2023 Service Manual

This Service Manual provides the specifications, diagnosis, maintenance and service information of Dongfeng Sokon vehicle models.

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Information as of March 2023

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General Contents

1. Model Overview 1
1.1 Warnings and notes 1
1.2 Vehicle label information 20
1.3 Traction and lifting 23
1.4 Maintenance 28
1.5 Health and safety 158
2. Engine.....1
2.1 Warnings and notes 6
2.2 Inspection and Measurement 10
2.3 Fuel system 30
2.4 Auxiliary emission control system 70
2.5 Exhaust system 90
2.6 Intake system 125
2.7 Ignition system 154
2.8 Control system 174
2.9 Cooling system 373
2.10 Engine assembly mechanism.....425
2.11 Engine mount.....442
2.12 Mechanical system 451
2.13 Lubrication system 550
3. Chassis.....1
3.1 Warnings and notes 6
3.2 Front suspension 8
3.3 Rear suspension 29
3.4 Wheels and tires 57
3.5 Four-wheel alignment..... 75
3.6 Drive shaft system 80
3.7 Front brake..... 90
3.8 Rear brake.....106
3.9 Hydraulic braking system 119
3.10 Parking system.....141
3.11 Brake safety control system.....221
3.12 Tire pressure monitoring system 347
3.13 Steering gear system.....353
4. Hybrid Transmission System.....1
4.1 Warnings and notes 2
4.2 Hybrid transmission..... 4
4.3 Electronic gearshift mechanism assembly 132
5. Electric System 1
5.1 Warnings and notes 4
5.2 Electrified vehicle control system 15
5.3 Power battery management system ..102
5.4 Battery thermal management system186
5.5 Charging system 206
5.6 HV distribution system.....254
5.7 Electric-driven and Electronically Controlled Thermal Management System 273
6. A/C 1
6.1 Warnings and notes 4
6.2 Cooling system 5
6.3 Heating System.....57
6.4 Ventilation circulation device 100
6.5 Air vent unit.....103
6.6 Controller device components.....121
7. Safety Protection System..... 1
7.1 Safety restraint system (SRS).....4
7.2 Pre-tightening type seat belt system .112
8. Electrical Equipment..... 1
8.1 Warnings and notes 9
8.2 Intelligent multimedia system 14
8.3 Exterior lighting system 87
8.4 Interior lighting system.....128
8.5 Window glass 139
8.6 Rearview mirror 205
8.7 Wiper/washer system 216
8.8 Instrument/driver's information system.....242
8.9 Panoramic sunroof system.....302
8.10 Small sunroof system 325
8.11 Central control door lock.....335
8.12 Power seat 348
8.13 Defrosting system.....357
8.14 Horn.....361
8.15 Backup power source 368
8.16 Mobile phone wireless charging system.....373
8.17 Remote monitoring system (T-BOX) 378
8.18 Power lift gate system 441
8.19 Cruise control system 496
8.20 Parking assist system.....504
8.21 Panoramic parking system.....514
8.22 ETC System.....521
8.23 Driving recorder 525
8.24 Side assist system (SSS).....529
8.25 Bluetooth key 574
8.26 LSPM 578
8.27 Data communication system.....583
8.28 Intelligent body control system 588
8.29 LV power supply system 818
9 Vehicle Body..... 1
9.1 Warnings and notes 6

9.2 Front end of body 8
9.3 Rear end of body 30
9.4 Front bumper 49
9.5 Rear bumper 65
9.6 Front door 74
9.7 Rear door 96
9.8 Instrument panel 117
9.9 Control box.....139
9.10 Front seat 162
9.11 Second-row seat.....175
9.12 Second-row seat (60/40 split) 185
9.13 Third-row seat 196
9.14 Interior trim 205
9.15 Vehicle body exterior trim.....231

10. Sheet Metal and Painting 1

10.1 Plastic panel information and maintenance..... 2
10.2 Body repair 6
10.3 Paint coating 178

Model Overview

1.1 Warnings and notes 1
1.1.1 Description and operation..... 1
1.1.1.1 Warnings and notes..... 1
1.1.1.2 Safety instructions for repair of plug-in hybrid electric vehicle..... 17
1.1.1.3 Safety measures for repair of plug-in hybrid electric vehicle..... 17
1.1.1.4 Operation safety of plug-in hybrid electric vehicle..... 18
1.2 Vehicle label information 20
1.2.1 Description and operation..... 20
1.2.1.1 VIN..... 20
1.2.1.2 Vehicle nameplate..... 20
1.2.1.3 Tire inflation label..... 22
1.3 Traction and lifting 23
1.3.1 Description and operation..... 23
1.3.1.1 Traction..... 23
Must mount a towing ring when towing vehicle. 23
Towing ring is contained in the vehicle tool. 23
1.3.1.2 Lifting..... 25
1.3.1.3 Support and jacking..... 26
1.4 Maintenance 28
1.4.1 Specification..... 28
1.4.1.1 Technical specifications..... 28
1.4.1.2 Fuel amount and specification..... 29
1.4.2 Description and operation..... 30
1.4.2.1 Table for regular maintenance cycles..... 30
1.4.2.2 Tire rotation instructions..... 33
1.4.2.3 Structure of diagnostic scanner..... 36
1.4.2.4 Instructions to diagnostic scanner..... 38
1.4.2.5 Update of diagnostic scanner software..... 47
1.4.2.6 After-sales matching after module replacement..... 48
1.4.2.8 Maintenance activation of electronic parking brake..... 56
1.4.3 Maintenance..... 59
1.4.3.1 Door limiting device inspection..... 59
1.4.3.2 Checking operation status of key cylinder . 60
1.4.3.3 Checking horn..... 60
1.4.3.4 Checking of seat belt..... 61
1.4.3.5 Checking sliding sunroof..... 63
1.4.3.7 Checking operation status of electrical system..... 64
1.4.3.8 Checking battery..... 66
1.4.3.9 Checking washer fluid..... 70
1.4.3.10 Brake fluid inspection..... 70
1.4.3.11 Check braking line..... 73
1.4.3.13 Checking oil level..... 76
1.4.3.14 Check the fluid level of hybrid transmission..... 77
1.4.3.15 Checking windshield wiper/washing unit .. 78
1.4.3.16 Checking limit position of windshield wiper blade..... 78
1.4.3.17 Checking free stroke of steering wheel..... 80
1.4.3.18 Check of child safety lock..... 81
1.4.3.19 Check the wear of friction plate..... 82
1.4.3.20 Checking brake disc for wear..... 83
1.4.3.21 Inspection of bolts connecting steering lower shaft and steering box assembly..... 83
1.4.3.22 Checking the outer tie rod ball joint, fixing device and dust cover..... 85
1.4.3.23 Inspection of front swing arm assembly and front stabilizer bar joint assembly..... 86
1.4.3.24 Checking suspension components..... 86
1.4.3.25 Checking body bottom..... 86
1.4.3.26 Checking tire..... 88
1.4.3.27 Checking wheel fixing bolts..... 89
1.4.3.28 Checking bearing of front damper..... 89
1.4.3.29 Checking electrical park brake (EPB)..... 89
1.4.3.30 Checking free stroke and height of the brake pedal..... 91
1.4.3.31 Visual check of drive shaft dirt proof trunk and rubber jacket..... 92
1.4.3.32 Visually checking engine compartment parts..... 92
1.4.3.33 Visually check the brake device for leakage and damage..... 93
1.4.3.34 Visually check exhaust system for leakage and damage..... 93
1.4.3.35 Visually checking fuel tank assembly surface for bump..... 94
1.4.3.36 Visual inspection of the appearance of power battery system..... 94
1.4.3.37 Replacing front wiper..... 96
1.4.3.38 Replacing rear wiper..... 97
1.4.3.39 Replacement of spark plug component..... 98
1.4.3.40 Replacement of engine coolant..... 99
1.4.3.41 Replacement of brake fluid..... 109
1.4.3.42 Replacing engine lubricating oil..... 115
1.4.3.43 Replacing oil filter component..... 117
1.4.3.44 Replacing hybrid transmission fluid..... 118
1.4.3.46 Removal and installation of air filter element..... 122
1.4.3.47 Replacing power battery coolant..... 123
1.4.3.48 Replacement of electric drive coolant..... 131
1.4.3.49 Replacing A/C filter element..... 138
1.4.3.50 Refrigerant recovery and filling..... 139
1.4.3.51 Recycling/filling compressor lubricating oil..... 141
1.4.3.52 A/C system vacuumization..... 143
1.4.3.53 Bleeding of brake system..... 143
1.4.3.54 Lubrication of door lock..... 151
1.4.3.55 Adjusting conditions of front combination light..... 152
1.4.3.56 Tightening chassis bolts..... 153
1.4.3.57 Test drive..... 157
1.5 Health and safety 158

1.5.1 Description and operation.....158
1.5.1.1 Description..... 158
1.5.1.2 Acids and alkalis..... 158
1.5.1.3 Airbag..... 158
1.5.1.4 A/C refrigerant..... 159
1.5.1.5 Adhesives and sealants..... 160
1.5.1.6 Coolant of drive motor and HV appliance assembly..... 161
1.5.1.7 Battery acid..... 161
1.5.1.8 Brake fluid..... 161
1.5.1.9 Chemical materials..... 161
1.5.1.10 Dust..... 162
1.5.1.11 Electric shock..... 162
1.5.1.12 Exhaust gas..... 163
1.5.1.13 Fiber isolation..... 163
1.5.1.14 Fire..... 163
1.5.1.15 First aid..... 163
1.5.1.16 Foam - polyurethane..... 164
1.5.1.17 Fuel..... 164
1.5.1.18 Gas cylinders..... 164
1.5.1.19 General workshop tools and equipment..... 165
1.5.1.20 Lubricating oil and grease..... 165

1.1 Warnings and notes

1.1.1 Description and operation

1.1.1.1 Warnings and notes

Definitions of “Warning”, “Caution” and “Note”

The diagnosis and service procedures in the Service Manual contain general and specific “Warning”, “Caution” and “Note”. DFSK Motor provides maintenance information to help after-sales service technicians to carry out system diagnosis and maintenance and put the vehicle in normal operation. However, the failure to operate by the recommended methods may lead to vehicle damage and personal injury.

“Warning”, “Caution” and “Note” are elements designed to prevent these hazards, but not all hazards can be foreseen. Such information is placed at conspicuous locations within the Service Manual. The information is designed to prevent the following consequences:

- Serious personal injury.
- Vehicle damage.
- Unnecessary vehicle repairs.
- Unnecessary component replacement.
- Improper repair or replacement of vehicle components.

Definition of “warning”

When encountering a “Warning”, you will be asked to take a necessary action or not to take a prohibited action. If a “Warning” is not heeded, the following consequences may occur:

- Serious personal injury.
- Serious personal injury to the driver or passengers of the vehicle.

Definition of “Caution”

“Caution” requires special attention to required measures or prohibited measures. If a “Caution” is not heeded, the following consequences may occur:

- Vehicle damage.
- Unnecessary vehicle repairs.
- Unnecessary component replacement.
- Abnormal operation or performance of the systems and components that have been repaired.
- Damage to relevant systems or parts and components.
- Damage to fasteners, basic tools, or special tools.
- Leakage of coolant, lubricant or other main fluids.

Definition of “Note”

“Note” highlights the necessity of certain diagnosis or maintenance procedure and it is given to:

- Specify the maintenance procedure.
- Offer supplementary information to finish a maintenance procedure.

- Explain the reason for operation in accordance with the recommended maintenance procedure.
- Offer information that helps to finish a maintenance procedure in a more effective way.
- Offer information on previous experience to technicians, so that they can finish a maintenance procedure easier.

Warning about vehicle lifting

Warning!

To avoid any vehicle damage, serious personal injury or death when major components are removed from the vehicle and the vehicle is supported by a hoist, support the vehicle with jack stands at the location where the components are removed.

ABS component handling warning

Warning!

Certain components in the Antilock Brake System (ABS) cannot be serviced individually. Attempting to remove or disconnect certain system components may result in personal injury or abnormal system operation. Only components permitted to be removed and installed can be repaired.

Warning about approved collision repair equipment

Warning!

To avoid personal injury due to exposure to welding arc or electroplating (zinc oxide) metal toxic smoke during grinding/cutting of any metal or sheet molding part, operation must be performed in a well-ventilated area with the specified respirators, goggles, earplugs, welder's gloves and protective clothing.

Assistant driving warning

Warning!

An assistant should drive the vehicle while the technician checks for the location of the reported condition. Otherwise, personal injury and traffic accident may be caused.

Warning about disconnection of battery negative terminal clamp

Warning!

Before maintenance of electrical components, do shut down all the electrical appliances and turn off the start switch. Unless otherwise specified in the operating procedure. If the tool or equipment to be used is likely to contact any live and bare electric terminal, the battery negative terminal clamp should be disconnected as well. Violation of any of these safety instructions may cause personal injury or damage to the vehicle.

Warning!

When repairing the airbag, disconnect the battery negative terminal clamp for at least 90s before any repair operation.

Brake dust warning

Avoid the following actions when you service wheel brake parts:

- Please do not grind the brake pad.
- Please do not grind the brake pad with abrasive paper.

- Do not clean wheel brake components with a dry brush or with compressed air.

Warning!

Some models or added brake parts may contain fibers which can become airborne in dust. Breathing in dust with fibers may cause serious bodily harm. Use a water-dampened cloth to remove any dust on brake parts.

Warning about brake fluid

Warning!

The brake fluid is humidity and moisture absorptive. Do not use any brake fluid that may be contaminated with water in an open container. Inappropriate or polluted brake fluid may result in system fault, vehicle being out of control and injury.

Brake fluid irritation warning

The brake fluid is irritating to the skin and eyes. In case of contact, take the following actions:

- Contact with eyes - Flush with water thoroughly.
- Contact with the skin - Wash with soap and water.

Warning about brake pipe replacement

Warning!

Be careful to install and fix the brake pipe during replacement. Make sure to use correct fasteners. Otherwise, the brake pipe and Braking System may be damaged, affecting personal safety.

Warning about R134a inhalation

Warning!

Avoid inhaling A/C refrigerant R134a and lubricating oil steam or fog which will irritate the eyes, nose and throat. Operation shall be made in a well-ventilated area. When discharging R134a from the A/C system, use a certified servicing device which meets the requirements in SAEJ2210 (R134a recycling device). If an accidental fluid discharge finds, ventilate the work area before continuing. Other health and safety information can be obtained from refrigerant and lubricating oil manufacturers.

Warning about collision cutting

Warning!

Cut at the recommended locations only. Otherwise, the structure integrity of the vehicle may be damaged and personal injury may be caused during a collision.

Cracked window warning

Warning!

If the glass of a certain window has cracks but is still intact, the protective adhesive tapes shall be stuck onto the window glass, with the tapes in a cross shape, so as to avoid further damage of the glass or personal injury.

Warning about window regulating function

Warning!

When the electrical window switch is operated on the driver side door, the window without anti-pinch

function may move too fast to stop, resulting in injury.

Eye protection warning

Warning!

When performing some procedures (such as welding or cutting), wear approved goggles and gloves to reduce risks of injury.

Warning about foam insulation material

Warning!

When flame is used during service, remove any foam insulation material within 152.4mm (6 in) from the flame. When installing the foam insulation material back, avoid inhaling smoke and dust. Otherwise, it is harmful to health.

Warning about fuel and fuel pipe!

To reduce risks of fire and injury, please follow the following requirements:

- Replace the fuel pipe which is bumped, scratched or damaged during installation. Do not try to repair it.
- Do not hammer directly on the fuel pipe harness clips when installing new fuel pipes.

Warning about fuel pressure gauge leakage

Warning!

Wrap a shop towel around the fuel pressure fitting to reduce the risks of fire or injury. The towel can absorb the fuel leaking from connection of the fuel pressure gauge. Put the towel in a proper container after the fuel pressure gauge is connected.

Warning about fuel pipe fitting

Warning!

Apply a few drops of clean engine oil to fuel pipe fittings before connecting to reduce the risk of fire and injury and to ensure proper reconnection and prevent possible fuel leakage. During normal operation, the O-ring located in the fitting will expand and may deform if not lubricated.

Warnings about fuel storage

Warning!

Do not store fuel in any open container. Otherwise, fire or explosion may occur.

Warning about fuel

Warning!

Fuel is inflammable. A fire source may result in fire. Never discharge or store gasoline or diesel fuel in an open container to prevent fire or explosion. Have a dry powder fire extinguisher nearby.

Warning about glass and sheet metal handling

Warning!

When working with any type of glass or sheet metal with sharp or rough edges, wear approved goggles and gloves in order to reduce the risk of injury.

Warning about fuel injector O-ring removal

Warning!

Check the fuel injector O-rings and make sure they are not left on the cylinder head after removal; otherwise the fuel injectors with new O-rings may not be fitted properly in the injector base, resulting in fuel leakage.

Warnings about moving components and hot surface

Warning!

When working around the engine in service, avoid touching the moving components and hot surface to prevent personal injury.

Exhaust repair warning

Warning!

To prevent scald, do not have the exhaust system components serviced in the warm state.

When removing the components of the exhaust system, wear goggles and gloves. Otherwise, rust peeled off from the worn components of the exhaust system and sharp edges will result in severe injury.

Warnings on removal of water reservoir cover

Warning!

In order to avoid burns, do not remove the water reservoir cap before the engine is cooled down. If the water reservoir cover is removed while the engine and radiator are not cooled down, the cooling system will release hot steam and high-temperature liquid.

Warnings on moving and high-temperature components

Warning!

When working around the drive motor in service, avoid touching the moving and high-temperature components to prevent personal injury.

Radiator cap removal warning

Warning!

To eliminate the risk of scald, do not remove the radiator cap before the drive motor cools down. If the radiator cap is removed before the drive motor and the radiator cool down, the cooling system will release scalding high-pressure liquid and vapor.

Warning about cooling system service

Warning!

Even though the coolant in the radiator does not boil, its temperature is much higher than the boiling temperature if the cooling system is under pressure. If the auxiliary water reservoir cap is opened to repair the cooling system when the drive motor has not cooled down and the pressure is still high, the drive motor coolant will boil immediately and may spill onto the operators, causing serious scald.

Relieving fuel pressure warning

Warning!

Remove the fuel tank cap and relieve the fuel system pressure before servicing the fuel system in order to reduce the risk of injury. After you relieve the fuel system pressure when servicing the fuel

lines, the fuel injectors, or the connectors, a small amount of fuel may spill out. In order to reduce the risk of personal injury, cover the fuel system components with a shop towel before disconnection. This will catch any fuel that may leak out. Place the towel in a proper container when the disconnection is complete.

Warnings for road test

Warning!

Road test the vehicle and observe all traffic laws and regulations on the premise of safety. Do not try any operation which may endanger the vehicle control. Violation of the above safety instructions may cause severe injury and vehicle damage.

Warning about goggles and gloves

Warning!

Wear goggles when handling fuel to prevent fuel splashing into the eyes.

SRS warning

Before repairing the SRS disconnect the negative battery terminal for at least 90s before any repair operation. The vehicle is equipped with an SRS. Failure to follow the correct procedure could cause the following conditions:

- The airbag deploys;
- Pretensioner igniting (if any);
- Personal injury;
- Unnecessary SRS repairs.

In order to avoid the above conditions, observe the following guidelines:

- You should refer to the view of SRS components to determine if you are working on or around the SRS components or on their circuits.
- If you are performing maintenance operations on or around SRS components or their wiring, you should disable the SRS first.

Warning about hot deployed airbag

The metal surfaces of deployed SRS components may be very hot. To prevent fire and personal injury:

- Ensure sufficient cooling time before touching any metal surface of a SRS component.
- Do not place inflated SRS components next to any flammable material.

Warning about SRS clock spring

Warning!

Improper installation of the clock spring coil assembly may damage the internal spiral of clock spring coil. The airbag may not work normally due to the coil fault, causing personal injury.

Warning about SRS scrap

Warning!

In order to prevent personal injury due to accidental airbag deployment, do not dispose of the undeployed airbag module as normal shop waste. If the sealed container is damaged during disposal,

some substances in the undeployed module may cause severe illness or personal injury. Follow the deployment procedures to safely dispose of the undeployed airbag module.

Warning about SRS airbag handling and storage

To transport an airbag not deployed:

- Do not handle the airbag by carrying the wire or connector on the airbag module.
- Make sure the airbag opening is not facing you or someone else.
- For storage of undeployed airbag module, be sure that the opening of the airbag does not face the surface of the airbag. Do not put the airbag with its opening downward. Do not put any article on the airbag. Provide enough space around the airbag for accidental deployment. Otherwise, personal injury may be caused. Do not immerse the airbag not deployed into water or other fluids.

Do not put the airbag not deployed near a fire source or in any hot area to prevent accidental deployment and personal injury.

Warning about handling of SRS collision sensor

Warning!

Do not impact or shake the SRS impact sensor. Before powering on the impact sensor, ensure that it is fixed securely. If you do not follow the correct installation procedures, the SRS may deploy by mistake or not deploy when it should have deployed, resulting in personal injury.

Warnings on power battery

Warning!

The electric vehicle contains a set of sealed high-voltage lithium-ion power batteries. If the power battery is improperly exposed, there will be a danger of severe burning and electric shock, which may lead to serious casualties and environmental pollution.

Warnings on HV safety preventive measures

Warning!

The vehicle is equipped with HV power battery. Please do not touch any HV component with bare hands when the HV power supply is not disconnected.

HV components of the vehicle include: drive motor and control unit, HV electrical appliance two-in-one assembly, HV box assembly, slow charging socket assembly, battery pack, compressor assembly, PTC heater assembly, etc.

After the vehicle runs for a period of time, the surface temperature of the drive motor and control device is high. If A/C is turned on for cooling, the surface temperature of the electric A/C compressor and radiator is high. During charging, the surface temperature of the HV electrical appliance two-in-one assembly is high. In such cases, do not touch the above components with bare hands.

It is strictly prohibited to remove any HV electrical component in the vehicle, or unplug or disconnect any onboard HV connector or cable without permission; otherwise, serious injuries due to electric shock and damage to vehicle may be caused. The HV cables in the vehicle are wrapped with orange-yellow corrugated pipes, so please identify them carefully.

Warnings on vehicle collision accidents

In case of vehicle collision (including collision with body front, rear, left and right and collision with

the ground):

Warning!

- Even if the vehicle can be driven, stop the vehicle safely, lift the EPB switch to apply parking braking, and turn off the start switch; do not touch body metal.
- Under any circumstances, it is forbidden for any person to repair the vehicle when the power supply of the vehicle is not completely disconnected.
- Check whether the high-voltage components and wiring harness of the vehicle are damaged or exposed (the position of the components can be determined by the layout of high-voltage components). To avoid personal injury, please do not touch HV harnesses, connectors and other HV components. Do not touch the damaged or exposed wire harness to avoid high voltage electric shock. Especially, if the base plate of the vehicle scratches the ground, carefully check whether the high-voltage wiring harness distributed on the base plate is damaged. Wear insulating protective clothing (including insulating gloves, insulating shoes and insulating clothing) withstanding a voltage above 1000V when you need to contact any high-voltage cables or components.
- If the damage of the vehicle cannot be estimated, please do not touch the vehicle. Do notify the emergency handling personnel in the first time that the vehicle is a plug-in hybrid electric vehicle, and keep any other person away from approaching, touching and moving the vehicle.
- If the driver is trapped and the HV system cannot be disconnected, please do not cut the vehicle before confirmation by professionals. Before cutting, flush the battery and the ground with a lot of fire water to flush off or dilute leaked electrolyte and prevent fire accident caused by the electrolyte ignited by electric sparks during cutting. During cutting, please do not touch HV cables (with yellow or orange cable sheath) and battery packs.
- It is strictly prohibited to remove the HV harnesses and parts from the engine compartment without permission. The HV harnesses have yellow or orange sheath.
- Leakage or damage of electrolyte of battery pack may cause fire. Please do not touch the leaked electrolyte with your hands. If your skin or eyes contact the electrolyte, please rinse immediately with plenty of water and seek medical attention immediately to avoid injury.
- If the vehicle smokes or catches fire, please leave the vehicle immediately, and do put out the fire with a carbon dioxide or dry powder extinguisher. Doing so may result in serious injury or death.
- In case of an accident, the vehicle may only be carried. Please do not tow the vehicle. If the wheels are on the ground during towing, the drive motor may generate electricity, thus damaging HV components of the vehicle and even causing a fire.
- If the vehicle needs to be repaired or painted after collision, remove HV components such as battery pack, HV wiring harness and motor controller before painting. The battery pack is exposed to the spraying operation room with high temperature, which may affect the service life of the battery pack. In addition, if the battery pack on the vehicle is not removed, it may bring the potential safety hazards to maintenance personnel who have not been trained in plug-in hybrid vehicle maintenance.
- Place the reflective tripod about 100m behind the vehicle immediately in case of fault or accident, or about 150m behind the vehicle on expressway to warn the passing vehicles and pedestrians for avoidance.

Warnings on charging

Warning!

If you use an electronic medical device, such as a cardiac pacemaker or cardiovascular defibrillator, please confirm the impact of electric vehicle charging on this device before charging. Charging may affect the functionality of electronic medical devices.

If you have a cardiac pacemaker or cardiovascular defibrillator, please pay attention to the following points when charging:

- Please do not stay in the vehicle;
- Do not get in the vehicle to pick up things.

Charging may affect the function of electronic medical devices, resulting in casualties.

Before charging, please check the surface and shell of the charging cable for breakage, and it is prohibited to use a broken charging cable. The charging plug is a high-voltage electrical device, which is strictly prohibited for children. Children are strictly forbidden to operate during charging.

Please make sure that the charging interface and plug are free of water or other foreign matters, rust or corrosion. If there is water or rust on the charging interface or plug, please do not charge, so as to avoid short circuit or electric shock, or casualties.

Please keep the power supply, vehicle to be charged, charging cable and plug away from rain, snow, accumulated water and fire.

In case of moisture near the charging port during charging, please disconnect the power supply first while ensuring safety, and then disconnect the plug at the power supply end (do not touch the sheet metal of the charging plug with your hands or other parts of your body, so as to avoid a safety accident when the charging system may fail), then pull out the charging plug at the vehicle end, use insulating gloves if necessary.

If the vehicle has been driven in the rain before charging, please wipe the body near the charging port before opening the charging port for charging.

Sparks may exist inside the charging system during operation. Please do not use the charging equipment in the environment where gasoline, paint, inflammable and explosive liquid are used or stored.

During charging, please keep the charging port dry and clean, and take corresponding preventive measures when necessary.

In case of sudden changes in weather (wind, rain and snow) during charging, check whether the charging plug is firm and dry in time. Do not touch the charging cable and vehicle body when lightning occurs.

During charging, appropriate protective measures should be taken to avoid children and other irrelevant personnel approaching the charging vehicle and charging cable.

Do not squeeze the charging cable when the vehicle is being charged, so as to avoid electric shock or fire.

Do not put the charging cable in the vehicle when the vehicle is being charged.

The charging cable must be kept away from fire when the vehicle is being charged.

Do not approach or touch the engine compartment radiator fan when the vehicle is being charged.

When charging with a home power supply, do adopt the socket of 220V 10A and above.

Please pay attention to the following points when charging:

- It is prohibited to touch the metal part of the charging port and plug.
- In case of sparks at the plug-in hybrid electric vehicle or charger/DC charging converter, it is prohibited to touch the vehicle and any device. Otherwise, personal casualty will be caused by electric shock. It is recommended that the ambient temperature during vehicle charging range from 0 °C to 35 °C, and avoid charging at a low temperature or high temperature. Charging at noon in winter and in the morning and evening in summer is recommended.

Avoid charging in an environment of high temperature such as direct sunlight in summer.

During the charging process, make sure that the charging cable is in a natural elongation state, and do not hang it in the air.

If you find special smell or smoke in the vehicle, please cut off the power supply immediately and safely. It is forbidden to plug and unplug the charging plug with wet hands and standing in a place with water, liquid and snow; otherwise, it is easy to cause electric shock and cause casualties.

When unplugging the charging plug, please hold the insulating part of the plug and do not drag or pull the charging cable directly. It is forbidden to disassemble or modify the charging port without permission.

It is forbidden to extend or modify the charging cable or plug without permission; otherwise danger will easily occur.

Warnings on charging method

Warning!

To avoid electric shock or fire accident due to short circuit, please install a ground fault circuit breaker in the circuit and use a waterproof grounded socket. The misuse of charging equipment will cause a fire accident or severe personal casualty.

- Do not use aged charging equipment.
- Please do not use charging equipment if the output power socket is damaged or loose.
- Please stop charging immediately after the charging socket or power socket is hot or has odor.
- Please do not use charging equipment together with other electrical appliances on the same circuit to ensure that the power circuit load meets vehicle charging requirements.
- Please do not continue to use a fault HV electrical two-in-one assembly.

Do charge in a charging place with stable voltage. Power sockets must be provided with electrical safety protective measures against water, moisture, dust, touch, electric leakage, etc. It is prohibited to connect power cable of any form without permission, so as to avoid bare power cables and prevent fire accidents.

It is prohibited to squeeze the charging cable while charging.

Do not use a damaged charging cable for charging.

Warnings on maintenance

Warning!

The vehicle is equipped with HV battery pack, and the temperature will be high after the vehicle runs.

Please do take protective measures and observe the following precautions when checking or maintaining the vehicle:

Park the vehicle on a horizontal road, turn on the parking brake switch and shift the gear in N. It is prohibited to connect or disconnect the 12V battery when the power-on switch is on.

Turn off all the electrical appliances and turn off the start switch.

Please disconnect the clamp of 12V battery negative terminal during maintenance since the cooling fan of this vehicle may be started at any time.

During maintenance, please fix or take off loose clothing and remove ornaments such as rings and watches, and please wear protective goggles. Metal ornaments in contact with live parts will cause electric shock or burn.

It is prohibited to maintain, remove, move or replace HV components, harnesses and connectors without authorization, otherwise it may cause serious burn or electric shock and even cause serious personal casualty.

It is forbidden to enter the area under a vehicle supported only by jacks. Do use a safety bracket for operation under the vehicle.

Children or pets are prohibited from coming into contact with vehicle oil.

To replace a bulb, fuse or 12V battery, please confirm that the vehicle charging plug has been unplugged and the remote control A/C has been turned off; turn off the start switch in advance to prevent the power battery from charging the 12V battery.

Pay attention to the polarity when connecting the 12V battery cable. Never connect the positive cable to the negative terminal or the negative cable to the positive terminal.

Caution about filling brake system with brake fluid

Notes

Fill the brake master cylinder reservoir with only brake fluid from a clean and sealed container. Use DOT4 brake fluid. Any other brake fluid than the recommended one may pollute the system, and thus damaging the rubber seal/lining in the hydraulic braking system.

Caution about brake caliper

Notes

Fix the brake caliper with a steel wire or special tools when removing it to prevent damage to brake pipeline.

Important precaution on impact of brake fluid on paint and electric components

Notes

Keep the brake fluid from the paint surface, electrical connectors, wires or cables. The brake fluid will damage the paint surface and corrode the electrical components. If it contacts with the paint surface, wash the affected part with clean water. If it contacts with any electrical connector, wire or cable, wipe the brake fluid with a clean towel.

Caution about fuel tank strap damage

Notes

Do not bend the fuel tank strap. Otherwise, it will damage the fuel tank.

Caution about engine emission

Notes

If the following systems are transformed, the emission control system will be affected, and the emission and engine MILs will go on:

- Engine
- Transmission
- Exhaust system
- Fuel system

Notes

Failure to replace the tire as per the performance criteria of original tire may affect the emission control and also result in that the emission MIL and engine MIL turn on.

Transformation of these systems or installation of incorrect tire may cause repair beyond the warranty scope of the manufacturer and the vehicle not to pass required emission inspection.

Caution about engine jacking

Notes

When the engine is jacked up or supported for any reason, do not place the jack underneath the oil pan or crankshaft belt pulley. Improper jacking or support may damage engine components.

Caution about engine mount

Notes

If any engine mount is broken, some drivetrain components may mismatch and thus be damaged finally. If one engine mount is broken, the stress applied to other engine mounts will increase, breaking these engine mounts.

Caution about exhaust pipe and oxygen sensor

Notes

When the engine temperature is above 48°C (120°F), it will be hard to remove the oxygen sensor. However, excessive force may damage the threads of the exhaust manifold or the oxygen sensor.

Caution about drive motor

Notes

When necessary to lift or support the drive motor, never place a jack under any metal panel or pipe. Lifting the drive motor in any incorrect way may cause damage to components or personal injury.

Caution about drive motor support

Notes

If the drive motor support is broken, some drivetrain components may mismatch and thus be damaged finally.

Notes

If a drive motor support breaks, the stress applied onto other drive motor supports will increase, resulting in breakage of other drive motor supports.

Caution about exterior trim emblem removal

Notes

Use a plastic, flat-bladed tool to prevent paint damage when removing an emblem/nameplate.

Caution about fastener

Notes

Please use proper fasteners in proper positions, and ensure that the part No. of the fastener for replacement is correct. The fasteners to be replaced or to be provided with thread locking adhesive or sealant will be specially noted in the service procedure. Unless otherwise stated, do not apply paint, lubricant or corrosion inhibitor to the fastener or its joint surface. These coatings affect fastener torque and joint clamping force and may damage the fastener. Install fasteners in correct tightening sequence and specifications to avoid damage to parts and systems.

Caution about handling of components sensitive to electrostatic discharge

Notes

Electrostatic discharge (ESD) will damage many solid electrical elements. Not all components susceptible to ESD are marked with the ESD symbol. So please handle all electrical elements carefully. Observe the following safety instructions to protect electrical elements against ESD:

- Touch the metal grounding point to discharge body static electricity (especially after sliding on a vehicle seat) before starting to repair any electronic component.
- Do not touch any bare terminal because it may be connected with a circuit easily damaged by ESD.
- Do not contact any tool with a bare terminal when repairing the connector.
- Unless otherwise stated, do not remove the component from the protective case.
- Unless otherwise specially required in the diagnosis procedure, avoid the following operations:
- Make jumping connection or grounding for components or connectors.
- Connect probes of the test equipment with components or connectors. Connect the ground wire before using test probes.

Ground the protective case of the component before opening it. Do not put any solid component on the metal platform or on the top of TV, radio set or other electrical equipment.

Cautions about turning off start switch before disconnecting the clamp of battery negative terminal

Notes

Turn off the start switch when connecting or disconnecting the clamp of battery negative terminal, battery charger or jumper cable, otherwise, it may damage the control module or other electrical components.

Caution about no twisting or bending during hose installation

Notes

Do not twist the inlet and outlet hose during installation. Do not bend or deform the hose for easy installation. Otherwise, the components may be damaged.

Caution about powertrain control module and esd

Notes

Do not touch the connector pins or soldered components on the circuit board in order to prevent possible electrostatic discharge damage to the electrostatic control module.

Caution about sealant

Notes

Do not let room temperature-cured sealant enter the tapped blind hole. If room temperature-cured sealant enters the tapped blind hole, the fastener will be hydraulically locked when it is tightened. Hydraulic locking of the fastener will cause damage to the fastener and other components, and failure to reach a proper clamp force during tightening. An improper clamp force may lead to leakage due to improper sealing. If the fastener fails to be tightened properly, components will get loose or disengaged, causing serious damage to the drive motor.

Caution about diagnostic scanner

Notes

Pay attention to the following conditions before diagnosis of the vehicle to prevent damage to the control module.

- Software versions of the diagnostic scanner and the terminal must be the latest ones.
- The vehicle battery must be fully charged and the battery voltage shall in the range of 12~14 V.
- Diagnostic scanner and terminal cables must be connected firmly.
- Do not connect the battery charger with the battery when programming the control module.

Caution about tester probe

Notes

Do not insert any test probe of the test equipment (digital multimeter, etc.) into the harness connector or the terminal in the fuse box, because diameter of the test probe may cause deformation of most terminals, which will result in poor contact and system failure. For this reason, be sure to use special tools to detect terminals from the front part. Never detect terminals with a clip or other substitutes.

Notes

Make sure that the terminal test adapter selected is suitable for the size of connector terminal when testing a component with special tools. Do not select the terminal test adapter based on visual observation, because some holes of connector terminals may seem larger than actual terminals and using a larger terminal test adapter may damage the terminal.

Safety notes for removal of battery pack

Notes

- The battery pack shall be removed in strict accordance with the operating instructions.
- During removal, operators are prohibited to wear metal ornaments such as gold and silver jewelry and watch.
- Operators must pass the training on safety and professional knowledge.
- When removing HV components, operators shall wear insulated gloves, safety shoes and safety helmets as required.

- Use insulated tools when removing HV connectors and fasteners, and carry out insulation protection in the removal of each fastener.

Cautions about daily use of battery pack

Notes

1. If the battery needs to be stored for a long time, keep the charge of the battery at 30%~50%, and avoid continuous parking for more than 1 month; (it is recommended to charge and discharge the battery every month).
2. Ambient temperature for charging: 0~45°C.
3. Ambient temperature for discharging: -30~55°C.
4. Regular safety inspection:

- Check and tighten the installation torque of the battery assembly regularly.
- Carry out looseness test of HV/LV connectors.
- Tightness test.
- Insulation and withstand voltage test.

Update BMS software regularly (function update and upgrade).

Avoid wading for a long distance or for a long time.

Never fully discharge the battery assembly.

It is not allowed to remove, install or modify the battery assembly without authorization.

HV power-off methods and notes for maintenance

Notes

- Removal and installation of HV parts by non-professionals are strictly prohibited.
- Maintenance personnel without HV safety training are not allowed to maintain HV parts.
- It is not allowed to remove and maintain HV components during vehicle charging.
- Before operation on the HV components, do disconnect the charging port from the charging equipment, confirm that the vehicle is in OFF, and disconnect the 12V battery, and check the HV components and circuits of the vehicle at least 3 minutes later (to discharge the capacitive devices in the HV components).
- Wear insulated gloves (with insulation grade above 1,000V/300A), insulated shoes, insulated helmets, protective goggles and other insulated protection tools.
- After the HV component is opened or the harness connector is disconnected, measure the voltage with a multimeter, and do not turn to the next step before the voltage drops below 36V (AC) or 60V (DC).
- When repairing high-voltage components, pay attention to the shell surface temperature, and operate after cooling.
- When repairing the battery pack, use a multimeter to confirm that there is no voltage at the positive and negative output terminals of the battery pack before turning to the next step.

Cautions about charging

Notes

- To charge the vehicle, observe whether the three-jaw charging plug matches the three-hole charging socket and whether the charging plug is coupled.

After charging, please make sure to close the charging socket protective cover and charging cover.

Before starting the vehicle, please make sure that the charging plug has been pulled out from the charging port.

1.1.1.2 Safety instructions for repair of plug-in hybrid electric vehicle

The electrical equipment on the plug-in hybrid electric vehicle is divided into LV components and HV components, the LV components include: instrument, audio, light, horn, etc.; the HV components include: drive motor and control unit, battery pack, HV electrical two-in-one assembly, compressor assembly, PTC heater, etc.

HV components are attached with orange warning labels. Pay attention to the requirements on the warning labels. To avoid electric shock, it is prohibited to touch HV components, HV cables (orange) and their connectors.

If a cable on board is bare or broken, do not touch it to prevent electric shock.

Non-professional maintenance personnel are prohibited to remove, disassemble or modify electrical equipment at will; otherwise touching high voltage will lead to serious consequences such as burns and even death due to electric shock.

1.1.1.3 Safety measures for repair of plug-in hybrid electric vehicle

Insulating protective articles

A Insulated protective clothing (insulation grade: 5kV)

B Insulated rubber shoes (insulation grade: 10kV)

C Insulated helmet (insulation grade: 10kV)

D Protective goggles

E Insulated gloves (insulation grade: 1kV)

Maintenance personnel must wear insulating protective articles before operation:

- Wear insulated protective clothing.
- Wear insulating shoes.
- Wear insulated helmet.
- Wear protective goggles.
- Wear insulated gloves: Choose the corresponding anti-HV electrician gloves or battery electrolyte acid-alkali-proof gloves according to the working conditions.

Notes

Before the insulating protective equipment is used, check them to ensure that they are free from damage, broken holes and cracks, and that both the internal and external surfaces are clean and dry. They insulating protective equipment must be free from water to ensure safety.

Insulation tool

A Insulated rubber pad (insulation grade: 1kV)

B Insulation tool

C Power battery work bench

D Insulated protection hook (insulation grade: 30kV) Use of insulated tools:

- Line an insulated rubber pad in the maintenance area.
- Maintenance personnel must use insulated tools when operating live components.
- It is necessary to use a professional workbench with insulated pad when checking battery pack and electronic control components.

Notes

Before the insulation tool is used, check them to ensure that they are free from damage, broken holes and cracks, and that both the internal and external surfaces are clean and dry. They insulating protective equipment must be free from water to ensure safety.

Maintenance site

A High pressure warning sign

B Carbon dioxide or ammonium phosphate fire extinguishers

C Deterrent line

D Special maintenance workstation, ground wire, maintenance site requirements:

- Take isolation measures prior to maintenance, adopt warning fence for isolation, and set up high-voltage warning signs to warn irrelevant personnel to stay away from the maintenance area and avoid safety accidents.
- The designated location of the maintenance site must be allocated with fire hydrants, and clear water shall be used to put out the fire.
- Before repairing HV equipment, connect the vehicle body with a ground wire to the earthing wire of the special maintenance station for the electric vehicle.
- Special AC circuits and power sockets shall be installed. If no special circuit is used to charge the plug-in hybrid electric vehicle, it may affect the normal service of other equipment on the circuit.
- Keep the working area clean and well ventilated, away from liquids and flammable materials.

1.1.1.4 Operation safety of plug-in hybrid electric vehicle

Repair of HV system

- Before powering on the vehicle, confirm whether there are still personnel carrying out high-voltage maintenance to avoid danger.
- When repairing HV system, shut down all the electrical appliances, turn off the start switch, and disconnect the clamp of battery negative terminal.
- When repairing HV cable, wrap all removed bare HV parts with insulating tape immediately for insulation.
- When installing the high-voltage wiring harness, the wiring harness must be fixed in place according to the requirements of the fixing holes in the body.

- Do not touch the live parts in the high-voltage harness connector with your fingers to avoid electric shock, and prevent small metal tools or iron bars from touching the live parts of the connector.

Measurement with multimeter

- Before repairing the HV system, use a multimeter to measure the vehicle HV circuit to ensure that there is no power. Measurement method: After disconnecting the clamp of battery negative terminal, measure the voltage between the power battery and the body to preliminarily judge whether there is electric leakage or not. If the voltage is not less than 50V, stop operation immediately, and check and judge the leakage position.
- When using a multimeter to measure high voltage, make sure to select the correct range. The accuracy of the multimeter used for measurement shall not be lower than grade 0.5. The multimeter must have a DC voltage measuring position, with a measuring range not less than 500V.
- During HV measurement with a multimeter, the principle of "one-hand operation" must be followed.
- The multimeter is equipped with an insulated crocodile clip on one pen cable (with required voltage resistance of 3kV and overcurrent capacity of greater than 5A). When measuring, first clamp the crocodile clip to one terminal of the circuit, then connect the other pen to the measuring terminal to measure the reading, and hold the pen with only one hand during each measurement.
- During HV measurement with a multimeter, it is strictly prohibited to touch the metal part of the pen.

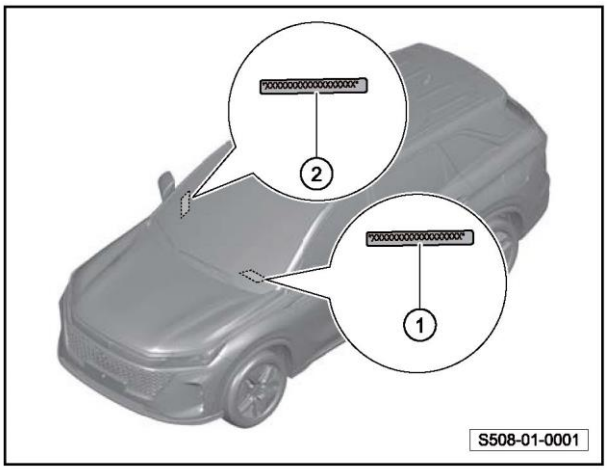
Vehicle treatment

- Vehicles have anomalies, accidents, fires and immersion in water.
- If the vehicle has an accident, it is not allowed to start the vehicle again.
- If the vehicle is on fire, put out the fire with a large amount of water immediately.
- When the vehicle is immersed in water, wait for no bubbles and sizzle sound on the water surface before salvage. After electricity consumption, wear insulated protective equipment before salvage to prevent electric shock.

1.2 Vehicle label information

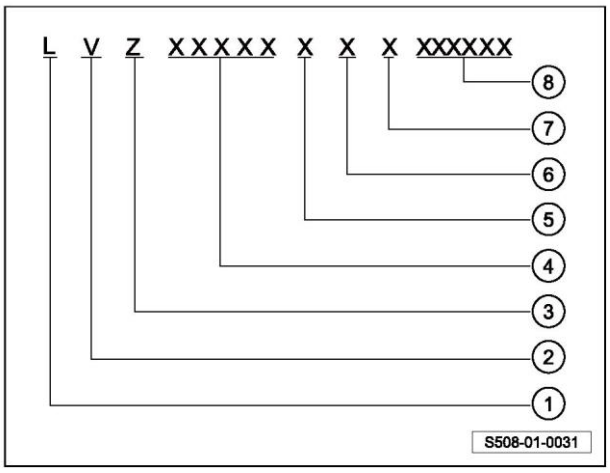
1.2.1 Description and operation

1.2.1.1 VIN



Vehicle identification number (VIN) (position as shown in the figure)

- Vehicle identification number (VIN) ①: on the left side of instrument panel.
- Vehicle identification number (VIN) ②: on the front left B-pillar.



VIN (Coding Method)

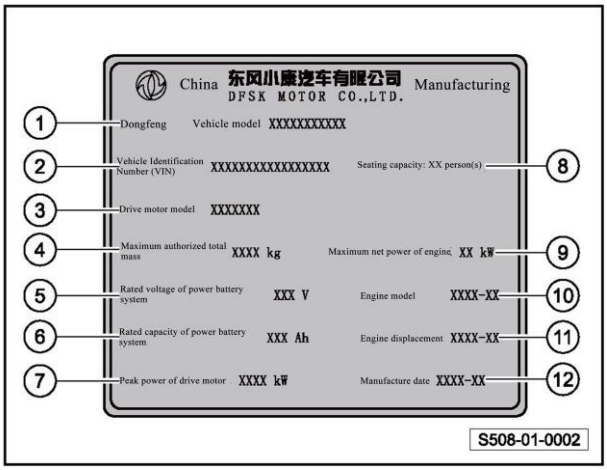
- VIN includes the following information:

① Geographical region
② Country
③ Manufacturer
④ Vehicle characteristic code
⑤ Check digit
⑥ Year
⑦ Assembly plant
⑧ Production S/N

1.2.1.2 Vehicle nameplate

Tip:

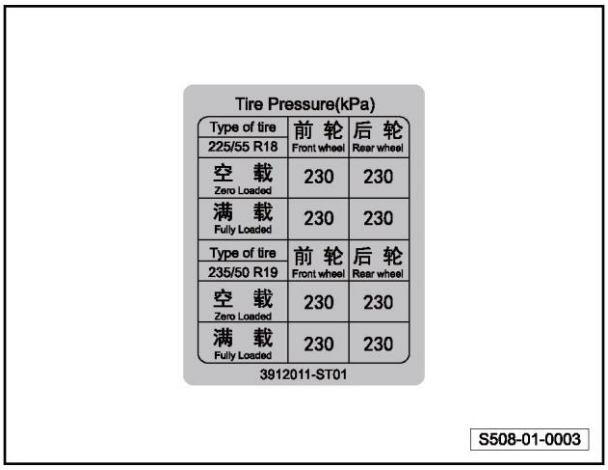
The vehicle nameplate is located on the right B-pillar.



The vehicle nameplate includes the following information:

① Brand and vehicle model
② VIN
③ Traction motor model
④ Maximum authorized total mass
⑤ Rated voltage of the traction battery system
⑥ Rated capacity of the traction battery system
⑦ Peak power of the traction motor
⑧ Seating capacity
⑨ Maximum net power of engine
⑩ Engine model
⑪ Engine displacement

⑫ Manufacture date



1.2.1.3 Tire inflation label

Left B-pillar: tire inflation label.

1.3 Traction and lifting

1.3.1 Description and operation

1.3.1.1 Traction

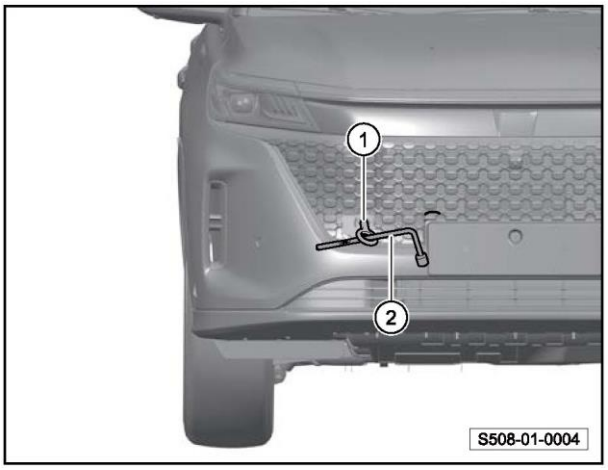
Pulling Procedures

Tip:

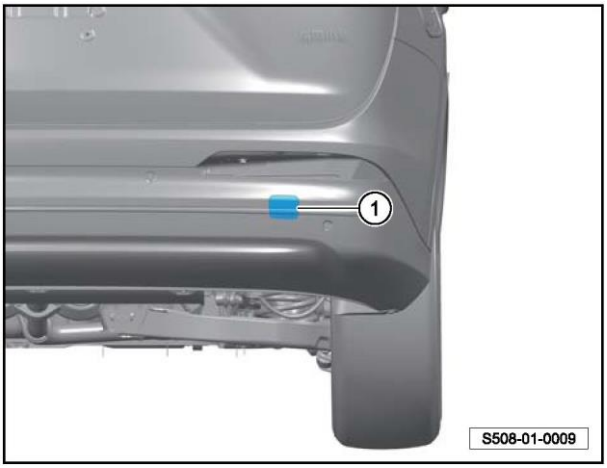
Must mount a towing ring when towing vehicle.
Towing ring is contained in the vehicle tool.

1 Front towing

a. Use a straight screwdriver wrapped by soft cloth to pry up the blank cover ① of the front towing hook.

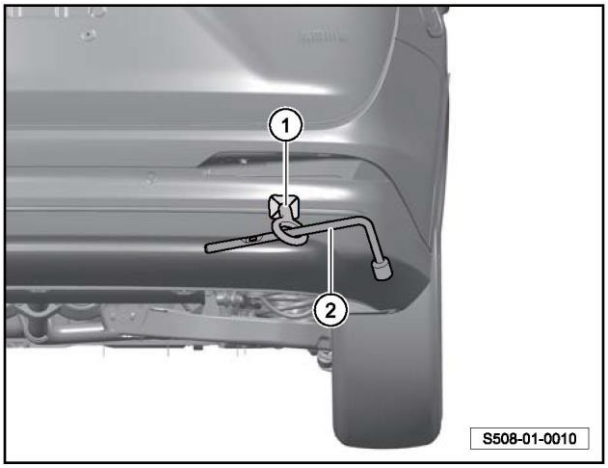


b. Screw the towing ring ① in and tighten it with a wheel wrench ②.



2 Rear towing

a. Use a straight screwdriver wrapped by soft cloth to pry up the blank cover ① of the rear towing hook.



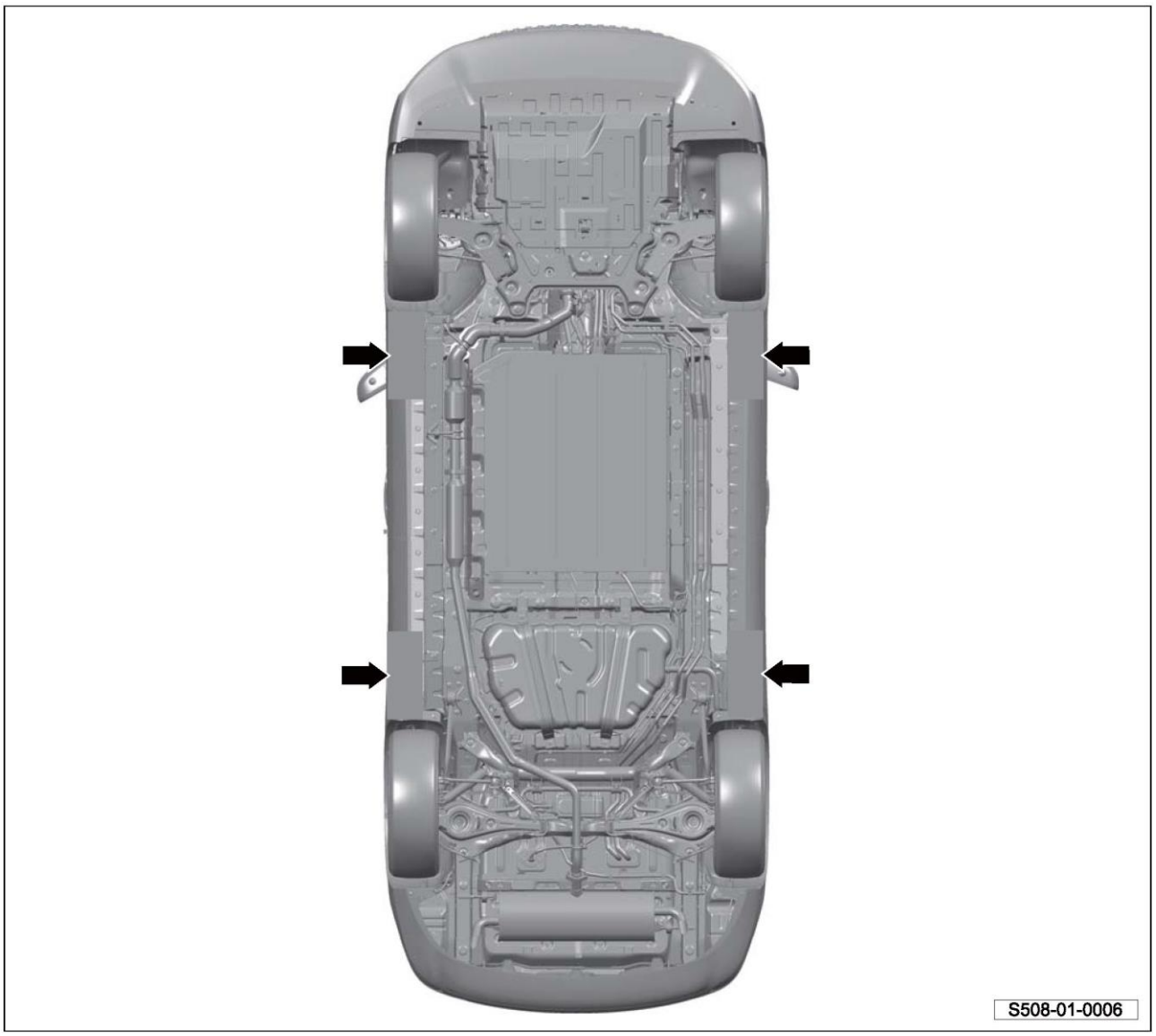
b. Screw the towing ring ① in and tighten it with a wheel wrench ②.

1.3.1.2 Lifting

Warning!

Using correct lifting positions is important to lifting safety. Otherwise, the vehicle may be damaged or personal injury may occur.

As shown below, use a level filler block under the lifting position (see arrows) when lifting the vehicle with a lifter.

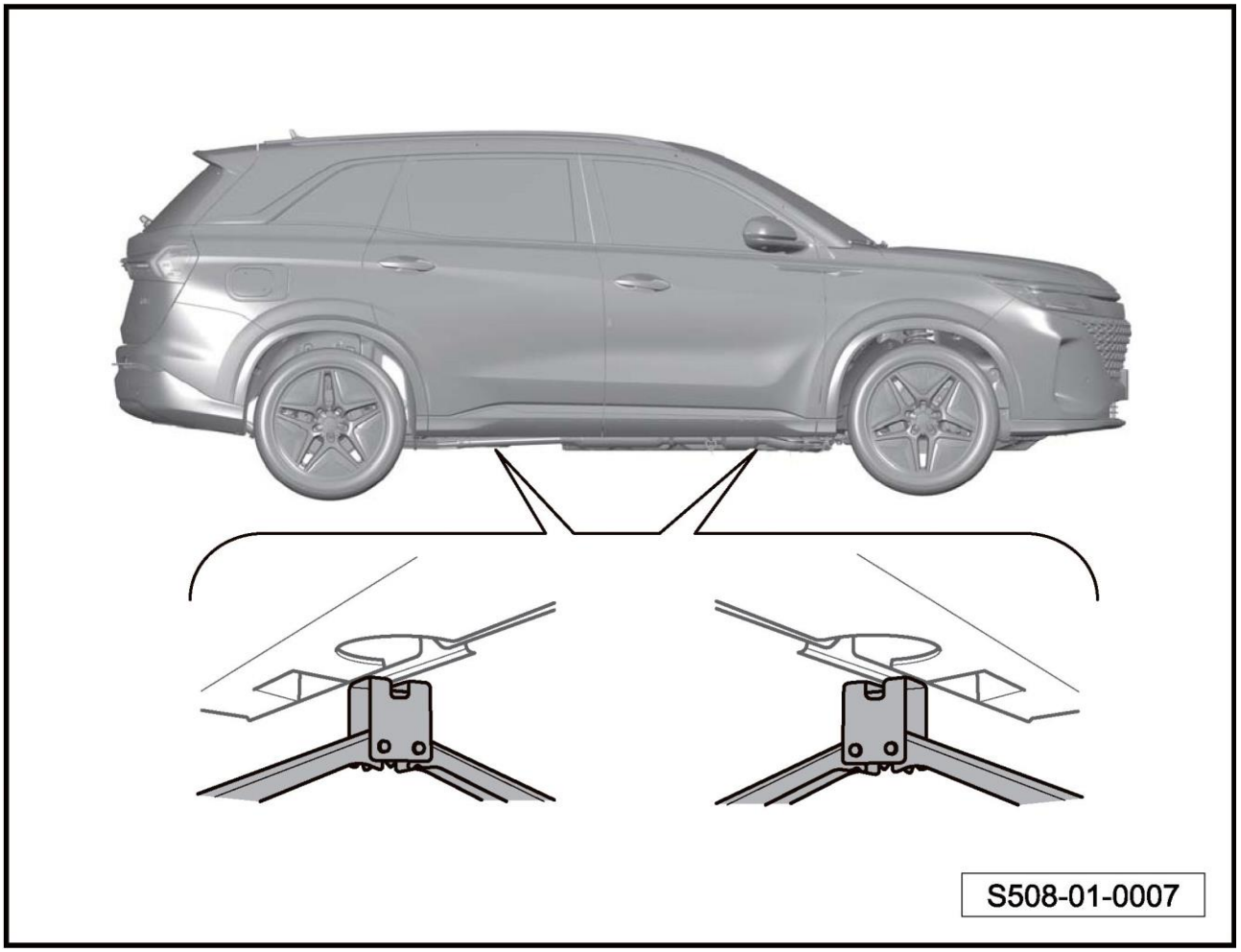


1.3.1.3 Support and jacking

Warning!

Park the vehicle on a hard and flat ground. If the vehicle needs to be jacked up on soft ground, a load dispersing block must be placed under the jack. Be sure to place a stopper at the wheel opposite to the jacking point on the diagonal. Failure to follow these instructions may result in personal injury.

When jacks are required for vehicle maintenance, it is essential to fully understand the following guidelines. Determine the correct supporting point which usually is at the stiffening plate of chassis between the front and rear wheels. When the jack is used, a pad shall be used to protect the vehicle paint from being damaged.



Jacking

Support

1.4 Maintenance

1.4.1 Specification

1.4.1.1 Technical specifications

Complete vehicle performance

Item	Engine model: F31A
Maximum vehicle speed (km/h)	165
Minimum turning diameter (m)	11.8

Engine parameters

Item		Engine model: F31A
Engine	Type	Ignition type, four-stroke, intake manifold (multi-point) (gasoline), naturally aspirated, liquid-cooled, fluffy, in-line
	Cylinder diameter × stroke (mm)	72×92
	Total displacement (L)	1.498
	Compression ratio	15.5:1
	Maximum net power (kW)	75
	Maximum torque (N·m)	135
	Idling speed (r/min)	1100±50
	Fuel oil	Using 92# or above unleaded gasoline for motor vehicles
	Emission standard	China VI

Transmission parameters

Model		DHT300
Type		E-CVT
Drive ratio of each gear of transmission	Engine drive	3.17
	Driven by drive motor	11.7

1.4.1.2 Fuel amount and specification

Item	Specification	Filling amount
Gasoline	Using 92# or above unleaded gasoline for motor vehicles	60L
Oil	SP 0W-20	3.7L
Hybrid transmission lubricating oil	EHSF-1	3.6±0.1L
Anti-freezing liquid	FD-40	9.6L (engine high-temperature circuit)
		Vision: 6.8L; Gotion: 3.2L (battery cooling system)
		5.2L (electric-driven and electronically controlled thermal management system)
Windshield cleaning fluids	-20# (typical) -35# (alpine area in winter)	2.5±0.5L
Brake fluid	DOT4	1.2±0.05L
A/C refrigerant	R134a	580±20g

1.4.2 Description and operation

1.4.2.1 Table for regular maintenance cycles

Complete vehicle														
Maintain the car as per the specified mileage or time interval (whichever comes first)														
Kilometer x 1000 (total mileage)	3.5	11	18.5	26	33.5	41	48.5	56	63.5	71	78.5	86	93.5	101
Number of months	6	18	30	42	54	66	78	90	102	114	126	138	150	162
Powertrain														
Electronic fuel pump (including fuel filter)	Check it at intervals of 3 years or 60,000 km and replace if necessary													
Hybrid transmission gear oil	1. Check and replace special gear oil for hybrid transmission and check the amount of gear oil in the hybrid transmission during routine service 2. Replace gear oil every 4 years or 60,000km, and replace the filter element assembly when replacing oil													
Engine coolant, electronically controlled coolant, power battery coolant	Replace the long-acting coolant every 4 years or 100,000km													
Air intake and exhaust system	I	/	I	/	I	/	I	/	I	/	I	/	I	/
Drive belt and tension pulley	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Fuel pipeline and connectors	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Tighten the bolts of engine suspension	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Engine harness and sensors	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Fuel tank, fuel vaporized hose	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Chassis and body														
Functions and travel of parking brake	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Steering wheel and steering transmission mechanism	/	I	I	I	I	I	I	I	I	I	I	I	I	I
Status and function of seat belt, buckle and support seat	I	/	I	/	I	/	I	/	I	/	I	/	I	/
Door lock, hinge and stopper (lubricate if necessary)	/	I	I	I	I	I	I	I	I	I	I	I	I	I

Complete vehicle														
Maintain the car as per the specified mileage or time interval (whichever comes first)														
Kilometer x 1000 (total mileage)	3.5	11	18.5	26	33.5	41	48.5	56	63.5	71	78.5	86	93.5	101
Number of months	6	18	30	42	54	66	78	90	102	114	126	138	150	162
Check the free travel of brake pedal	/	I	I	I	I	I	I	I	I	I	I	I	I	I
Brake fluid	Replace every 2 years or 40,000km, and check during routine service													I
Brake pipeline	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Tighten the bolts and nuts at the chassis and underbody	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Front and rear dampers	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Wheel alignment	Check when something abnormal happens													
Tire condition and tire pressure	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Electric power steering	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Drive shaft sleeve	/	I	I	I	I	I	I	I	I	I	I	I	I	I
Front wheel brake disc and related working components	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Rear wheel brake disc and related working components	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Wheel nut	I	I	I	I	I	I	I	I	I	I	I	I	I	I
A/C and Electronics														
A/C system	I	/	I	/	/	I	/	/	I	/	/	I	/	/
Lighting and signal devices	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Windshield washing system (including wiper and fluid reservoir)	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Battery	I	I	I	I	I	I	I	I	I	I	I	I	I	I
A/C filter	I	R	R	R	R	R	R	R	R	R	R	R	R	R
Sunroof	Check it at intervals of 5000 km (check whether the sunroof is stuck during operation, and add lubricating oil or grease as necessary)													

Engine
Maintain the car as per the specified mileage or time interval

kilometer x 1000 (HEV mileage)	3.5	8.5	13.5	18.5	23.5	28.5	33.5	38.5	43.5	48.5	53.5	58.5	63.5	68.5
Number of months	6	18	30	42	54	66	78	90	102	114	126	138	150	162
Engine oil and oil filter	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Air filter element	/	/	/	R	/	/	/	R	/	/	/	R	/	/
Spark plug	/	/	/	R	/	/	/	R	/	/	/	R	/	/
Gasoline detergent	/	R	R	R	R	R	R	R	R	R	R	R	R	R
Positive Crankcase Ventilation System	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Engine idling	I	/	I	/	I	/	I	/	I	/	I	/	I	/
DUST FILTER, CARBON CANISTER	Replace every 2 years or 30,000km, or replace when frequent shut-off of refueling nozzle occurs													

I: Inspect these items and associated parts; correct, clean, supplement, adjust or replace if necessary.

R：Replace or change.

/: Check or replace according to the conditions of the vehicle.

Notes

– Add 1 bottle (180 ml/bottle) of gasoline detergent during each maintenance except the first maintenance.

  – It is recommended to continuously apply 3 bottles (180 ml/bottle) of gasoline detergent to the vehicle whose mileage exceeds 20000 km and which receives gasoline detergent for the first time. After that, continuously apply 2 bottles of gasoline detergent to the vehicle every 7500 km.

  – For areas using ethanol gasoline, it is recommended to add 1 bottle (180 ml/bottle) of gasoline detergent to every other tank of fuel.

  – Add gasoline detergent first and then fill up the fuel tank. Do not refuel or add gasoline detergent before the refueling prompt displays on the instrument cluster and the fuel indicator turns yellow.

– If your vehicle is used in a low-temperature environment (ambient temperature < 5°C) for a long time, and the continuous driving time in HEV mode is short (< 15min) every time, or it is frequently driven in a slow crawling condition (vehicle speed < 10 km/h) for a long time, it indicates that the vehicle is in a bad working condition. In order to protect your vehicle, it is recommended that you shorten the recommended maintenance intervals according to the actual situation.

1.4.2.2 Tire rotation instructions

Notes

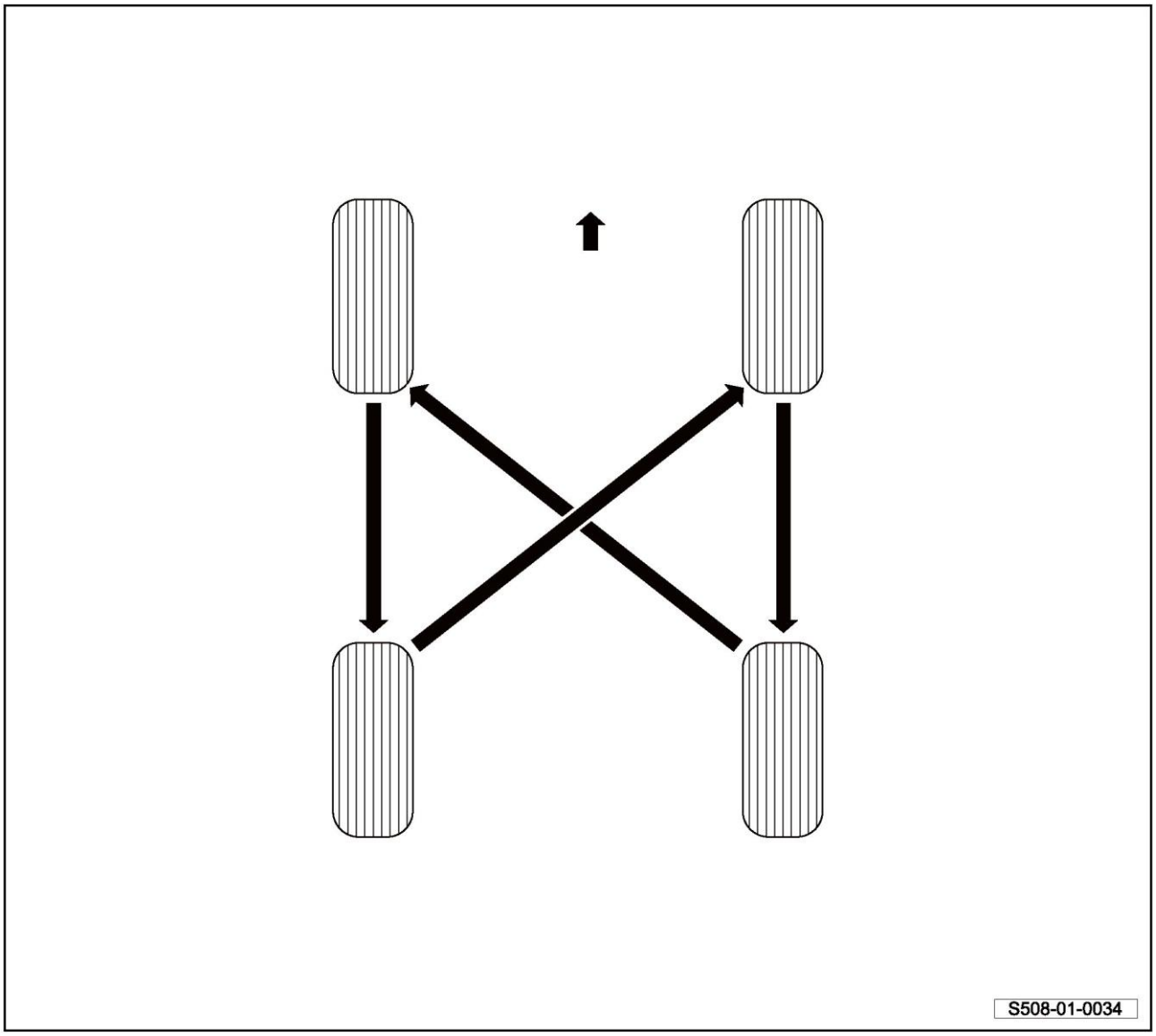
In case of obvious uneven abrasion on any tire, find the reason or such abrasion fault. It is suggested to simultaneously check the dynamic balance of wheel assemblies in case of rotation of wheel assemblies.

1 The front wheels differ greatly from the rear wheels in abrasion as the load on them is different. To avoid unidirectional abrasion, the tire shall be rotated regularly as appropriate to ensure even abrasion and prolong the service life of tires. It is suggested to carry out tire rotation every 10000km. tire rotation is carried out mainly to:

   a. Ensure even tire wear and average tire fatigue as well as guarantee vehicle stability and high fuel economy.

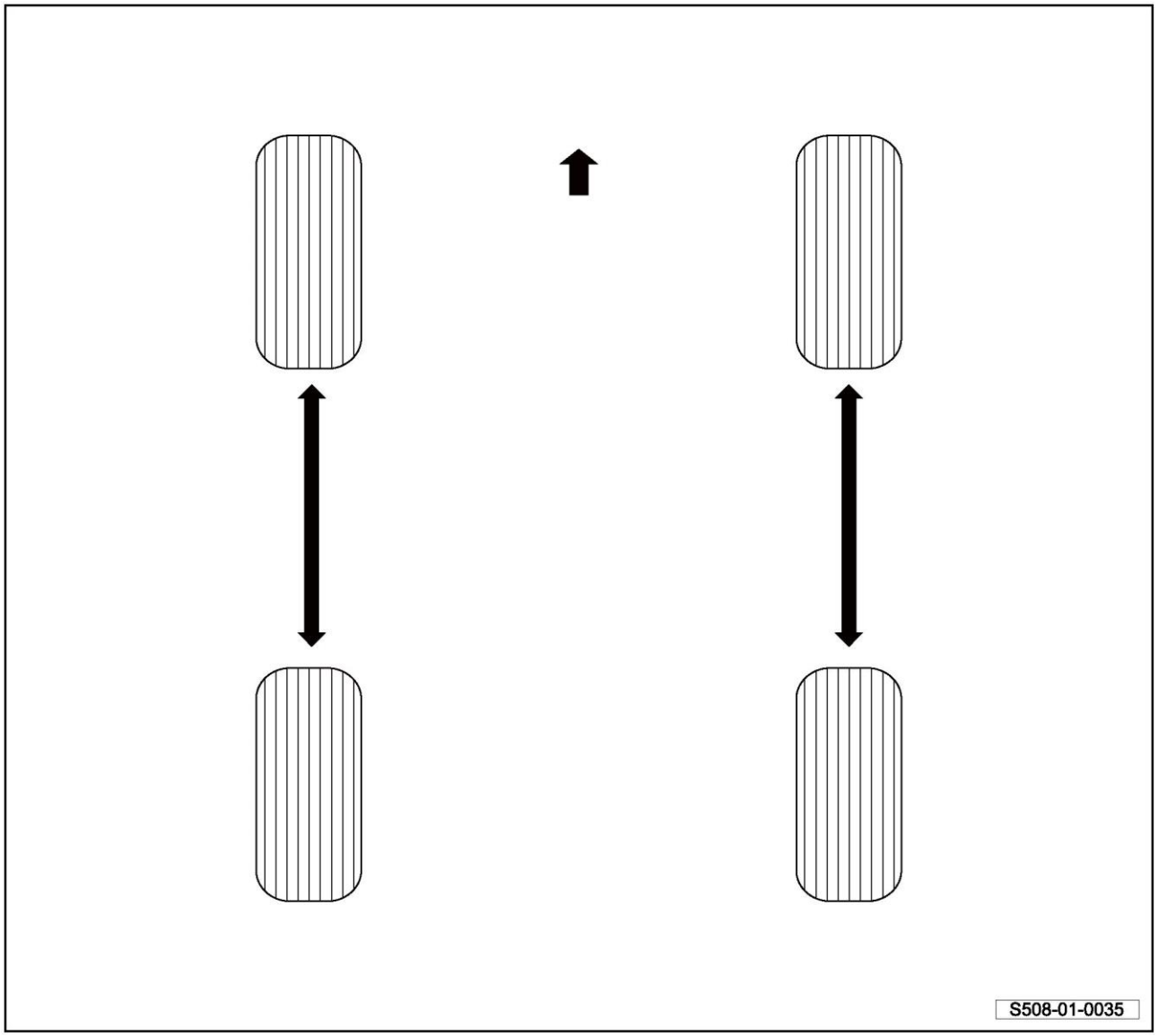
   b. Check the condition of tires during rotation, find and solve problems in time to prevent accidents.

2 Perform rotation of wheel assembly as shown below.



Notes

Swap the wheel assembly "without rotation direction" crosswise as shown above.



Notes

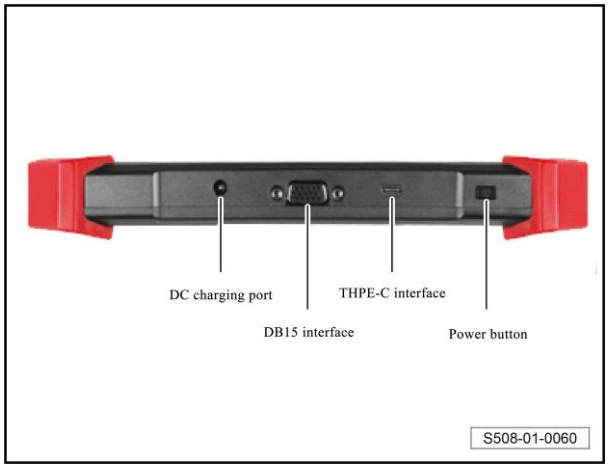
Swap the wheel assembly "with rotation direction" in parallel as shown above.

1.4.2.3 Structure of diagnostic scanner

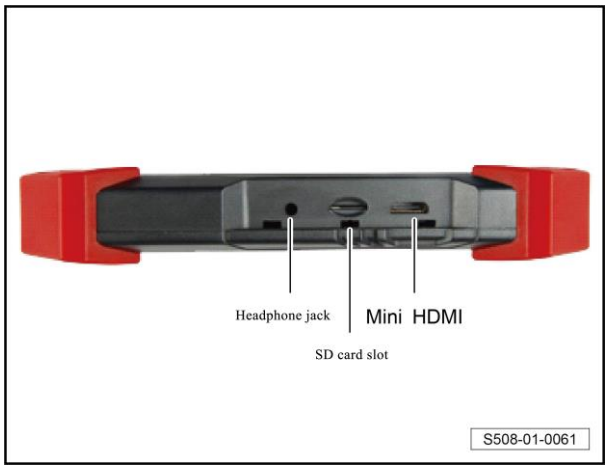
Description of construction

TDS800 system components

a. It is the TDS800 host shown in the picture.



b. It is the top of TDS800 host shown in the picture.



c. It is the right side of TDS800 host shown in the picture.

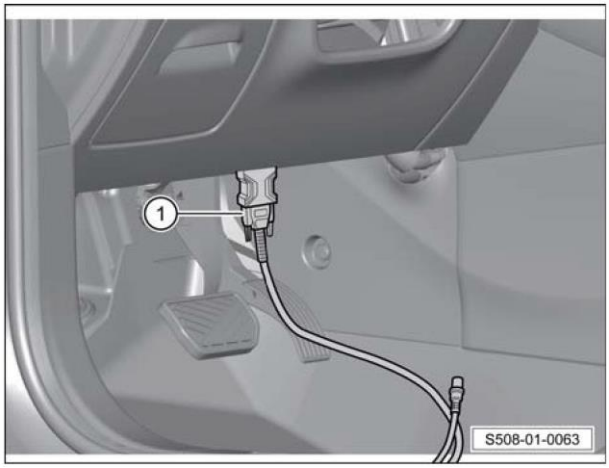
d. It is the VCI diagnostic box shown in the picture.

e. It is the OBD II-16 connector shown in the picture.

f. It is the test line shown in the picture.

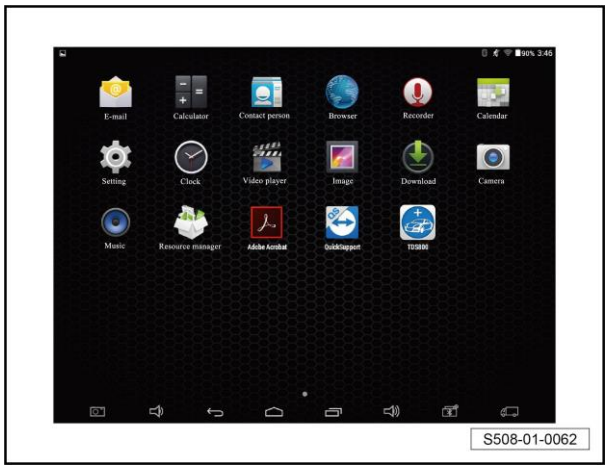
1.4.2.4 Instructions to diagnostic scanner

Service description

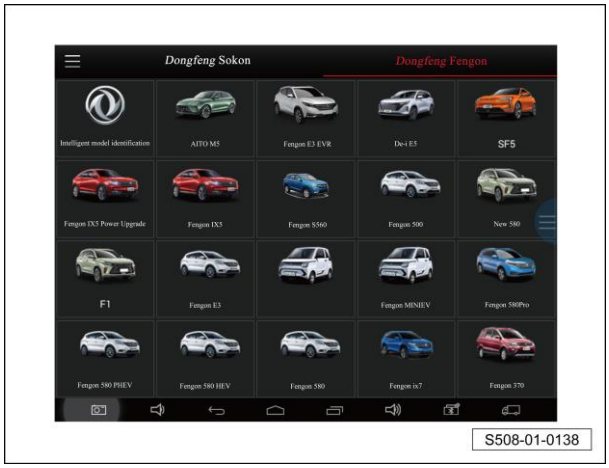


1 Startup of diagnostic software

a. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.



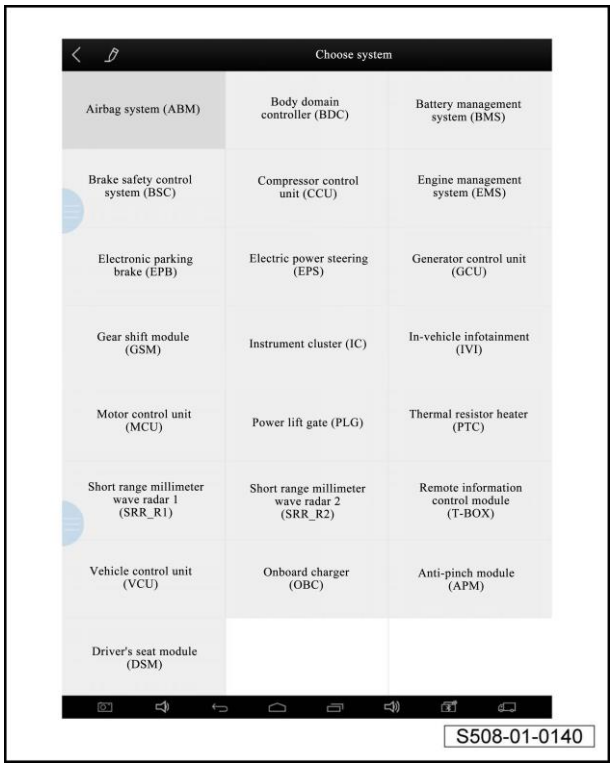
b. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.



c. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

d. The main interface of the diagnostic scanner will appear after vehicle identification.

e. Click "System Selection" on the main interface to enter the sub-function interface of "System Selection".



f. On the "system selection" sub-function interface, 21 module functions can be operated, including "airbag system (ABM)", "body domain controller (BDC)", "battery management system (BMS)", "brake safety system (BSC)", "compressor control unit (CCU)", "engine management system (EMS)", "electronic parking brake (EPB)", "electric power steering (EPS)", "generator control unit (GCU)", "gear shift module (GSM)", "instrument cluster (IC)", "in-vehicle infotainment system (IVI)", "motor control unit (MCU)", "power lift gate (PLG)", "thermistor heater (PTC)", "short-range millimeter wave radar 1 (SRR_R1)", "short-range millimeter wave radar 2 (SRR_R2)", "remote information control module (T-BOX)", "vehicle control unit (VCU)", "on-board charger (OBC)", "window controller (APM)" and "seat controller (DSM)".

The functions of each module are shown listed in the table below:

Control module (ECU)	List of Functions	Details
ABM	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other

Control module (ECU)	List of Functions	Details
		functions of ECU.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	ECU flashing	Enter the interface to flash ECU software.
BDC	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Action test	Enter the interface, and the DIDs available for action test will be shown in a list. Select the DID for action test and proceed to the next interface.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
BMS	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
BSC	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Routine control	After entry, vacuum filling and manual exhaust can be carried out
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
CCU	Version information	Enter the interface, and the basic information of ECU will be shown in

Control module (ECU)	List of Functions	Details
		a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
EMS	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
EPB	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	Hardware reset	Enter the interface to reset the ECU hardware by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
EPS	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.

Control module (ECU)	List of Functions	Details
	ECU reset	Enter the interface to reset the ECU hardware by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
GCU	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
GSM	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Action test	Enter the interface, and the DIDs available for action test will be shown in a list. Select the DID for action test and proceed to the next interface.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
IC	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Action test	Enter the interface, and the DIDs available for action test will be shown in a list. Select the DID for action test and proceed to the next interface.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.

Control module (ECU)	List of Functions	Details
IVI	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
MCU	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
SRR_R1	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
	Engineering mode	Enter the interface read information and DTCs.
SRR_R2	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.

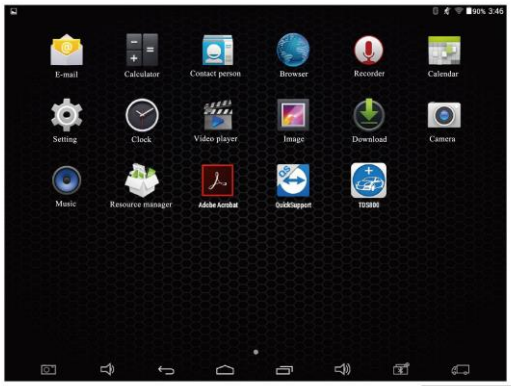
Control module (ECU)	List of Functions	Details
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
	Engineering mode	Enter the interface read information and DTCs.
PTC	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
T-BOX	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
VCU	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Write data	Enter the interface, and the parameter items available for writing-in

Control module (ECU)	List of Functions	Details
		will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
CDU	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Write data	Enter the interface, and the parameter items available for writing-in will be displayed according to the content of the cell.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
APM	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Action test	Enter the interface, and the DIDs available for action test will be shown in a list. Select the DID for action test and proceed to the next interface.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.
	ECU flashing	Enter the interface to flash ECU software.
DSM	Version information	Enter the interface, and the basic information of ECU will be shown in a list.
	Read DTC	Enter the interface, and the current DTC of ECU will be shown in a list, including DTC description and interpretation.
	Clear DTC	Enter the interface to clear the current DTC of ECU.
	Read data flow	Enter the interface, and the DIDs available for data flow will be shown in a list.
	Action test	Enter the interface, and the DIDs available for action test will be shown in a list. Select the DID for action test and proceed to the next interface.
	ECU reset	Enter the interface to reset the ECU hardware and software by initialization.
	After-sales function	Enter the interface to perform "Click-to-Match After-sales" and other functions of ECU.

Control module (ECU)	List of Functions	Details
	ECU flashing	Enter the interface to flash ECU software.
	Engineering mode	Enter the interface read information and DTCs.

1.4.2.5 Update of diagnostic scanner software

Software update



S508-01-0062

1 Update of diagnostic scanner software

a. Turn on the TDS800 host and click "Settings" software shortcut on the desktop to enter the setting interface.

S508-01-0141

b. Turn on WiFi and select the available WiFi for connection.

S508-01-0062

c. Click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

S508-01-0142

d. Click on the upper left corner of the diagnostic scanner interface to enter.

e. Click "Click-to-Upgrade" to download and update the diagnostic scanner to the latest version.

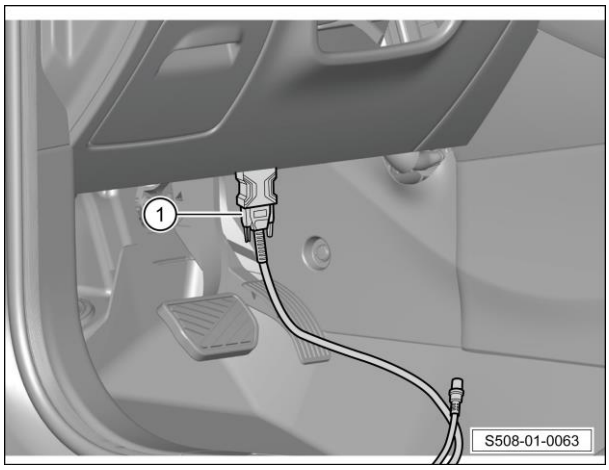
1.4.2.6 After-sales matching after module replacement

Operation steps

Tip:

If any control module needs to be replaced, after-sales matching will be required for module replacement after a new control module is installed.

The after-sales matching after replacement of "Electronic Parking Brake (EPB)" module is introduced here for reference. The operation of after-sales matching of other 21 modules may be figured out based on the reference



1 After-sales matching after module replacement

a. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

S508-01-0062

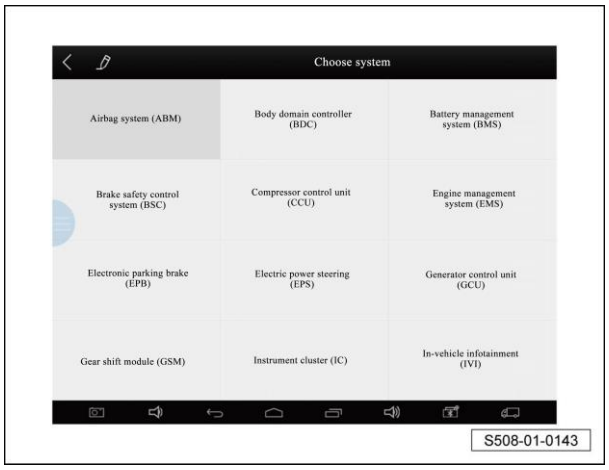
b. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

S508-01-0138

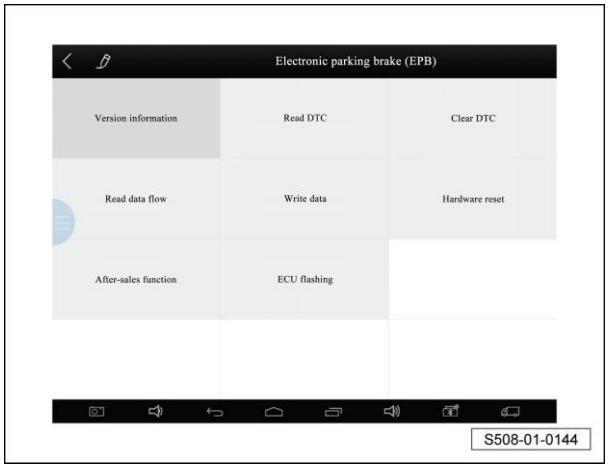
c. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

S508-01-0139

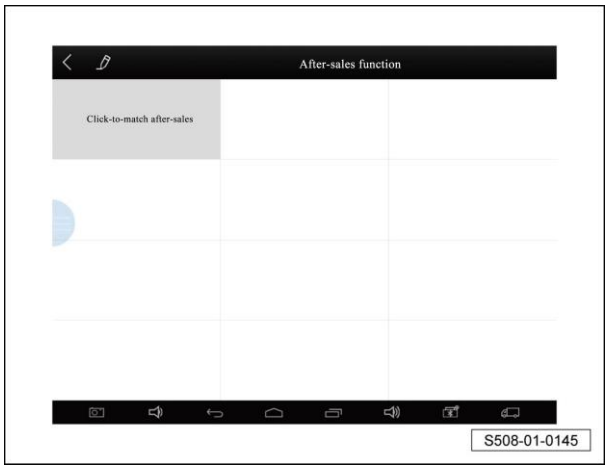
d. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.



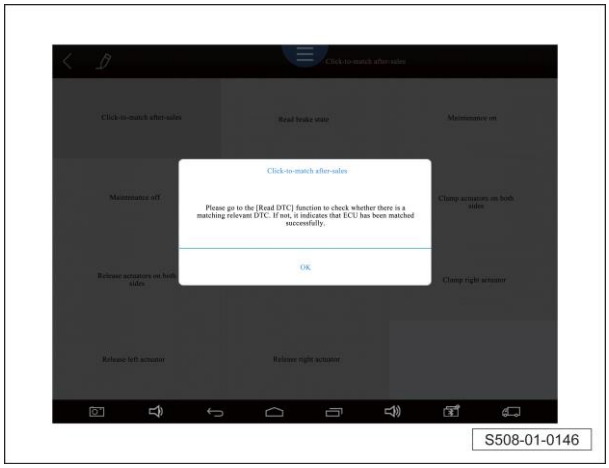
e. Select "Electronic Parking Brake (EPB)" on the "System Selection" sub-function interface and click to enter.



f. Select "After-sales Function" on the "Electronic Parking Brake (EPB)" sub-function interface and click to enter.



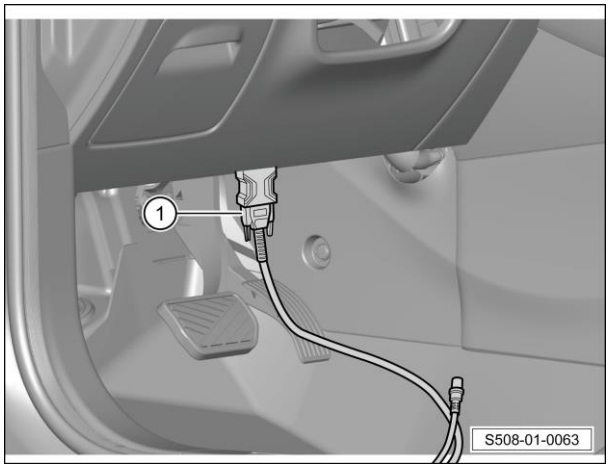
g. Select "Click-to-Match After-sales" on the "After-sales Function" sub-function interface and click to enter. Complete the after-sales matching after module replacement according to the instructions on the interface.



h. When the operation is completed, read the DTC(s). If there is no any, ECU is matched.

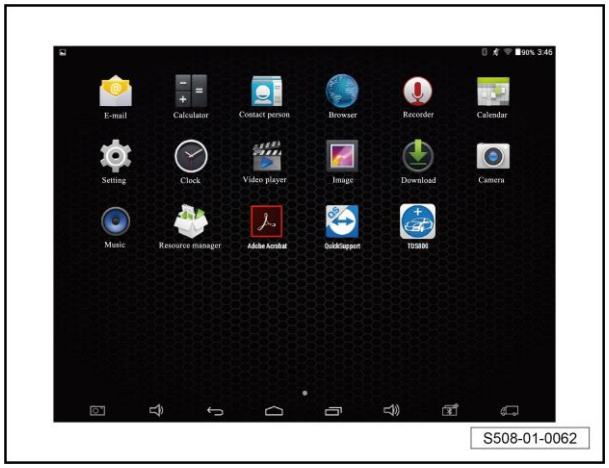
1.4.2.7 Steering angle calibration

Operation steps

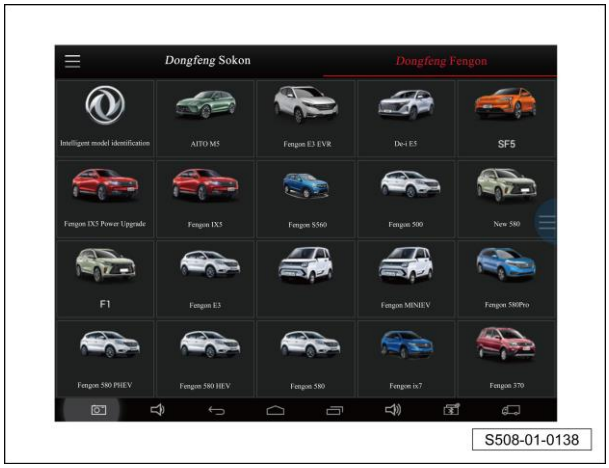


1 After-sales matching after module replacement

a. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

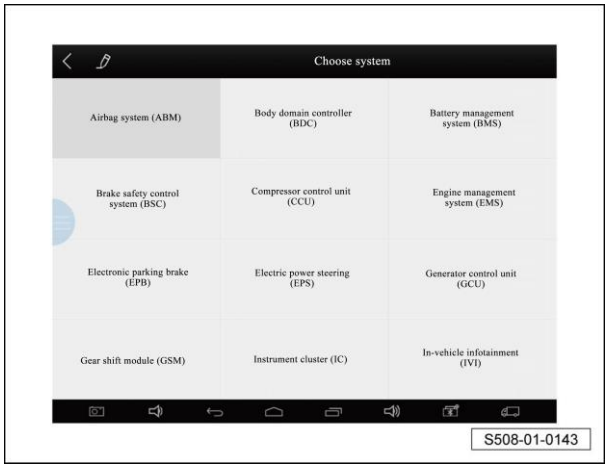


b. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

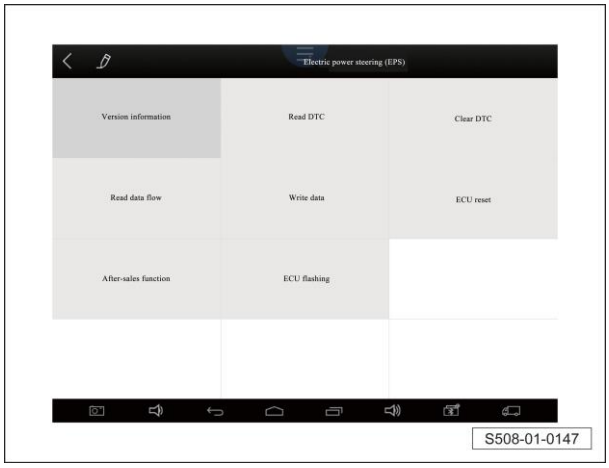


c. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

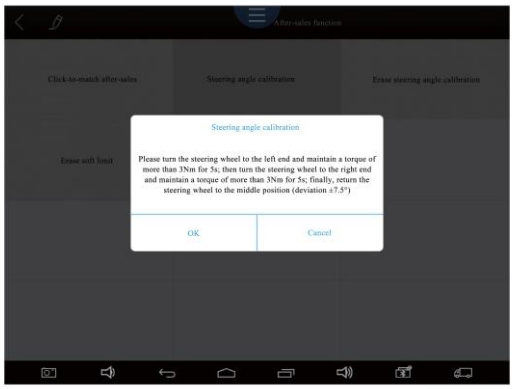
d. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.



e. Select "Electronic Power Steering (EPS)" on the "System Selection" sub-function interface and click to enter.



f. Select "After-sales Function" on the "Electronic Power Steering (EPS)" sub-function interface and click to enter.

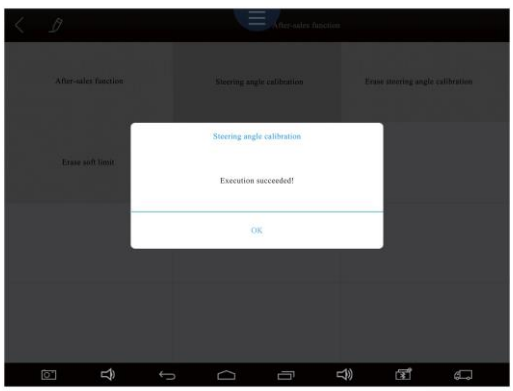


S508-01-0148

g. Select "Steering Angle Calibration" on the "After-sales Function" sub-function interface and click "OK" to enter.

S508-01-0149

h. Follow the instructions on the interface to complete the steering angle calibration.

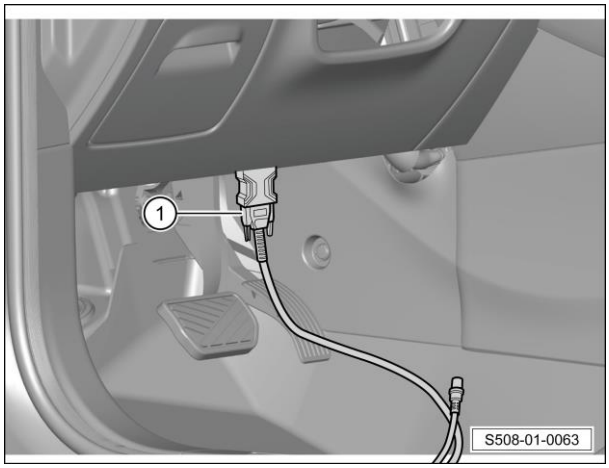


S508-01-0150

i. When the steering angle calibration is completed, the "Execution Succeeded" window pops up.

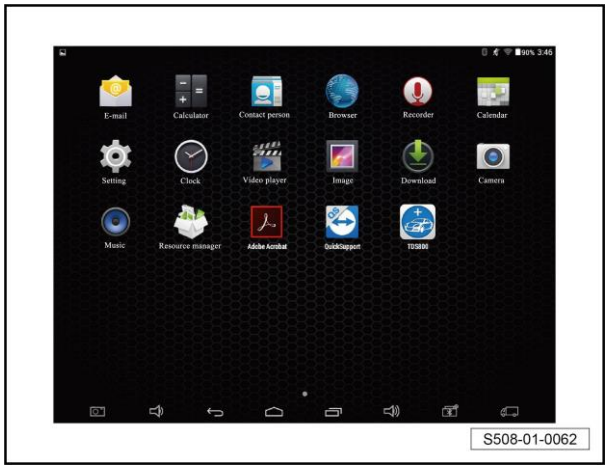
1.4.2.8 Maintenance activation of electronic parking brake

Operation steps

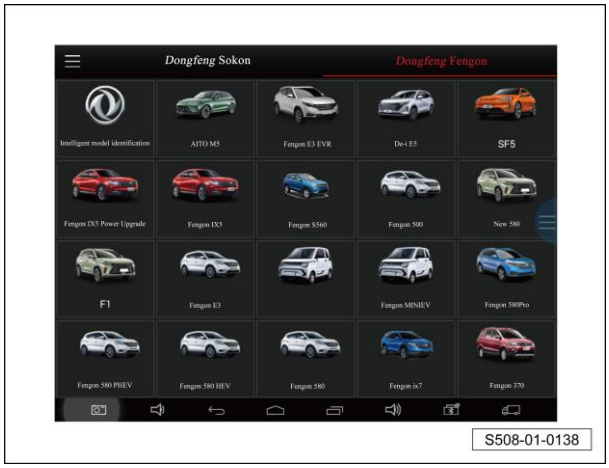


1 After-sales matching after module replacement

a. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

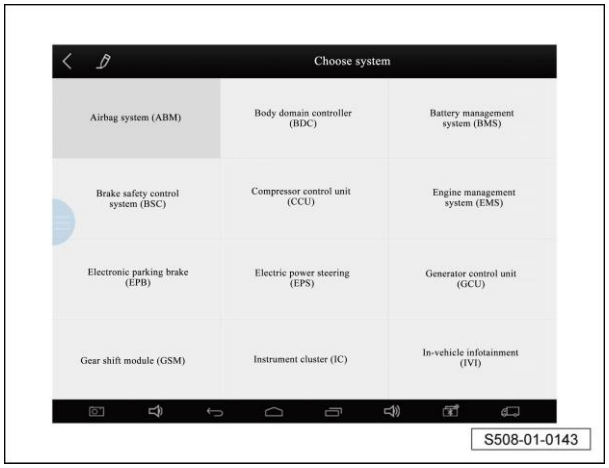


b. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

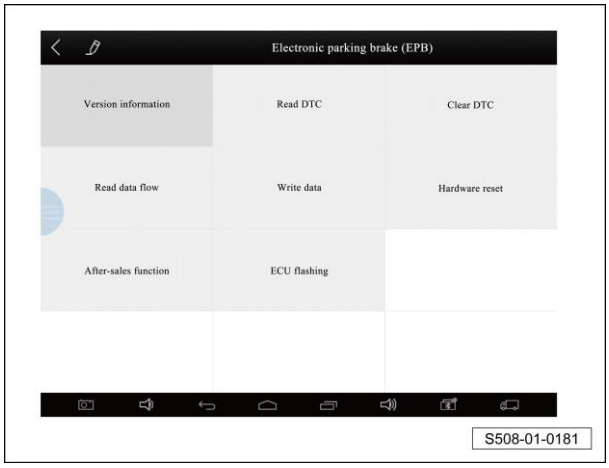


c. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

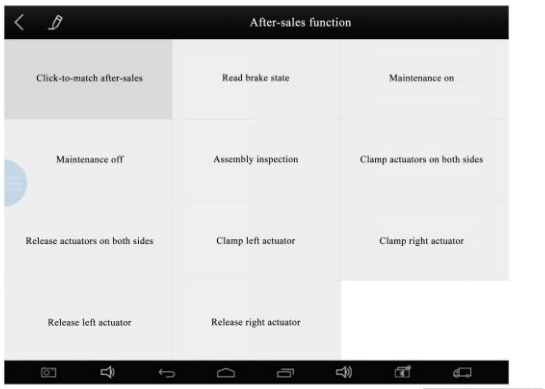
d. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.



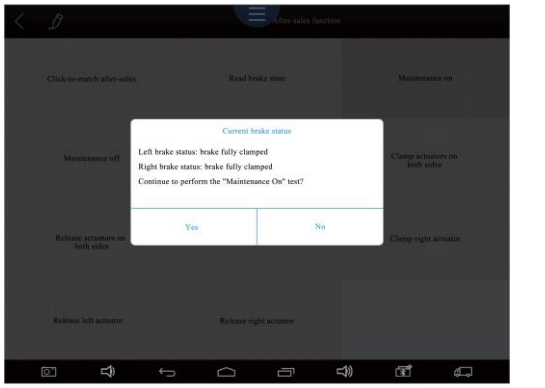
e. Select "Electronic Parking Brake (EPB)" on the "System Selection" sub-function interface and click to enter.



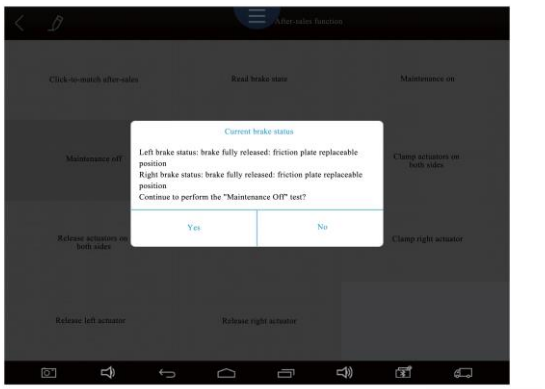
f. Select "After-sales Function" on the "Electronic Parking Brake (EPB)" sub-function interface and click to enter.



g. Select "Maintenance Activation" on the "After-sales Function" sub-function interface and click to enter.



h. Click "Yes" and there will be a clear sound of the rear brake motor disengagement. At this moment, the maintenance mode is activated for operations like brake pad replacement.



i. After the maintenance operation is completed, click "Maintenance Deactivation".

j. Click "Yes" and there will be a clear sound of the rear brake motor engagement. At this moment, the maintenance mode is deactivated.

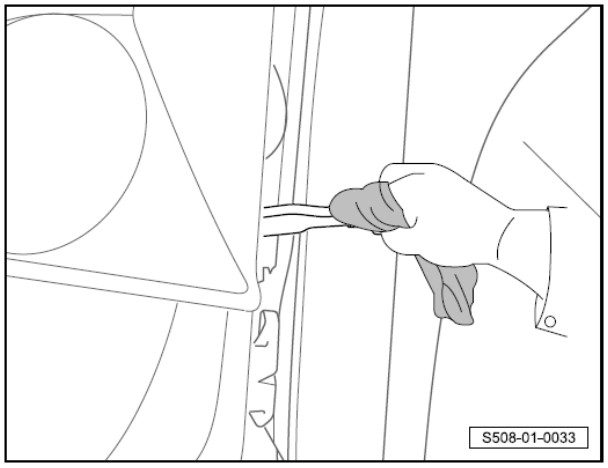
1.4.3 Maintenance

1.4.3.1 Door limiting device inspection

Testing Procedures

1 Door limiting device inspection

a. Repeatedly open and close the door to check whether the door limiting device makes any abnormal noise.



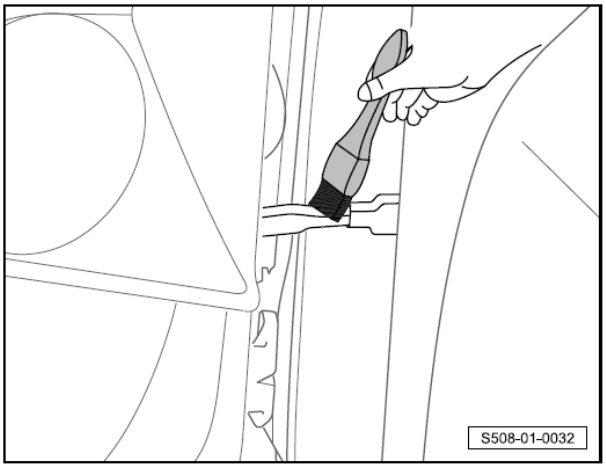
2 Lubrication of door stopper

a. Open the door to the widest extend.

b. Use a soft cotton cloth to remove dust and other dirt from the surface of the black stopper pull rod.

Notes

It is strictly prohibited to lubricate the door stopper with engine oil, automatic transmission fluid, or grease other than the recommended ones.

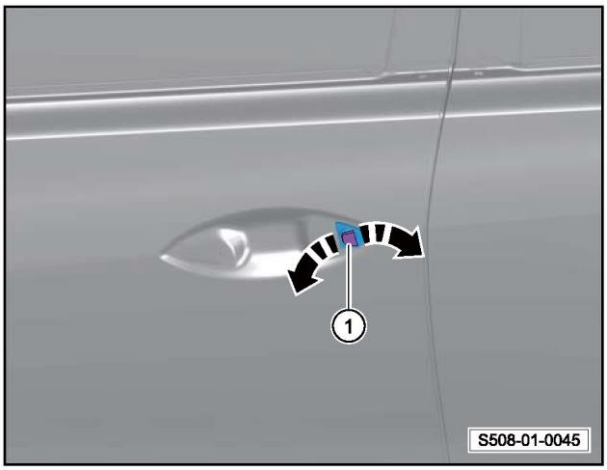


c. Use a small brush to apply the specified grease vertically on the sliding surface of the stopper.

d. Open and close the door repeatedly for 5 cycles to ensure that the sliding surface is evenly covered with grease.

1.4.3.2 Checking operation status of key cylinder

Testing Procedures



Checking door lock at driver side

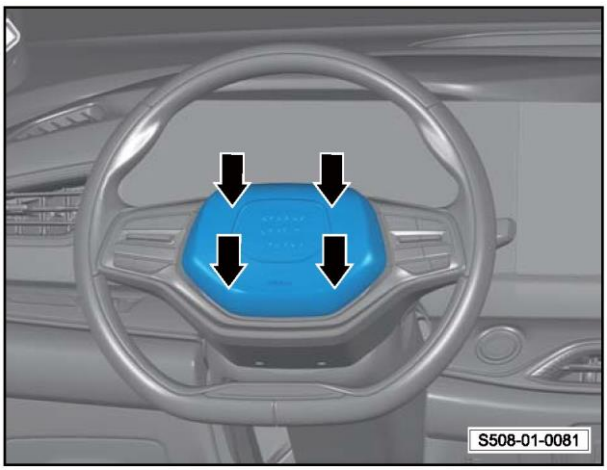
a. Insert the key ① into the door lock.

b. When turning the key left and right in the direction indicated by the arrow; there must be no sign of getting stuck.

c. Visually check the key cylinder and clean it if necessary.

1.4.3.3 Checking horn

Testing Procedures

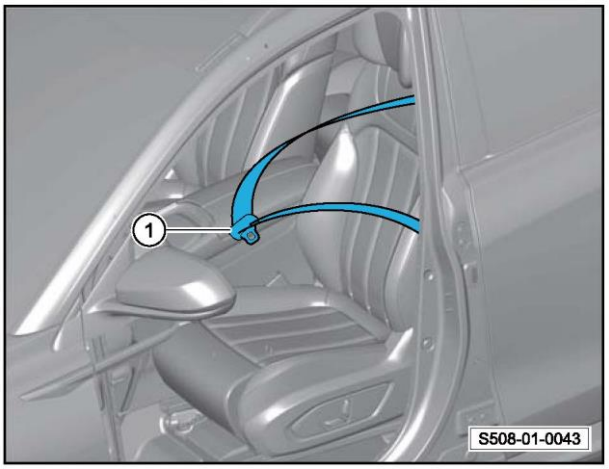


Inspect the horn

a. Press the horn switch (see the arrow). During 5 or more inspections, even the horn didn't sound for only once, maintenance of the horn system must be carried out.

1.4.3.4 Checking of seat belt

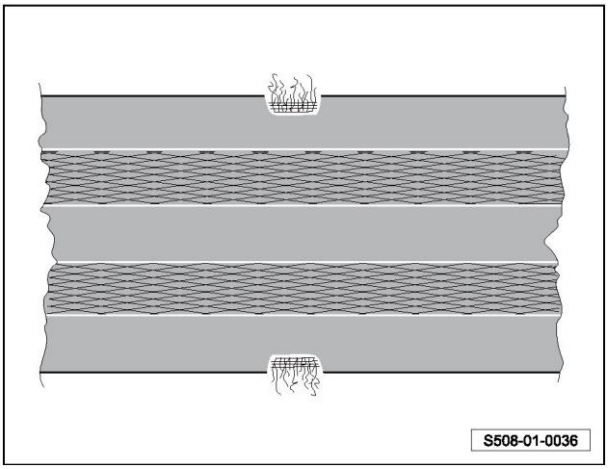
Testing Procedures



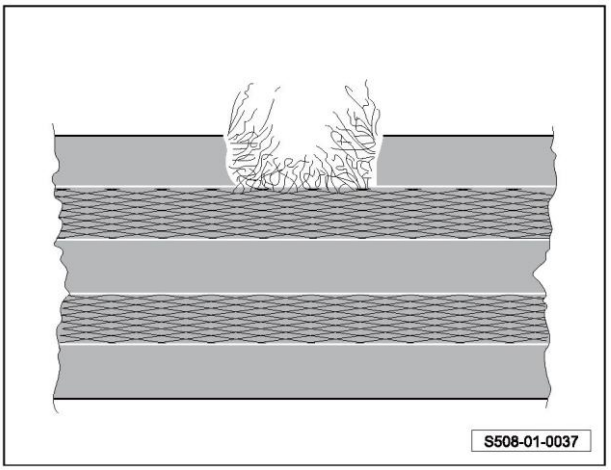
1 Checking of seat belt

a. Pull the seat belt ① out from the automatic retractor unit.

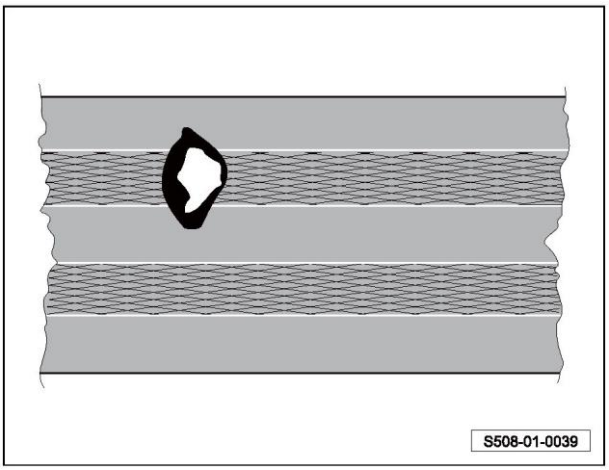
b. Check if the seat belt is dirty and clean it with the neutral liquid soap if necessary.



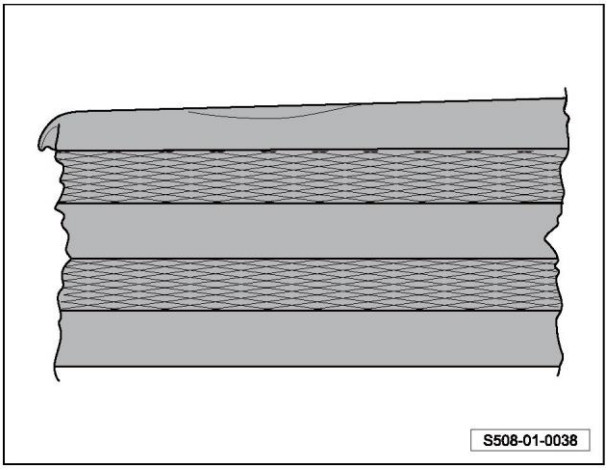
c. Replace the seat belt if it cracks, or is torn or scraped.



d. Replace the seat belt if the fabric loop on the seat belt edge is torn.



e. Immediately replace the belt if there is scorch made of cigarette (for example) on it.



f. If one side of the seat belt is deformed, or the edge of the seat belt is wave-like, the seat belt must be replaced.

2 Checking Automatic Retractor (Locking Function)

a. Pull the seat belt out from the seat belt automatic retractor device forcibly and rapidly.

– If there is no locking function, replace the entire seat belt and seat belt buckle assembly.

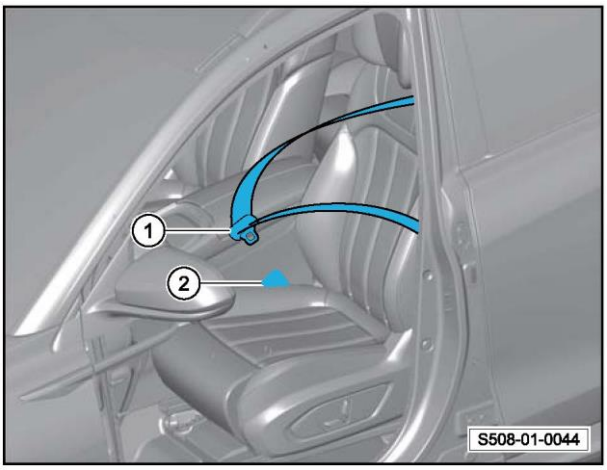
– If any fault occurs in pulling or retracting the seat belt, firstly check if the position of the seat belt automatic retractor device is changed.

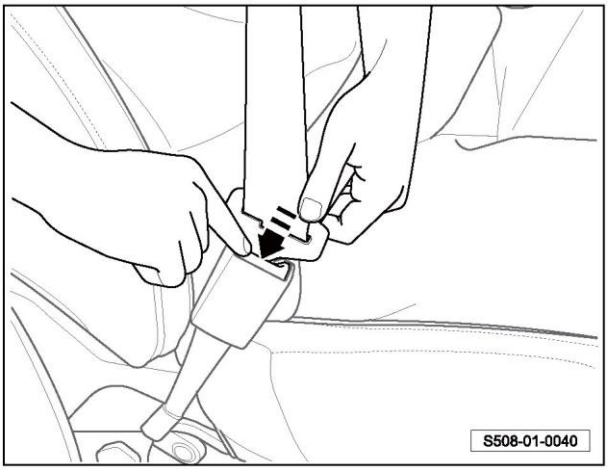
3 Visually Inspecting Seat Belt Buckle Assembly

a. Inspect Seat Belt Buckle Assembly for Any Fissure or Crack.

Notes

If damaged, replace the seat belt and buckle assembly as a whole.





4 Inspect the function of seat belt buckle assembly

a. Inspection of locking device:

– Push the latch plate ① into the buckle assembly ② until a click is heard. Pull the seat belt with force to check if the locking mechanism is engaged.

Notes

During 5 or more inspections, even if the latch plate cannot be locked into the seat belt buckle assembly for only once, the seat belt and buckle assembly must be replaced as a whole.

b. Inspection of unlocking device:

– Press the button on the seat belt buckle assembly (see the arrow) and then loosen the belt.

– When the belt is loose, the latch plate must be able to be ejected out of the seat belt buckle assembly automatically.

Tip:

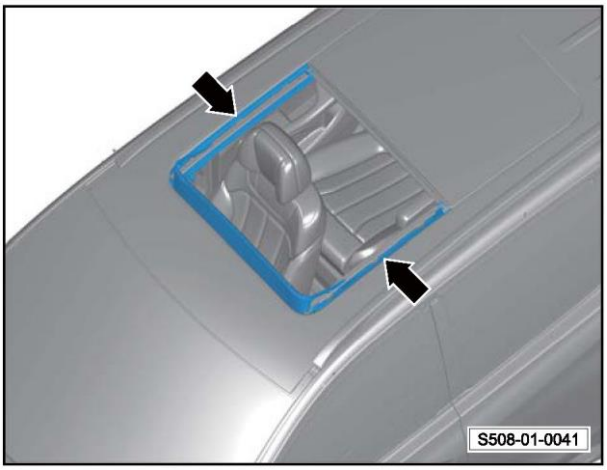
If these parts are surely damaged, replace the seat belt and buckle assembly as a whole.

Notes

Never apply any lubricating oil on the button of the seat belt buckle assembly to get rid of the operation noise or interference.

1.4.3.5 Checking sliding sunroof

Testing Procedures



1 Check the sliding sunroof

a. Visually inspect the seal and corrosion damage of the sliding sunroof.

b. Check the function of the sliding sunroof.

c. Clean the guide rail (see the arrows) of the sliding sunroof, and apply grease to it if necessary.

d. Check the working condition of the sliding sunroof, and pay attention to possible friction residual.

1.4.3.6 Checking front airbag

Testing Procedures

1 Driver airbag

a. The "AIRBAG" mark of the driver's airbag is on the steering wheel.

b. Visually check the plastic housing ① for any damage, and replace it if necessary.

2 Passenger side airbag

a. The "AIRBAG" mark of the front passenger's airbag is on glove box at the right side of the instrument cluster.

Notes

Remind users that the airbag housing shall not be bonded, pulled out or applied with other operations to ensure the normal function of the airbag.

The airbag housing shall only be cleaned with dry or slightly wet cloth.

1.4.3.7 Checking operation status of electrical system

Testing Procedures

1 Check the electrical system

- The operation status and lightness of the following: front combination light, turn signal, warning flashing light, rear combination light, rear fog light, reversing light and parking light.
- The operation status of interior light, glove box light and rear trunk light.
- The operation status of buzzer, control unit, center tunnel, all switches on the instrument panel and horns.
- The operation status of electric window,

exterior rearview mirror, central control door lock and comfort system.

- Reception status and anti-interference of radio and navigation device, and check loudspeaker.

1.4.3.8 Checking battery

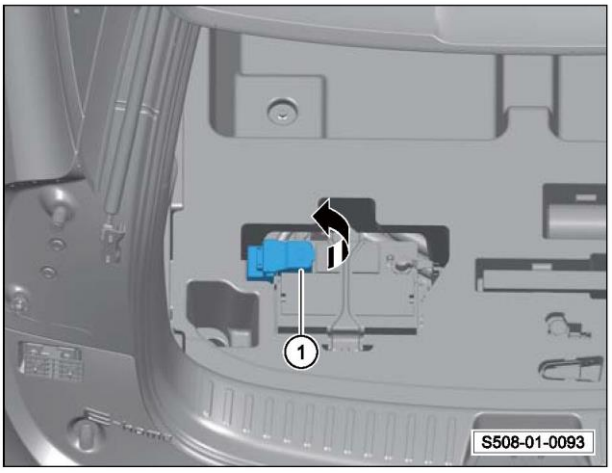
Testing Procedures

Tip:

Wear insulated protective equipment, including insulated gloves, insulated shoes and face masks, before maintenance of HV system.

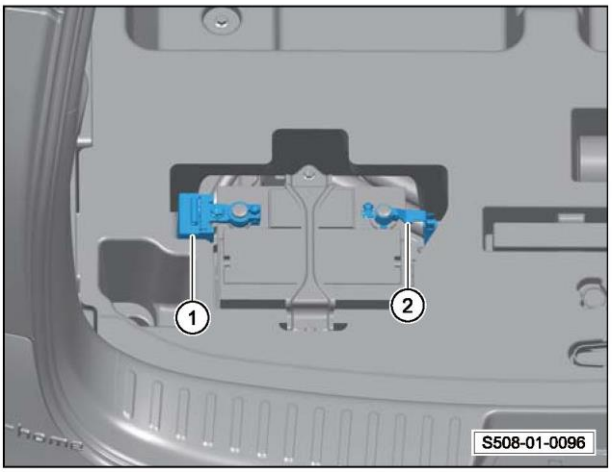
1 Turn off all the electrical appliances and turn off the Ignition or Start switch before check.

2 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

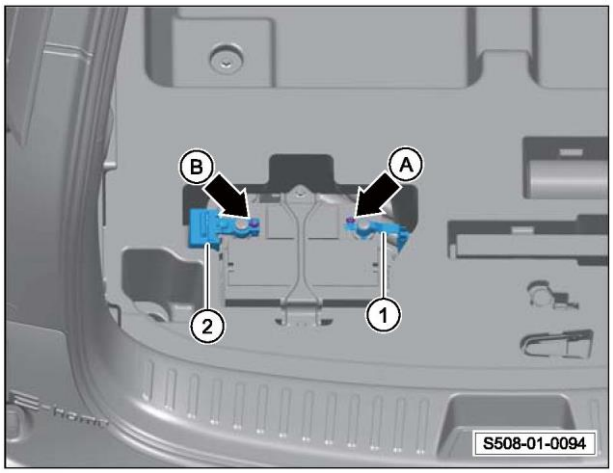


3 Operating according to the following steps

a. Open the battery positive terminal cover ① in direction of the arrow.



b. Shake the battery positive terminal ① and negative terminal ② around to check whether the terminals are secure.

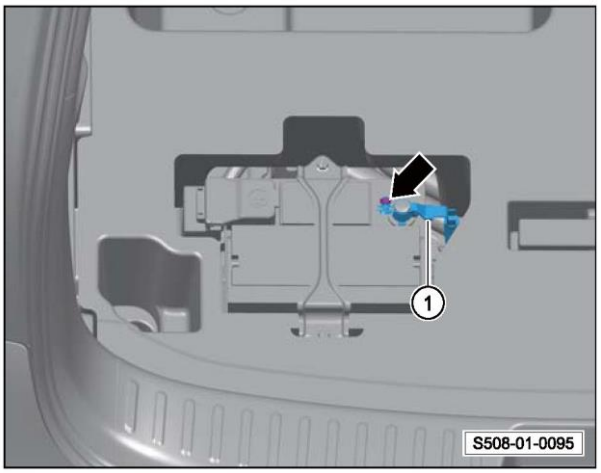


4 If the battery positive terminal is not fixed

a. Unscrew the fixing nut (see arrow A). Disconnect the battery positive terminal ①.

b. Reinstall the battery positive terminal ②, and tighten the fixing nut (see arrow B).

c. Install the battery negative terminal ①, and tighten the fixing nut (see arrow A).



5 If the battery negative terminal is not fixed

a. Reinstall the battery negative terminal ①, and tighten the fixing nut (see the arrow).

6 Visually checking battery

a. Before performing a comprehensive detection, the external status, connection conditions and secure fixing of battery must be visually checked.

b. Check the battery case for damage. If the battery case is damaged, the battery acid flowed out will cause serious damage to car. In this case, the parts contacted with the electrolyte shall be quickly treated with electrolyte diluent or liquid soap.

c. Check the battery terminal for damage. If the battery terminal is damaged, the good contact of battery terminal cannot be ensured. Please refer to relevant Service Manual when connecting the battery terminal. If the battery terminal hasn't been plugged in and tightened correctly, fire of circuit may be caused, thus leading to malfunction of electrical appliances. Thus, the safe driving cannot be ensured.

Notes

If the battery is not correctly fixed, it may be damaged.

Shock will reduce the battery service life, cause explosion and cause damage to the battery case.

Check whether the battery is secure; tighten the fixing nut to specified tightening torque when necessary.

7 Checking battery static voltage

a. Special tool and service appliance needed:

- Hand-held multimeter.

b. Test conditions:

- The battery is neither recharged nor discharged within at least two days.
- Use the handheld multimeter to measure the battery static voltage.

Measured value	Measure to be taken
Static voltage ≥12.6V	Normal static voltage

Static voltage <11V	Battery charging

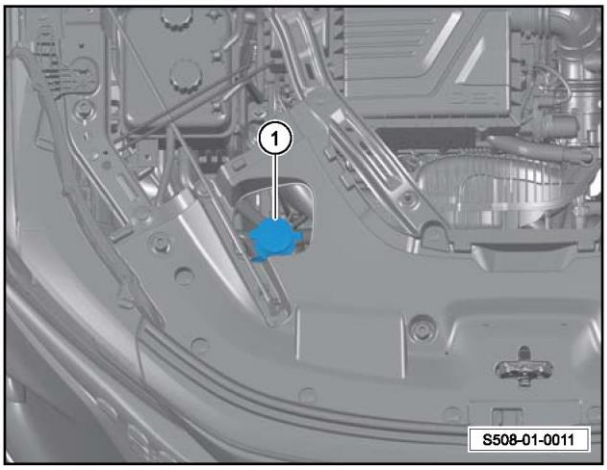
Tip:

Within the specified working scope of repair and maintenance, only the static voltage of the battery of the car not used or stored car can be measured to evaluate the battery status.

It can be determined whether to recharge the battery of car not used or stored car through static voltage measurement.

1.4.3.9 Checking washer fluid

Testing Procedures



1 Check the washer fluid level

a. As washer fluid is consumable, please check it regularly (every two weeks or one month). Add washer fluid if insufficient.

b. Open the filler cap ①, and fill washer fluid to the view area under the caliber. Do not fill excessively.

- Total filling amount of washer fluid: **2.5±0.5 L**

Tip:

Washer fluid can prevent the nozzle, tank and connecting hose from freezing.

Generally, -20# (for typical condition) and -35# (for alpine areas in winter) washer fluid are adopted.

In warm seasons, washer fluid also needs to be filled. It can easily remove residues such as wax or engine oil on the windshield glass.

Make sure the windshield washer unit won't be frozen under the lowest temperature around -20°C (in areas of harsh climate, around -35°C).

1.4.3.10 Brake fluid inspection

Testing Procedures

Notes

Never mix the brake fluid with the mineral oil (engine oil, gasoline and washer fluid), as mineral oil can damage the sealing parts and sealing sleeves of the brake device.

The brake fluid is corrosive and can damage the paint surface. If the brake fluid overflows when filling, absorb it immediately with a water-absorbing cloth and clean with vehicle cleaner and water.

Use only new brake fluid in sealed container (the brake fluid is hygroscopic; the fluid in open container and fluid discharged out of the brake system has absorbed wet in air, and thus it can cause of harmful effect to brake performance).

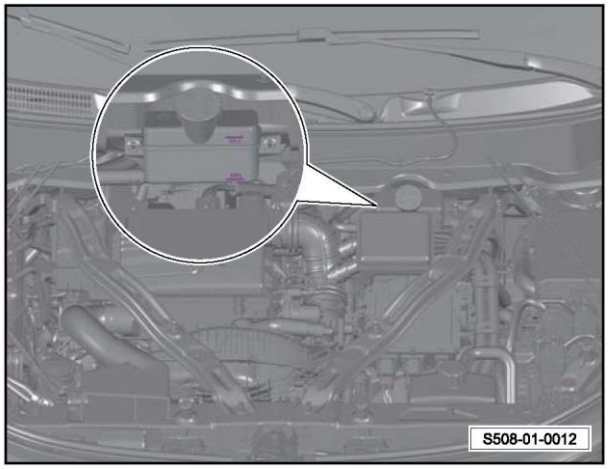
The brake fluid is toxic. Please keep the container sealed and far away from children. When eating by mistake, go to a doctor immediately.

Prevent brake fluid from contacting with skin or eyes. If that happens, wash immediately with water.

Don't drive the vehicle when the brake fluid level is below the MIN mark of the reservoir.

If the customer complains longer stroke of brake pedal or feels the brake fluid level declined, please check brake fluid for leakage.

Be sure to comply with disposal regulations of waste brake fluid!

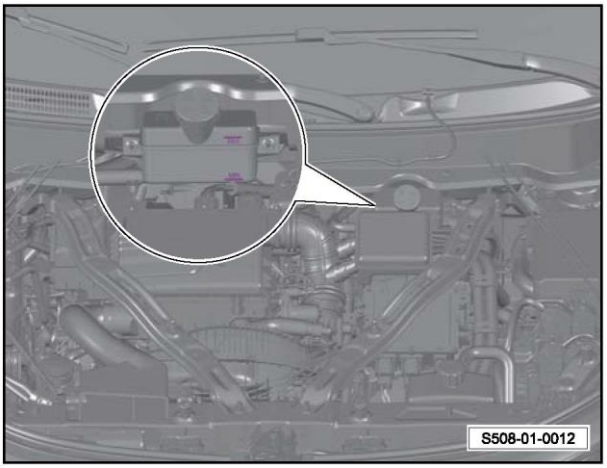


1 Inspect brake fluid level

a. The brake fluid level should be between MIN and MAX.

Tip:

Avoid the brake fluid flowing from the tank. The brake fluid filling shall not exceed the MAX mark.



2 Brake Fluid Level Checking During Regular Maintenance

a. Whether to fill brake lining depends on wear of brake lining.

b. The recommended brake fluid level when the wear of brake lining gets close to the limit:

– When the level is at the MIN mark or is slightly above MIN mark, there is no need to fill brake fluid.

c. The recommended brake fluid level when the brake lining is new or it is far away from the wear limit:

– The brake fluid level should be between MIN and MAX.

- Total filling amount of brake fluid: **1.2±0.05 L**
- Specification of brake fluid: **DOT4**

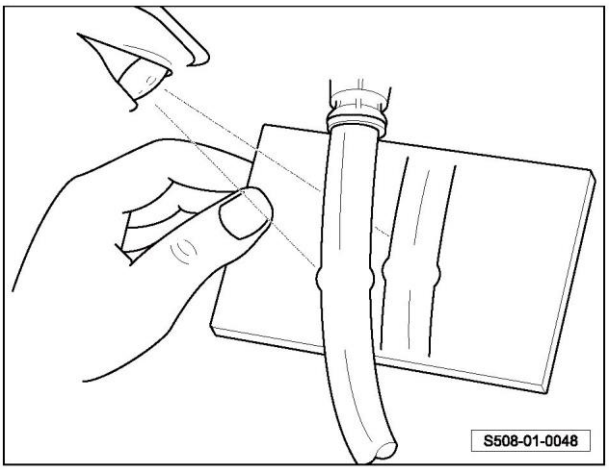
Tip:

By using car, the brake fluid level in the reservoir may decline slightly because of the wear of brake friction plate, and need to be filled.

If the level is below the MIN mark, check for leakage before filling brake fluid.

1.4.3.11 Check braking line

Testing Procedures



1 Check braking line

a. Check the brake pipeline (pipe and hose) for crack, degradation or other damage.

b. Set the start switch at “ON” and press the brake pedal with a force of 785N (80kg) and hold for about 5s. Check whether there is any brake fluid leakage.

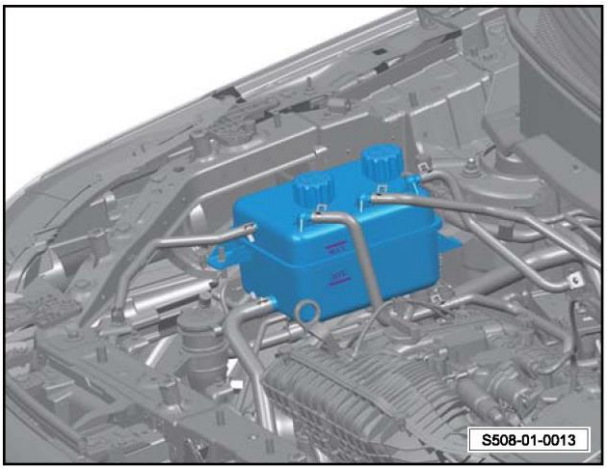
Notes

If any fitting of a brake pipe or hose leaks, tighten it. If any part is damaged, replace it.

The brake line should not interfere with the car parts at the maximum steering angle.

1.4.3.12 Checking coolant

Testing Procedures



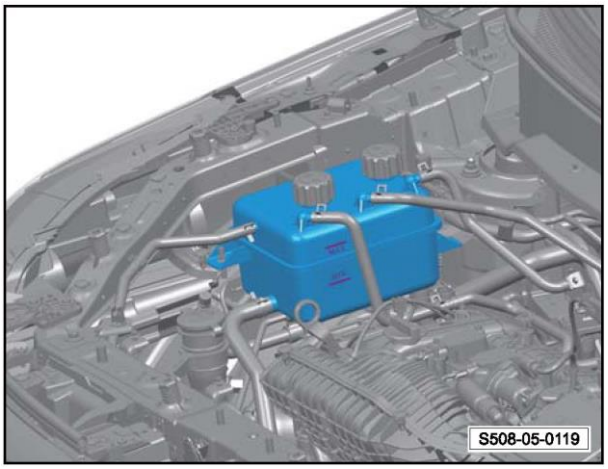
1 Inspection of the engine coolant level

a. When the engine is in normal state, check the engine coolant level in the expansion tank.

b. The coolant level should be between MAX and MIN.

c. If the engine coolant level is too low, add the coolant.

- Coolant model: FD-40.
- Total filling amount of coolant: 9.6L.



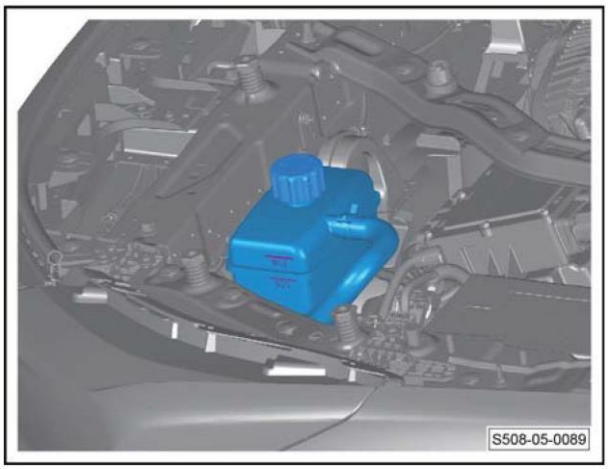
2 Check the coolant level of the traction battery box

a. When the vehicle is in normal state, check the power battery coolant level in the expansion tank.

b. The coolant level should be between MAX and MIN.

c. If the power battery coolant level is too low, supplement the coolant.

- Coolant model: FD-40.
- Coolant filling amount: Vision (6.8L); Gotion (3.2L).



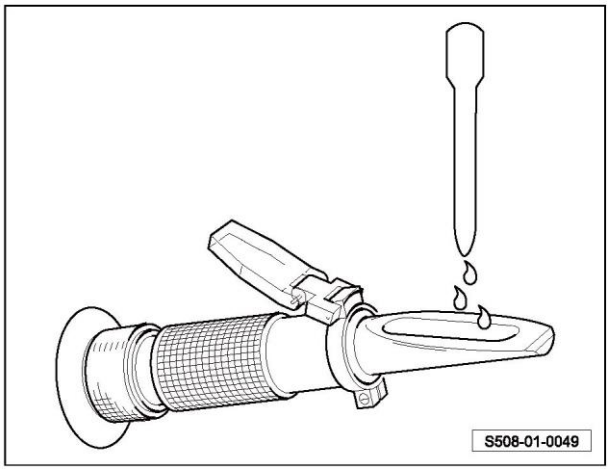
3 Check the electric drive coolant level

a. When the engine is in normal state, check the electric drive coolant level in the expansion tank.

b. The coolant level should be between MAX and MIN.

c. If the electric drive coolant level is too low, supplement the coolant.

- Coolant model: FD-40.
- Total filling amount of coolant: 5.2L.

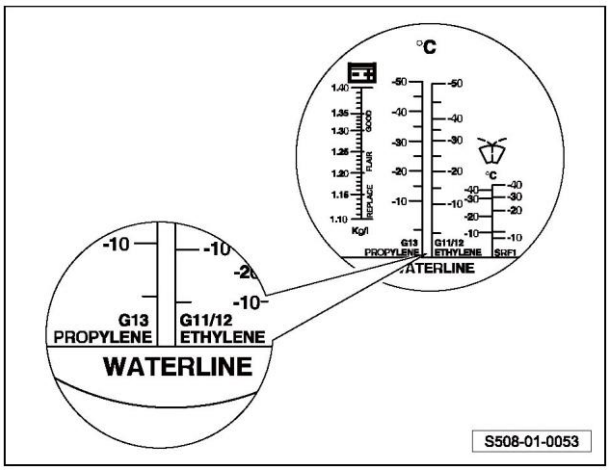


4 Inspect the freezing point of coolant

a. Drop the coolant onto the refractometer glass with a pipette and observe the freezing point of the coolant.

Tip:

•Read the measured data on the light and shade boundary. To better distinguish the light and shade boundary, dip a drop of water on the refractometer glass with a suction tube to form a “waterline”.



b. Read the freezing point of the coolant.

Tip:

Do not dilute the coolant at will.

Ensure that the freezing point of the coolant below -20℃ and -40℃ (the freezing point varies depending on the area and climate).

When the freezing point of the coolant does not conform to the specified value, the coolant shall be replaced.

1.4.3.13 Checking oil level

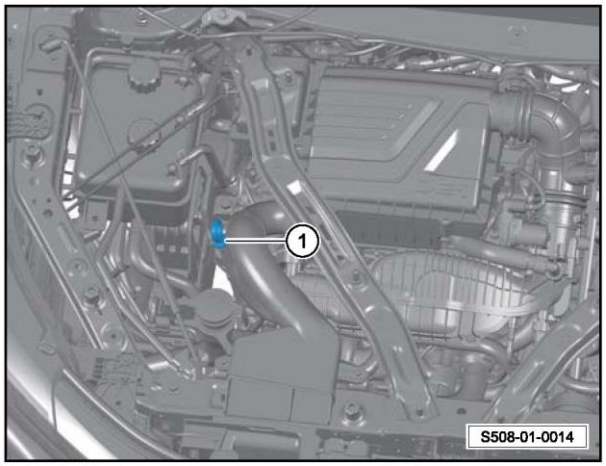
Testing procedure

1 Test conditions

– Park the car on a level ground.

– Engine oil pan is not deformed.

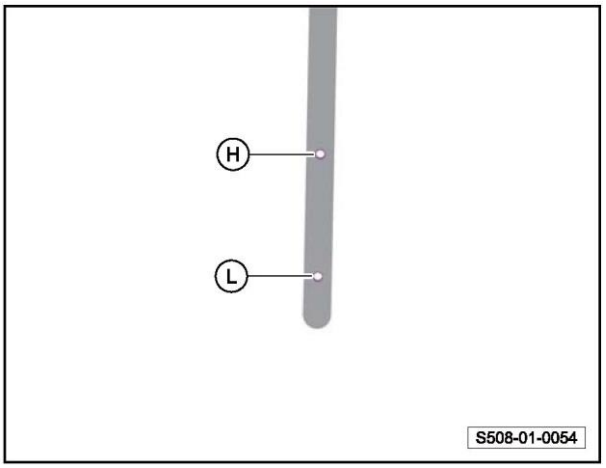
– Wait for 10 minutes after turning off the engine so that the engine lubricant can flow back to the oil pan.



2 Steps

a. Pull out the engine oil dipstick ①; wipe it with a piece of rag. Then reinsert and push it to the bottom. Remain this state for a while.

b. Pull out the engine oil dipstick ① again and read the engine oil level.



3 Marks on the engine oil dipstick:

H— maximum level.

L—minimum level.

Between point H and point L normal engine oil level.

Above point H, the engine oil must be discharged in order to reach the level between point H and point L.

Below point L, the engine oil must be filled in order to reach the level between point H and point L.

Requirements for Filling Engine Lubricating Oil

Oil specifications/viscosity	Filling amount	Replacement
SP 0W-20	3.7L	3.2L

1.4.3.14 Check the fluid level of hybrid transmission

Testing Procedures

Notes

Use the hybrid transmission fluid with specified specifications: EHSF-1, filling amount: 3.6±0.1L.

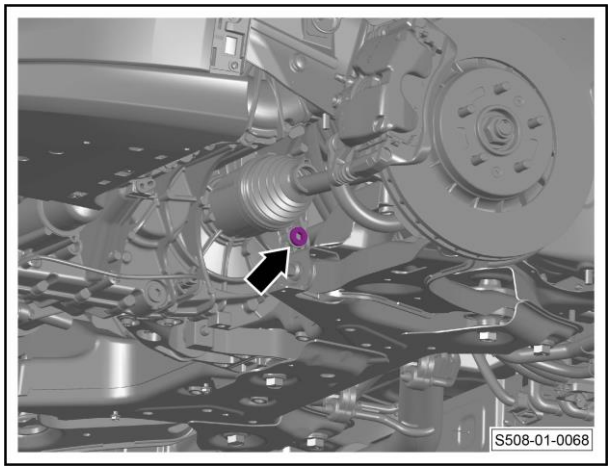
Do not mix hybrid transmission fluid of different specifications, as that may cause abnormal noise or vibration, or damage the vehicle transmission.

1 Wait for the engine to run idle for 30s so that all components are filled with oil. Keep the transmission in a hot state during inspection, and turn off the start switch.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

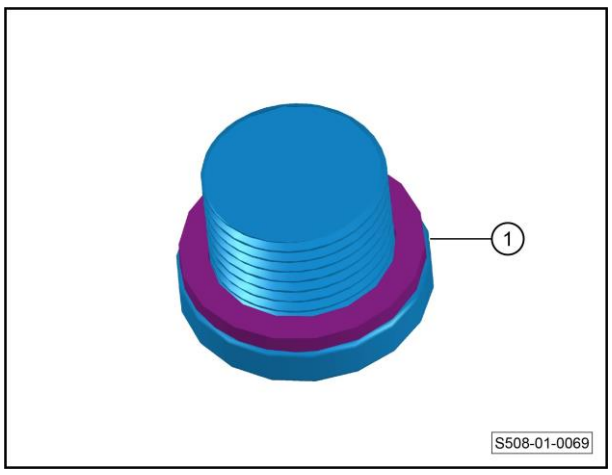


5 Check the fluid level of hybrid transmission

a. Lift the vehicle and keep it horizontal.

b. Remove the dust and foreign matters on the surface of the oil spill plug (see the arrow).

c. Unscrew the oil spill plug and sealing ring component (see the arrow). If there is fluid dripping slowly, it indicates that the fluid level is normal. Otherwise, the fluid level is insufficient. In this case, replenish the fluid and repeat the above steps until the fluid slowly drips from the fluid level check plug port. If the fluid flows out quickly, it indicates excessively fluid filling. Wait until the fluid drips slowly from the level check port).



d. Replenish the transmission fluid. Refer to 1.4.3.44 Transmission fluid change

Notes

If the hybrid transmission fluid level is low, check for fluid leakage. If there is no leakage, replenish the fluid to the normal level.

Tip:

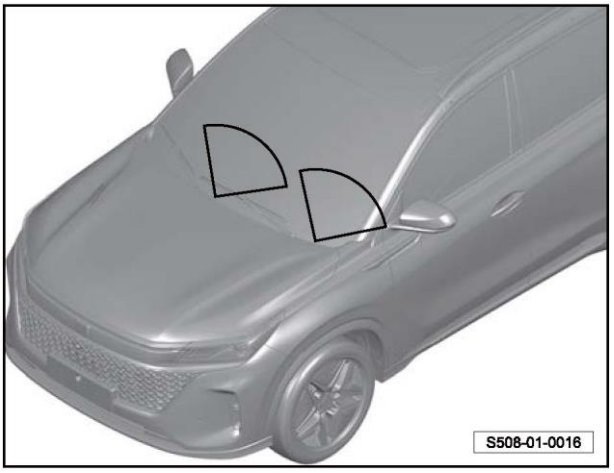
Replace with a new sealing gasket ① of overflow screw plug in each removal.

1.4.3.15 Checking windshield wiper/washing unit

Testing Procedures

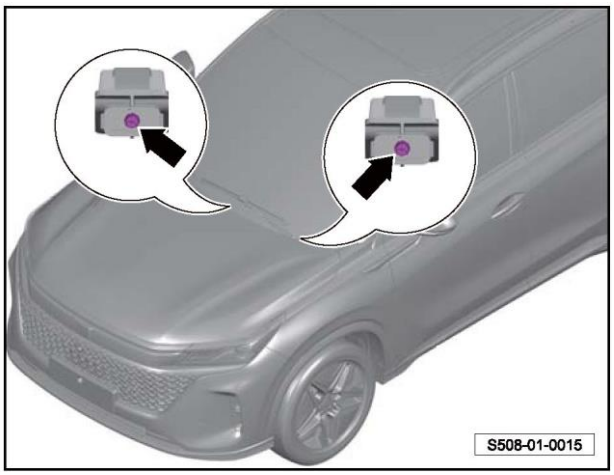
Tip:

If the uneven spraying area is caused by foreign matters in nozzle, the nozzle shall be removed and washed with water in the direction opposite to nozzle spraying direction. Then, blow the nozzle with compressed air in the direction opposite to nozzle spraying direction.



1 Check the windshield wiper/washing unit

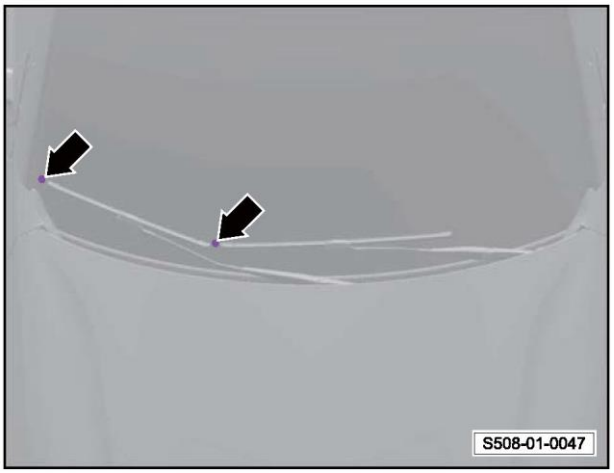
a. The nozzle is pre-adjusted, and only small height tolerance can be compensated through adjustment.



b. If two spraying areas are of different heights, use a small straight screwdriver (see the arrow) to adjust the nozzle's spraying direction.

1.4.3.16 Checking limit position of windshield wiper blade

Testing Procedures



1 Check the rest position of wiper blade, and adjust it if necessary.

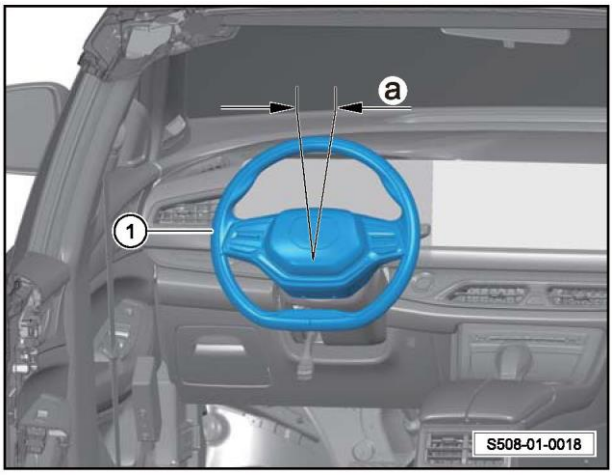
a. Check whether the wiper blade rubber is overlapped with a big round point (see the arrow) of the front windshield.

– Adjusting Wiper Blade Installation Positions

– If the measured values deviate from specified values too much, place the wiper arm at the normal stop position. Remove the wiper arm and blade subassembly, adjust to the proper angle, and then install the wiper arm and blade subassembly.

1.4.3.17 Checking free stroke of steering wheel

Testing Procedures



1 Check the free stroke of steering wheel.

a. Let the front wheels towards the front.

b. Measure the quantity of motion -a- of the steering wheel to left and right when the front wheels are still.

- Free travel: ≤15°

1.4.3.18 Check of child safety lock

Testing Procedures

1 Child safety lock (rear door)

a. Move the child safety lock switch ① in the direction indicated by the arrow. Close the rear door, and the child safety lock will engage. Under this condition, the door may only be opened from outside.

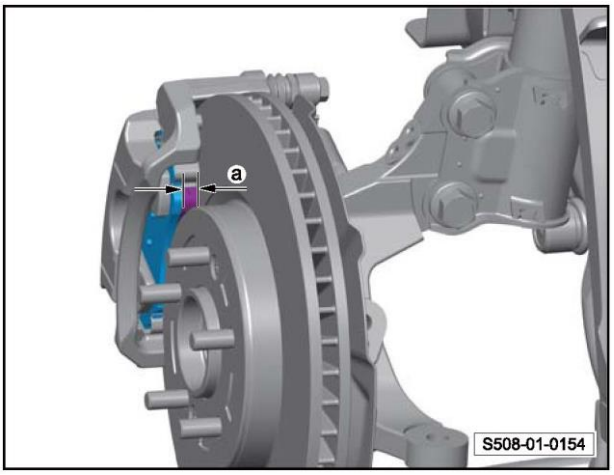
Tip:

To prevent the child in the car from opening the door by accident, the child safety lock can be used.

The door with the child safety lock functioning can only be opened from outside.

1.4.3.19 Check the wear of friction plate

Testing Procedures



1 Check wear of front wheel brake lining.

a. Remove the front wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

b. Visually check the thickness (a) of inner and outer brake friction plates.

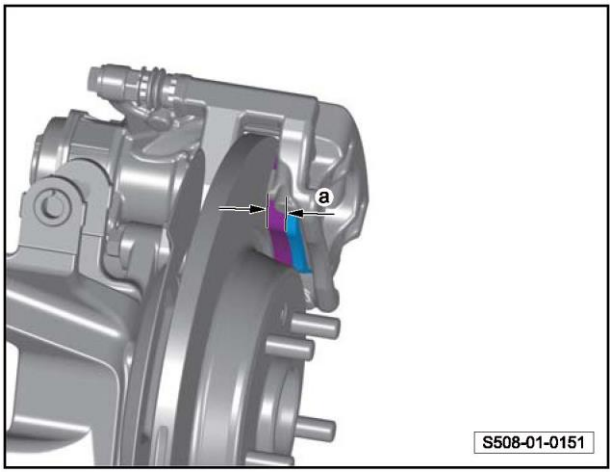
c. Remove, where necessary, the brake lining and measure its thickness with a scale.

- Standard thickness: **8 mm**
- Wear limit: 2mm

Tip:

If the thickness of friction plate (without back panel) is less than 2mm, it means that the friction plate reaches the wear limit and must be replaced.

When replacing the brake lining, the wear of brake disc must be checked. The wear limit of front brake disc is 26mm. Replace the brake disc when necessary.



2 Check wear of rear wheel brake friction plate.

a. Remove the rear wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

b. Visually check the thickness (a) of inner and outer brake friction plates.

c. Remove brake lining, when necessary, measure its thickness with a scale.

- Standard thickness: 10 mm
- Wear limit: 2mm

Tip:

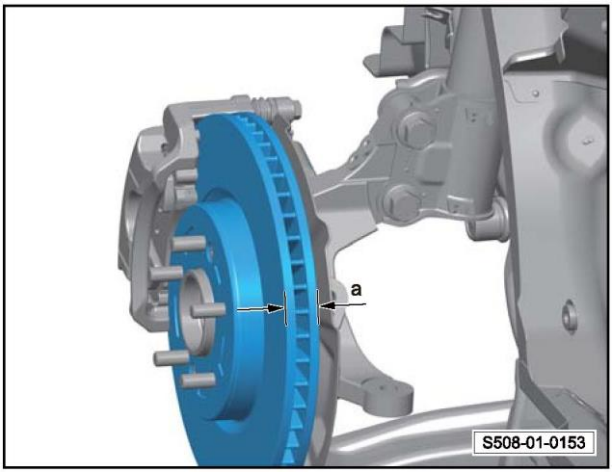
If the thickness of friction plate (without back panel) is less than 2mm, it means that the friction plate reaches the wear limit and must be replaced.

When replacing the brake lining, the wear of rear brake disc must be checked. The wear limit of rear brake disc is 9mm. Replace the rear brake disc when necessary.

1.4.3.20 Checking brake disc for wear

Testing Procedures

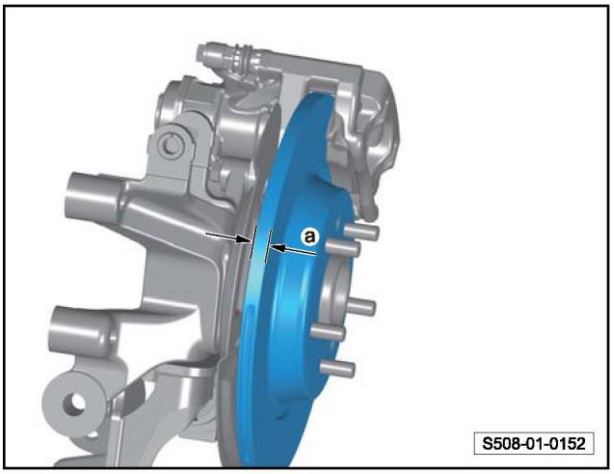
1 Remove the wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Check front wheel brake disc.

a. Measure the thickness (a) of front brake disc.

- Front brake disc thickness: **28mm**
- Service limit: **26mm**



3 Check rear wheel brake disc.

a. Measure the thickness (a) of rear brake disc.

- Rear brake disc thickness: **11mm**
- Service limit: **9mm**

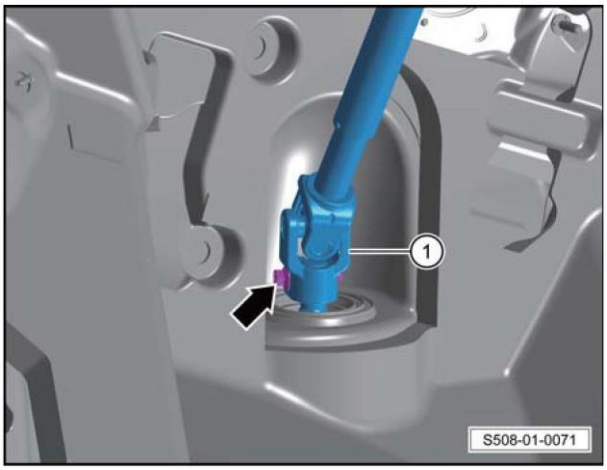
Tip:

If the wear of brake disc exceeds the specified value, it must be replaced.

1.4.3.21 Inspection of bolts connecting steering lower shaft and steering box assembly

Testing Procedures

1 Park the vehicle on a horizontal ground with the wheels positioned right ahead.



2 Inspection of bolts connecting steering lower shaft and steering box assembly

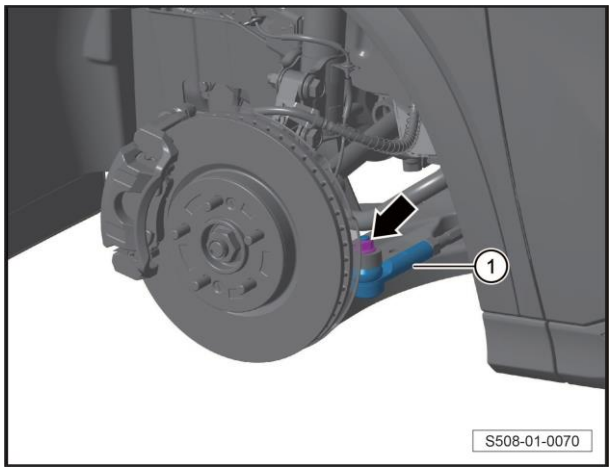
a. Check whether the bolt (see the arrow) connecting steering lower shaft and steering box assembly is loose; if so, tighten the bolt.

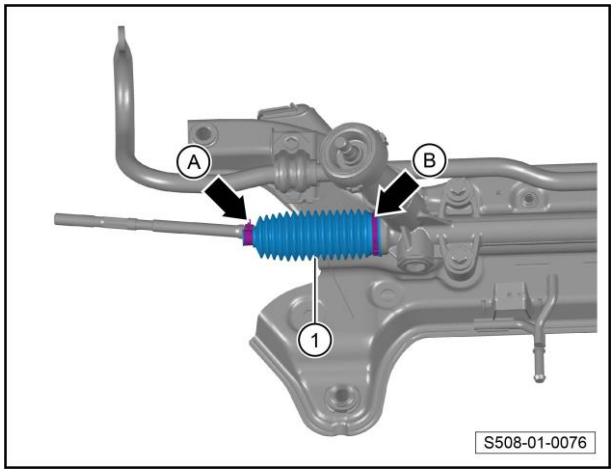
b. Turn the steering wheel to check whether there is any gap in the steering universal joint ① of the steering box assembly. If so, replace the steering column assembly. Refer to 3.13.8.5 Removal and installation of steering column assembly

- Tightening torque of bolt: **32±2N·m**

1.4.3.22 Checking the outer tie rod ball joint, fixing device and dust cover

Testing Procedures





1 Checking steering gear outer ball joint, fixing device and dust cover

a. Lift up the vehicle to a proper height, and shake the outer tie rod ball joint by hands to check for any gap.

b. Check whether the fixing nut (see arrow) of the outer tie rod ball is secure.

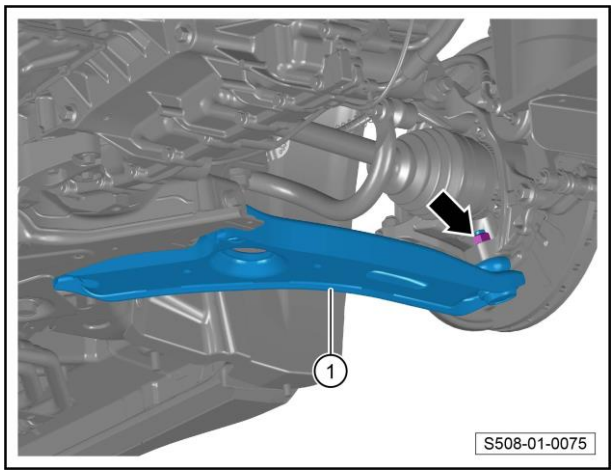
c. Check the dirt proof trunk of the outer tie rod ball for damage. If any, replace it. Refer to 3.13.8.1 Removal and installation of outer tie rod ball joint

- Tightening torque of nut: 60±6 N·m

d. Check the fixing clamp (see arrows A and B) for looseness, and check the dirt proof trunk ① of the steering input shaft for damage. If any, replace the dirt proof trunk of steering input shaft. Refer to 3.13.8.4 Removal and installation of dust cover of steering input shaft

1.4.3.23 Inspection of front swing arm assembly and front stabilizer bar joint assembly

Testing Procedures



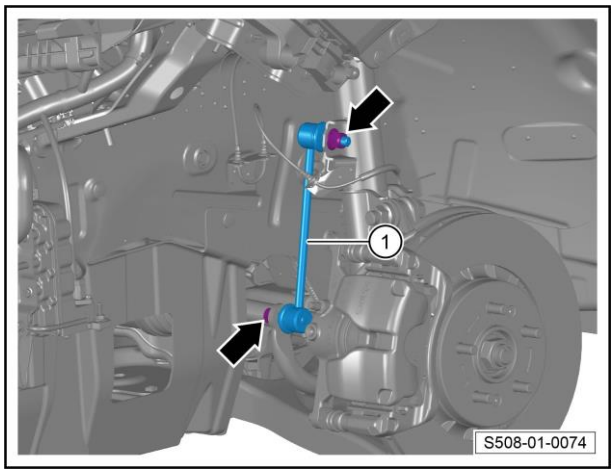
1 Front swing arm

a. Check the front swing arm assembly ① for damage.

b. Check the ball joint nut of the front swing arm assembly (see the arrow) for looseness.

c. If damaged, replace the front swing arm assembly. Refer to 3.2.6.6 Removal and installation of front swing arm assembly

- Tightening torque of nut: **90±5 N·m**



2 Front stabilizer bar joint assembly

a. Check the fixing nut of the front stabilizer bar joint assembly (see the arrow) for looseness.

b. Check the front stabilizer bar joint assembly ① for damage. If any, replace the assembly. Refer to 3.2.6.1 Removal and installation of front stabilizer bar joint assembly

- Tightening torque of nut: 100±5 N·m

1.4.3.24 Checking suspension components

Testing Procedures

Checking Suspension Components

- Lift the vehicle.
- Visually check all connecting bushings for aging and damage.
- Tighten all connecting bolts and nuts to the specified torque.
- Visually check each connecting component for deformation and crack.
- Check the damper for oil leakage, and check the dust cover for damage.

1.4.3.25 Checking body bottom

Testing Procedures

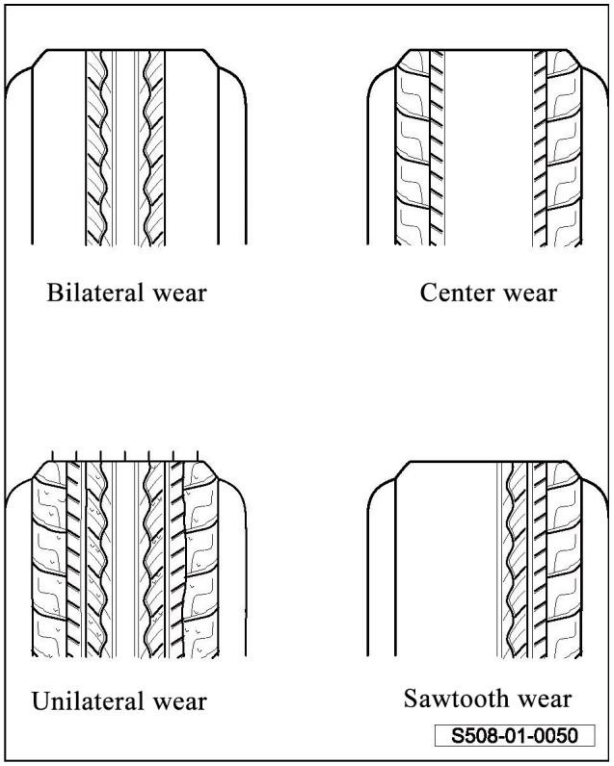
Check the body bottom.

- Lift the vehicle.
- Check fuel pipelines and brake fluid pipelines for leakage.

- Visually check the bottom protective coating, wheel housing and side member for damage.
- Visually check each connecting component for deformation and crack.
- Visually check the lifting lug of exhaust pipe for aging and secure installation.

1.4.3.26 Checking tire

Testing Procedures



1 Lift the vehicle

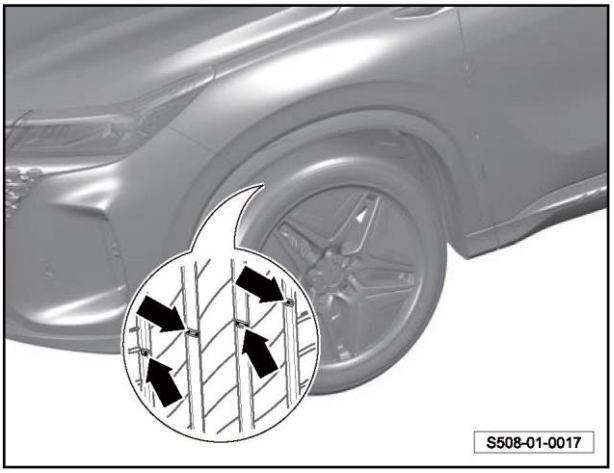
2 Check of tires

a. Check the tire for abnormal wear.

b. Check the tire tread for damage and foreign matter.

c. If bilateral wear or center wear of tire tread is found, please adjust the tire pressure.

d. If unilateral wear or saw tooth wear of tire tread is found, please check the front wheel toe-in and camber angle and adjust if necessary.

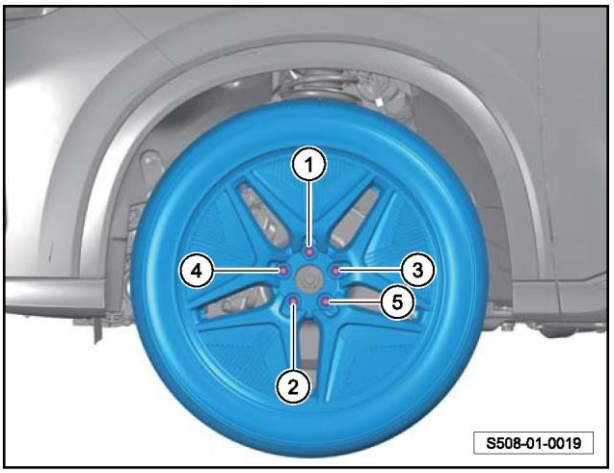


e. Check tread depth (see the arrows).

f. Check the single side tread of the tire for wear, porosity, cuts and piercing.

g. Ensure that the depth of the tire tread pattern groove is greater than the thickness of the wear mark.

h. Replace the tire not conforming to specified values when necessary.



1.4.3.27 Checking wheel fixing bolts

Testing Procedures

1 Check the wheel fixing bolts

a. Check the wheel bolts for missing and damage.

b. Tighten wheel bolts ① to ⑤ in a cross way.

- Tightening torque of bolt: **120±6 N·m**

1.4.3.28 Checking bearing of front damper

Testing Procedures

Notes

It shall be checked on the premise that the tires are original and under normal pressure.

Checking bearing of front damper

- Park the car on flat pavement.
- Turn the steering wheel and carefully observe whether any abnormal sound is heard from the bearing of the front damper.
- Drive the car across the speed bumps and carefully observe whether any abnormal sound is heard from the bearing of the front damper.

Notes

Avoid too high speed when driving across the speed bumps.

If abnormal sound is heard, find out the cause and replace the faulty part(s).

1.4.3.29 Checking electrical park brake (EPB)

Testing Procedures

Checking EPB for Slipping

- Check ramp parking to make clear whether the brake efficiency is reduced.
- Fasten the driver belt, drive the vehicle to a 20% ramp, and brake to stop.
- Shit to gear N.
- Start the electronic parking, and release the service brake pedal after parking.
- Observe whether the vehicle is full parked; if slipping takes place, it indicates that the parking efficiency is reduced.

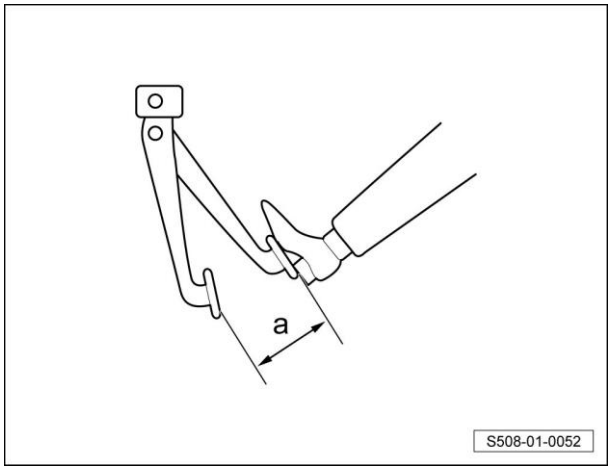
Checking EPB for Dragging

- Release the electronic parking normally.

- If the red light goes on or blinks, the residual force is too large. Please detect and repair.

1.4.3.30 Checking free stroke and height of the brake pedal

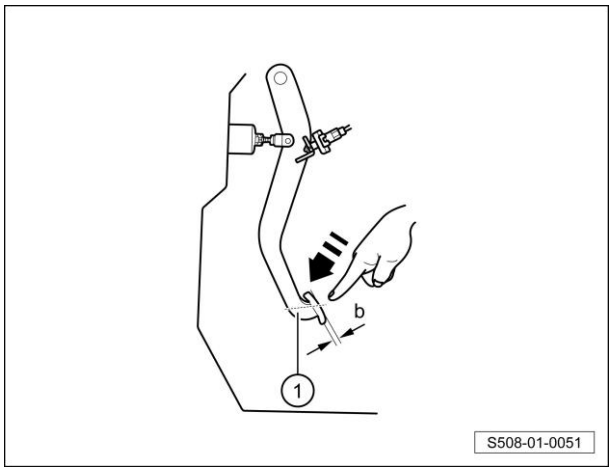
Testing Procedures



1 Brake pedal stroke

a. It refers to the distance (a) from the maximum position to the minimum position of the pedal.

- Action stroke of brake pedal: **70mm**
- Extreme stroke of brake pedal: **120mm**



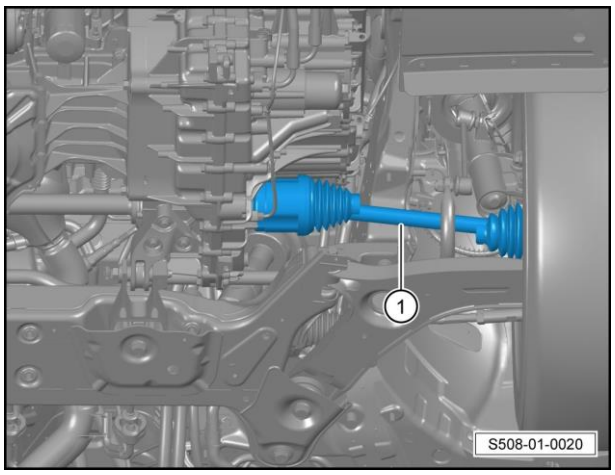
2 Free stroke of brake pedal

a. Turn off the start switch and push the brake pedal with your hands in direction of the arrow to check the stroke of the brake pedal liner ①.

b. If the free stroke of the brake pedal exceeds the specified range, the braking may be insufficient. If the free stroke of the brake pedal is not sufficient, the brake drag may be caused.

- Free travel of brake pedal: **1~5 mm**

1.4.3.31 Visual check of drive shaft dirt proof trunk and rubber jacket



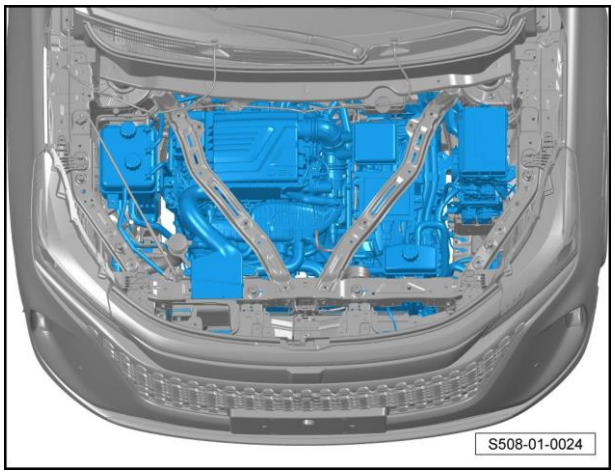
Testing Procedures

1 Visual check of drive shaft dirt proof trunk and rubber jacket

a. Check the dirt proof trunk of drive shaft ① for damage, leakage and aging.

b. In case of damage, replace the drive shaft assembly. Refer to 3.6.4.2 Removal and installation of left drive shaft assembly 3.6.4.3 Removal and installation of right drive shaft assembly

1.4.3.32 Visually checking engine compartment parts



Testing Procedures

1 Visually check the engine compartment components

a. The fault found during checking shall be timely eliminated.

b. Check the following guide pipes, hoses and connectors for leakage, damage and looseness.

– Fuel system

– A/C system pipelines and cooling system pipelines

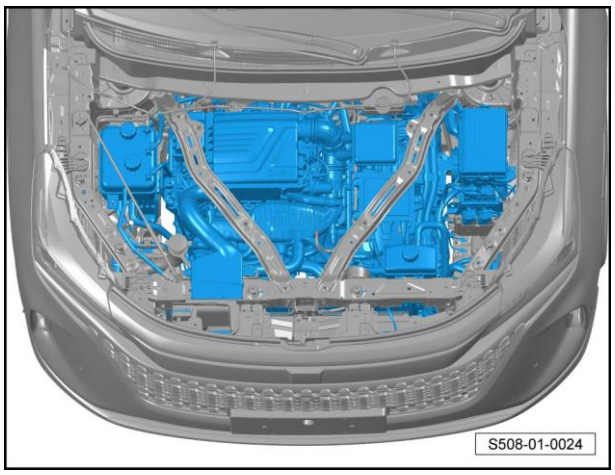
– Brake device

Tip:

Eliminate all faults found during checking.

1.4.3.33 Visually check the brake device for leakage and damage

Testing Procedures



Visually check the following components for leakage and damage:

– Brake safety control system

– Brake caliper

– Brake pipeline

- Visually check the brake hose for aging and body assembling clearance.
- Visually check the brake hose and brake pipeline for scratch.
- Visually check the brake pipeline connector and fixing unit for secure fixation, leakage and corrosion.

Notes

Do not twist the brake hose.

At the maximum steering angle, the brake hose shall not interfere surrounding car parts.

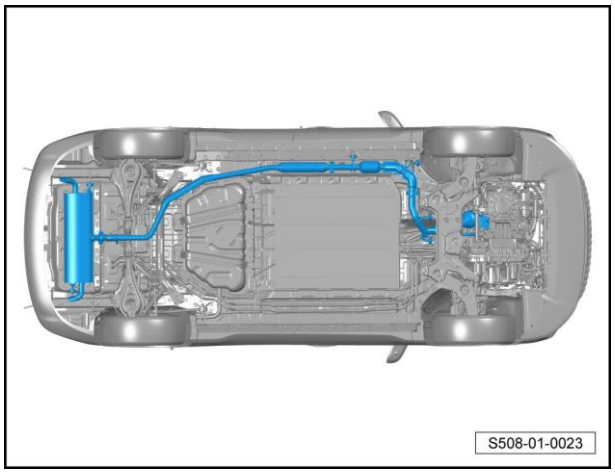
The fault found must be eliminated (repair measures).

1.4.3.34 Visually check exhaust system for leakage and damage

Testing Procedures

Notes

Inhalation of carbon monoxide is dangerous and it is the potential factor to cause death. When the engine is idling, the concentration of carbon monoxide is high. When the engine is operated in workshop or any narrow area, the gas pumping and discharging device must be used.



1 Visually check the exhaust system.

a. Lift up the car, and check the exhaust system components for leakage and damage.

b. Check the enclosures of front muffler and rear muffler for corrosion and damage.

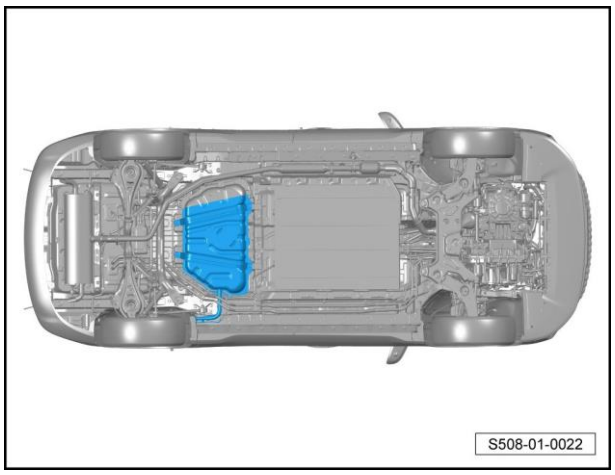
c. Check the connection of front/rear silencer, catalytic converter to cylinder head for leakage.

d. Check whether the exhaust pipe hanging cushion is aged.

Notes

Eliminate all faults found during checking.

1.4.3.35 Visually checking fuel tank assembly surface for bump



Testing Procedures

1 Visually check the fuel tank assembly

a. Lift the vehicle.

b. Visually check the fuel tank assembly surface for bump

c. Visually check the fuel pipe and connector for oil leakage and damage.

1.4.3.36 Visual inspection of the appearance of power battery system

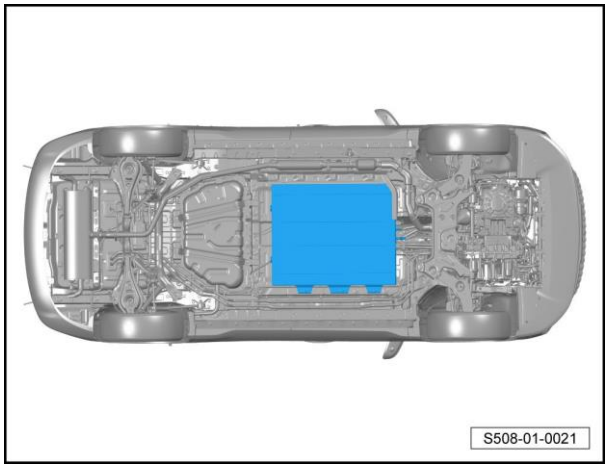
Testing Procedures

Tip:

Wear insulated protective equipment, including insulated gloves, insulated shoes and face masks, before maintenance of HV system.

1 Turn off all electrical appliances and cut off the HV power supply of the vehicle.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Inspection of the appearance of power battery system

a. Lift the vehicle.

b. Check whether the HV plug of the power battery system is damaged or whether the plug is firm and reliable, and whether the HV harness is aged or broken.

c. Check whether the LV plug of the power battery system is damaged or whether the plug is firm and reliable, and whether the LV harness is aged or broken.

d. Check the general appearance of the power battery system for bump deformation or odor.

e. Check whether the water inlet and outlet of the power battery system has leakage, aging or breakage.

Notes

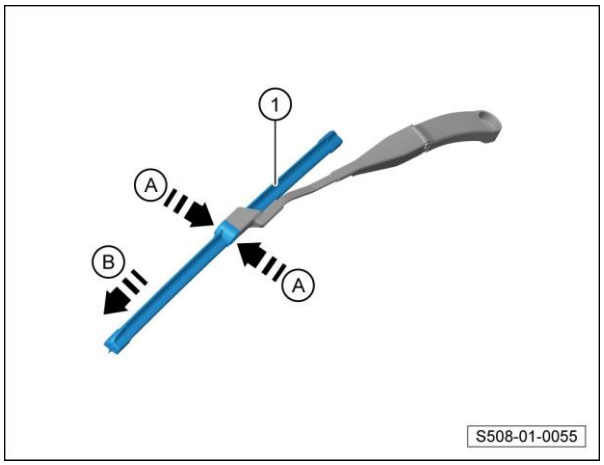
Eliminate all faults found during checking.

1.4.3.37 Replacing front wiper

Disassembly procedures

Tip:

Cover the front windshield with cotton cloth to prevent damage during removal.



1 Remove the front wiper

a. Pull up the front wiper arm and blade component.

b. Press the clip in the direction given (see arrow A) and remove the front wiper blade ① in the direction given (see arrow B).

Installation procedures

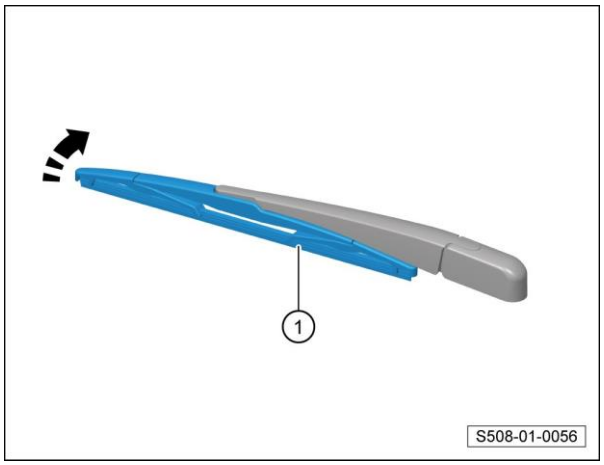
The installation procedure is to be performed basically in the reverse order:

1.4.3.38 Replacing rear wiper

Disassembly procedures

Tip:

Cover the tail door glass with cotton cloth to prevent damage during removal.



1 Remove the rear wiper.

a. Pull up the rear wiper arm and blade assembly.

b. Rotate in the direction given (see the arrow) to remove the rear wiper blade ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

1.4.3.39 Replacement of spark plug component

Disassembly procedures

Tip:

To prevent foreign matters from entering the cylinder, use a wad of cloth to plug up the spark plug hole after removing the spark plug.

1 Turn off all the electrical appliances and turn off the Start switch.

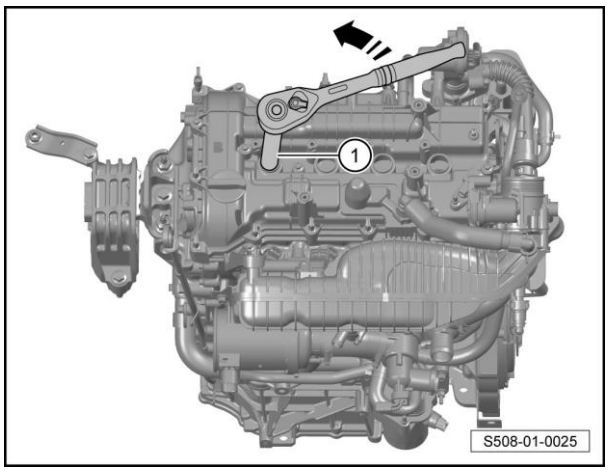
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the ignition coil. Refer to 2.7.7.1 Removal and installation of ignition coil

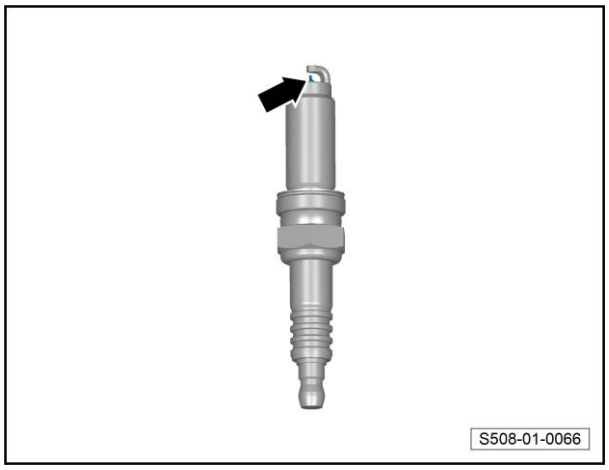


7 Remove the spark plug components

a. Use the spark plug removal tool ① to unscrew the spark plug in direction of the arrow.

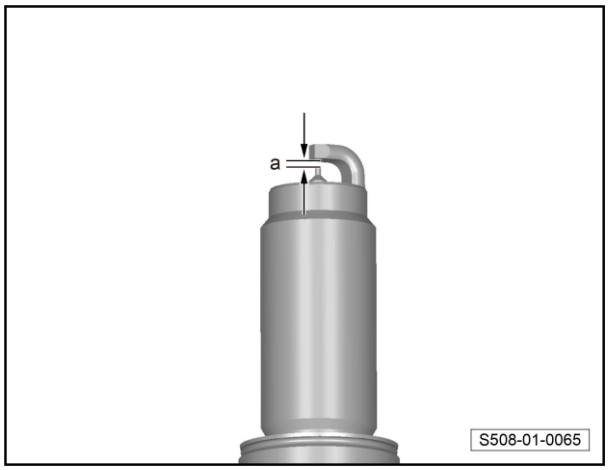
- Tightening torque of spark plug: **22N·m**

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check the place indicated by arrow on the spark plug for residual greasy dirt and carbon deposit. Clear them if necessary.



– Check the electrode clearance (a) of spark plug.

• Standard clearance **a**: **1.05~1.15 mm**

1.4.3.40 Replacement of engine coolant

Discharging procedures

Tip:

Wait until the coolant completely cools down before drain engine coolant. Then discharge the coolant.

1 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

2 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

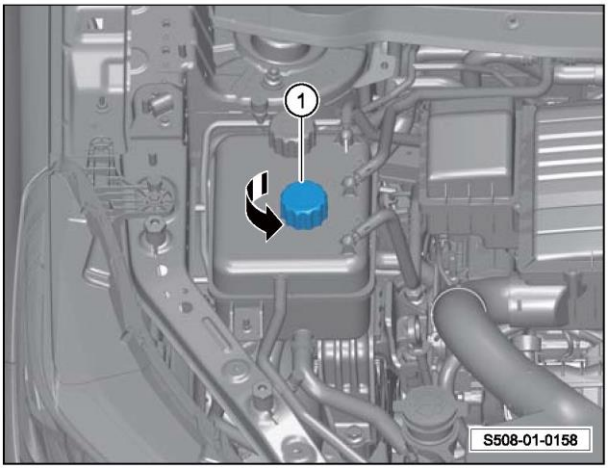
3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

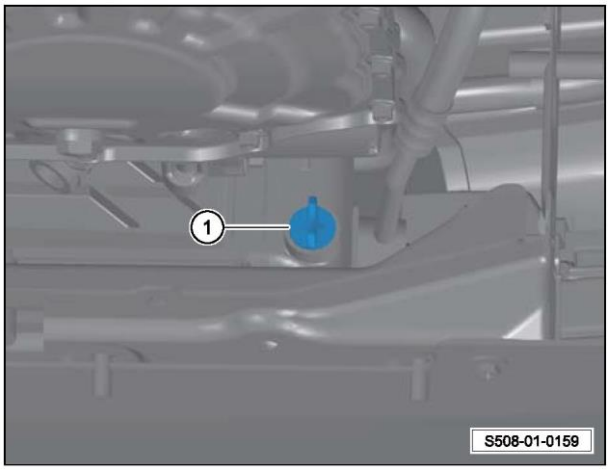
5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Drain engine coolant

a. Rotate valve ① to be parallel with the water pipe, and open valve ①.



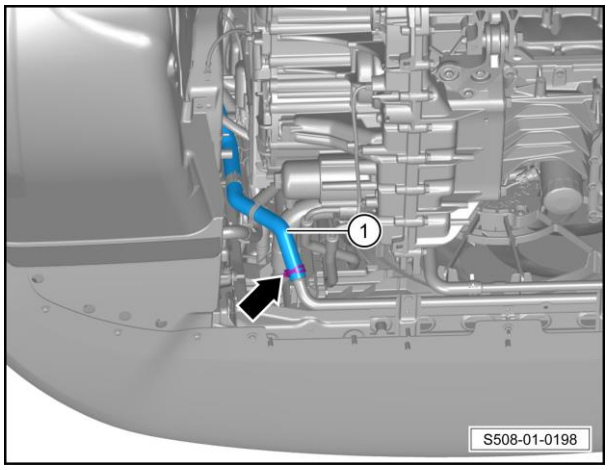
b. Unscrew the water reservoir cap ① in direction of the arrow.



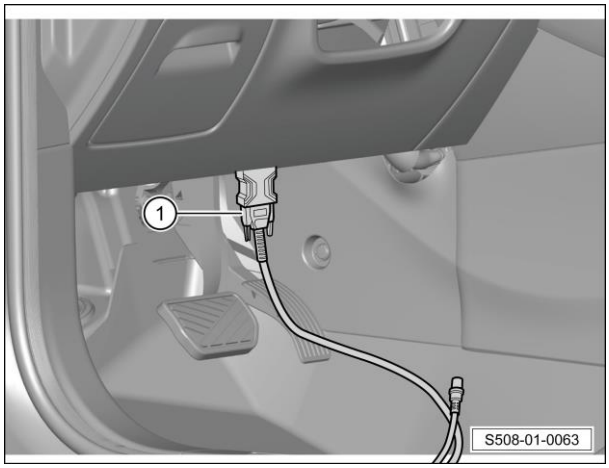
c. Lift the vehicle.

d. Place the coolant collection container at the bottom of the car.

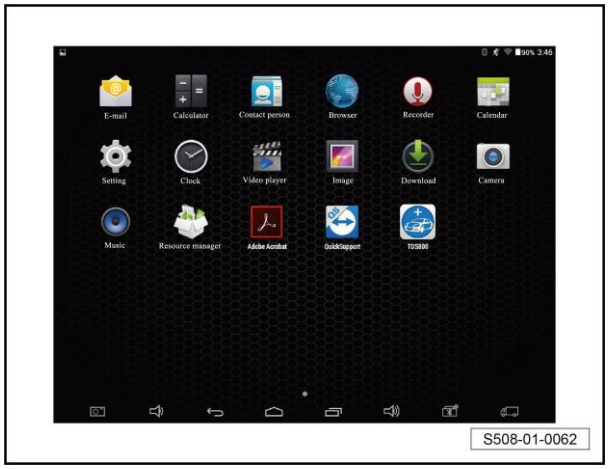
e. Unscrew the drain screw plug ① anti-clockwise to discharge the coolant.



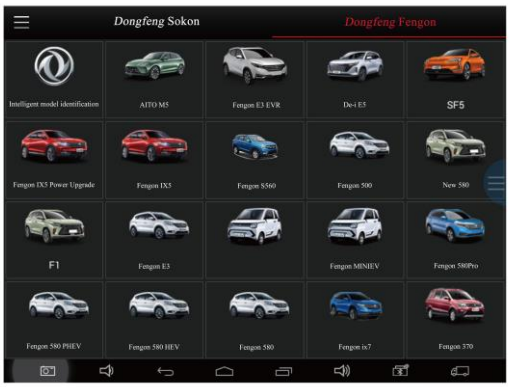
f. Loosen the clamp of the low-temperature radiator water inlet hose assembly ① (see the arrow), and discharge the coolant.



g. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

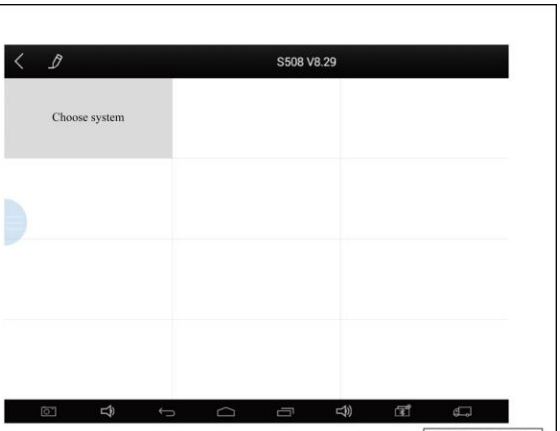


h. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.



S508-01-0138

i. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.



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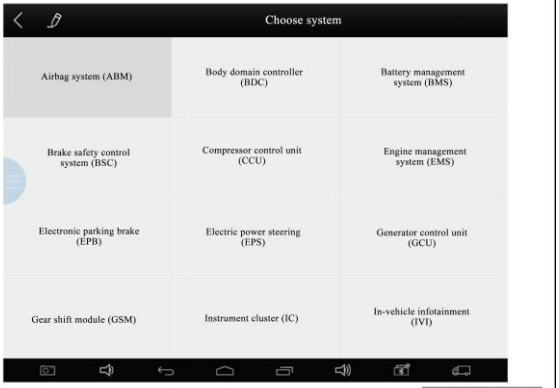
j. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.



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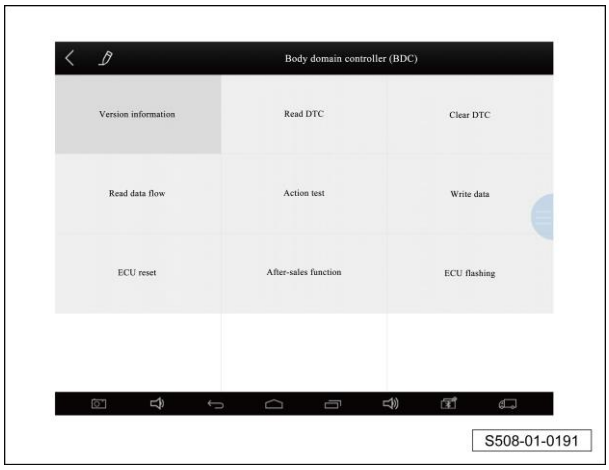
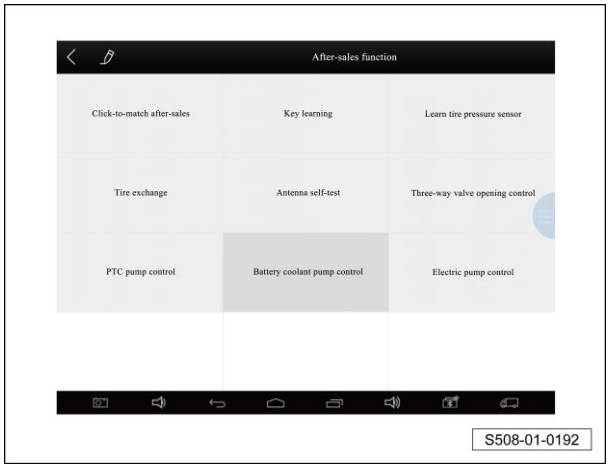
k. Select "body domain controller (BDC)" on the "System Selection" sub-function interface and click to enter.

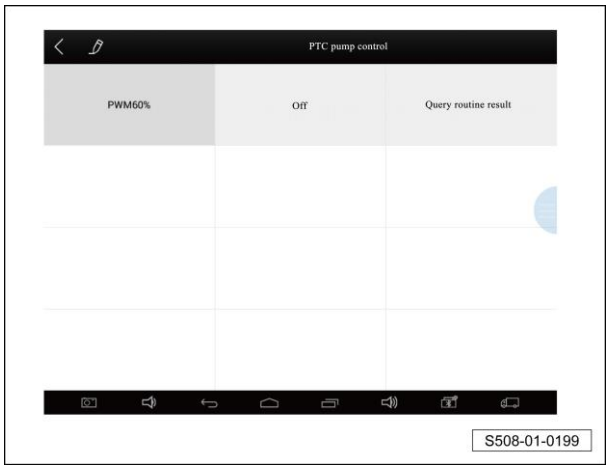


l. Select "After-sales Function" on the "body domain controller (BDC)" sub-function interface and click to enter.

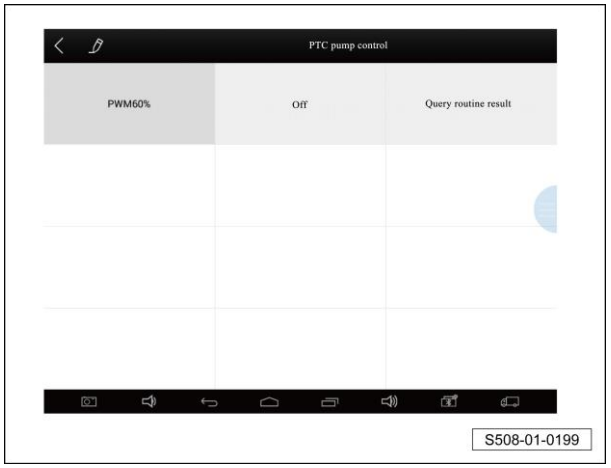


m. Select "Three-way Valve Opening Control" on the "After-sales Function" sub-function interface, and click to enter.

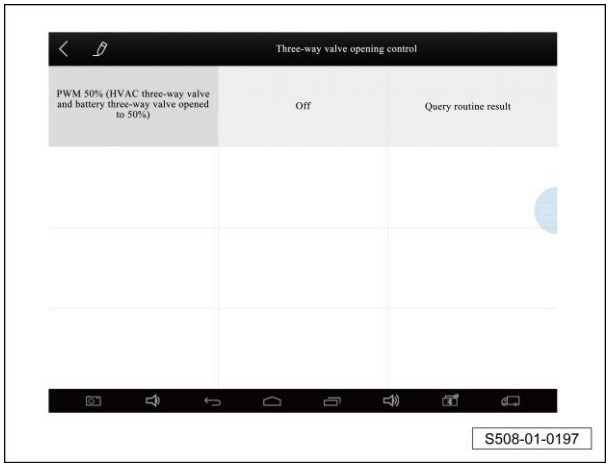
n. Select “PWM 50%” on the "Three-way Valve Opening Control" sub-function interface to open the three-way valve.



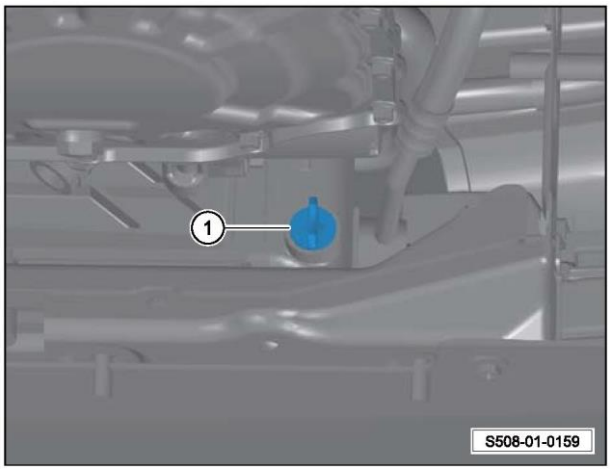
o. Select “PWM 60%” on the "PTC Pump Control" sub-function interface to run the PTC pump.



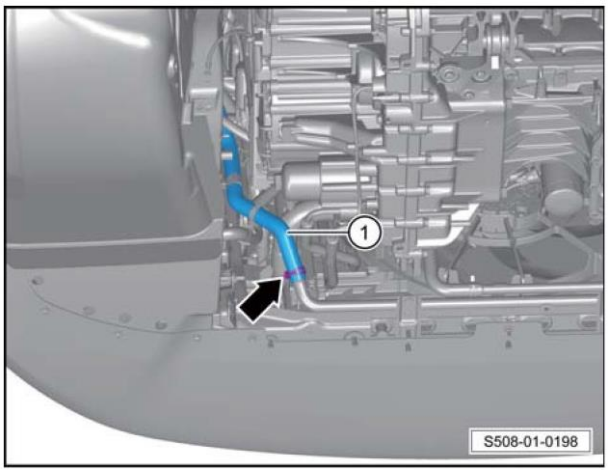
p. After the engine coolant is discharged, select "Off" on the "PTC Pump Control" sub-function interface to put the PTC pump out of operation.



q. Select “Off” on the "Three-way Valve Opening Control" sub-function interface to close the three-way valve.

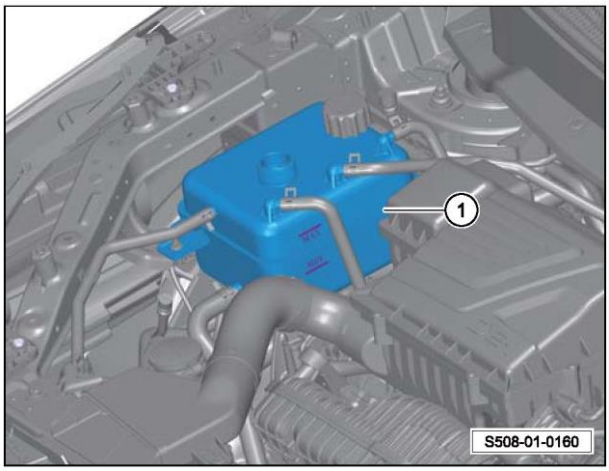


r. After the engine coolant is completely discharged, install the drain screw plug ①.



s. Connect the clamp of the low-temperature radiator water inlet hose assembly ① (see the arrow), and install the fixing clamp to the original position.

Filling procedure



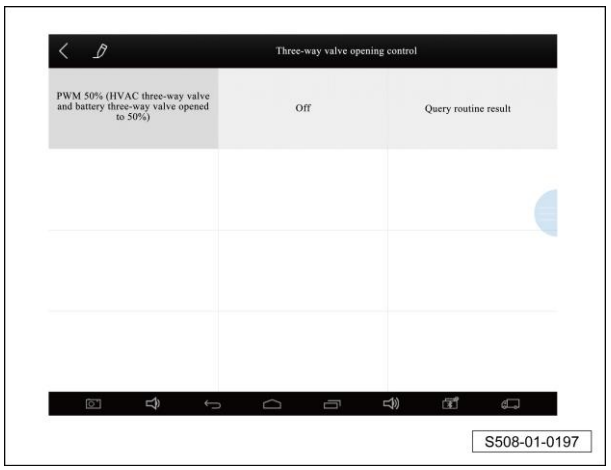
Coolant filling

a. Slowly fill the coolant until it reaches the "MAX" mark on the water reservoir.

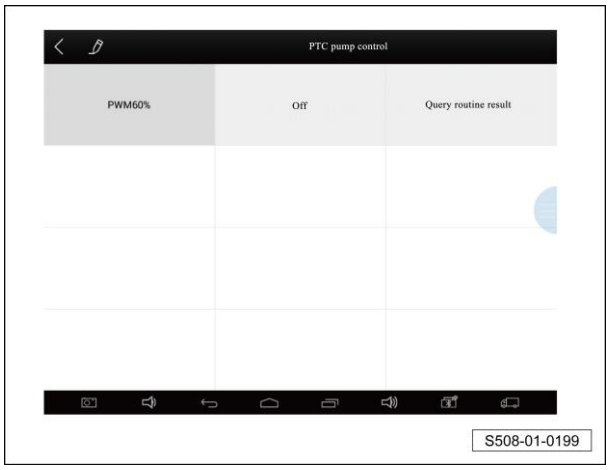
Description

- Do not dilute the coolant at will.
- The coolant cannot be reused or mixed with other types of coolant. Also, it cannot be substituted with different colors of coolant.
- Coolant: FD-40, filling amount: 9.6L.
- The coolant can prevent frost, corrosion and scaling, as well as raising the boiling point. Therefore, the coolant must be refilled according to the standards.
- It is prohibited to use the coolant with phosphates or nitrates as preservative.
- In southern places with tropical climate, use the coolants of high boiling point.
- The proportion of additive and water in the coolant should be at least 50%. Under the standard atmospheric pressure (101 kPa), the coolant boiling point is no less than 107°Cand the freezing point is no more than -35°C.
- The coolant must be recycled according to related national regulations.

b. Install water filling cover.

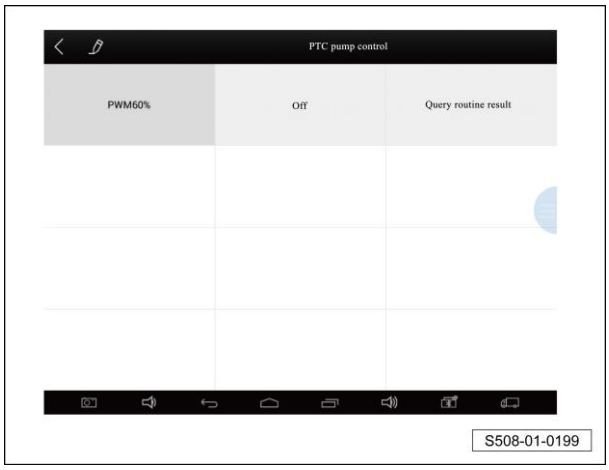


c. Connect the diagnostic scanner, select “PWM 50%” on the "Three-way Valve Opening Control" sub-function interface to open the three-way valve.

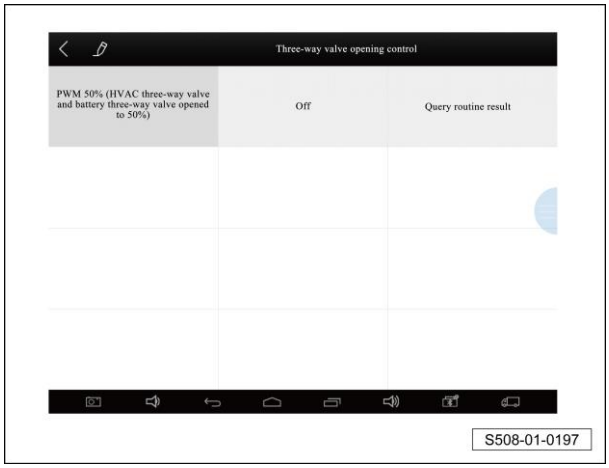


d. Select “PWM 60%” on the "PTC Pump Control" sub-function interface to run the PTC pump.

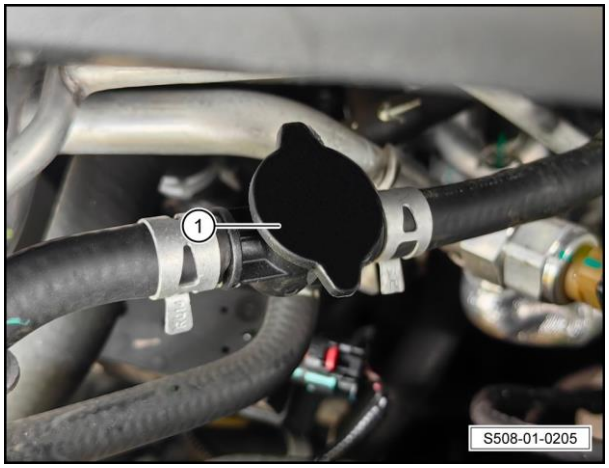
e. Observe the coolant level, and fill coolant if necessary to between the -MAX- and -MIN-.



f. Observe the reflux pipe of the water reservoir, when there are no bubbles in the coolant from the reflux pipe, select "Off" on the "PTC Pump Control" sub-function interface to put the PTC pump out of operation.



g. Select “Off” on the "Three-way Valve Opening Control" sub-function interface to close the three-way valve.



h. Rotate valve ① to be vertical to the water pipe, and close valve ①.

1.4.3.41 Replacement of brake fluid

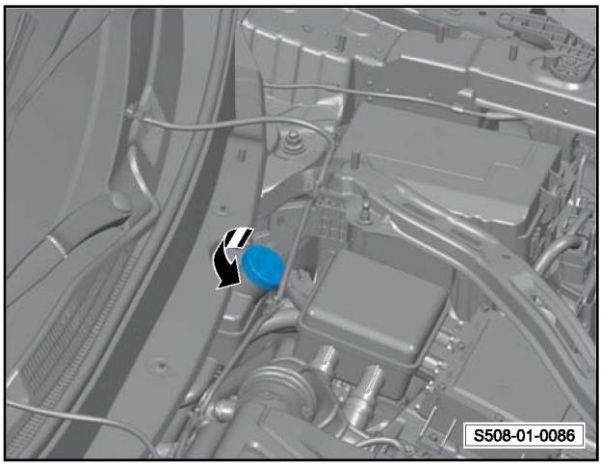
Replacement procedures

Tip:

Brake fluid model: DOT4, filling amount: 1.2±0.05L.

Never mix the brake fluid with the mineral oil, as mineral oil can damage the seal parts of the brake system.

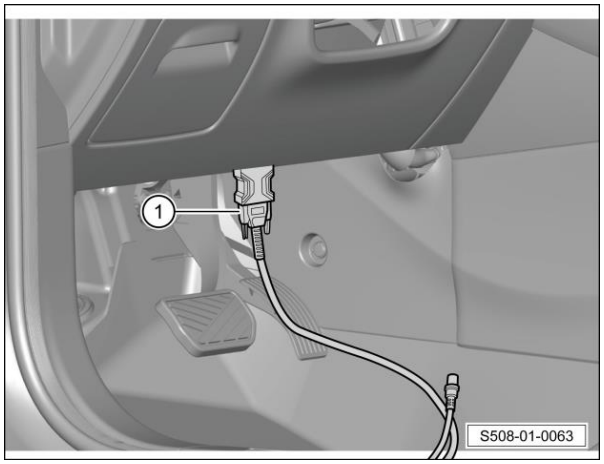
The brake fluid has a strong capability of hygroscopicity and can absorb the moisture in the surrounding, so it must be stored under a sealed condition.



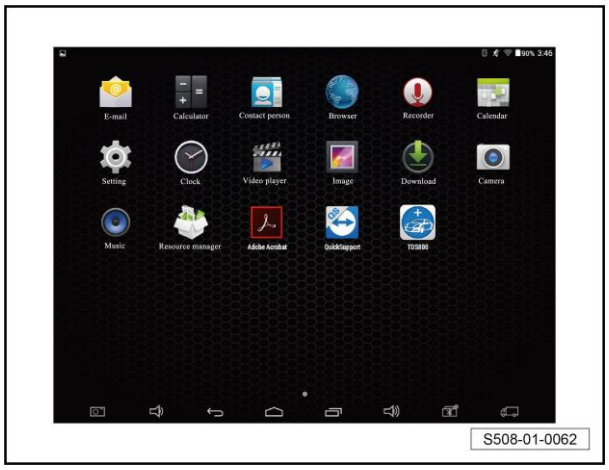
1 Replacing brake fluid

a. Unscrew the cap of the brake fluid reservoir in the direction of arrow.

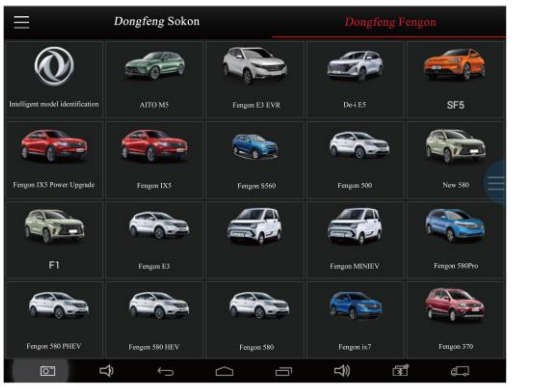
b. Pump out the brake fluid from brake fluid reservoir.



c. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.



d. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

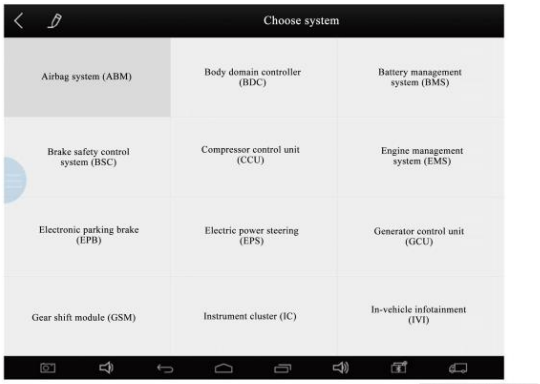


S508-01-0138

e. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

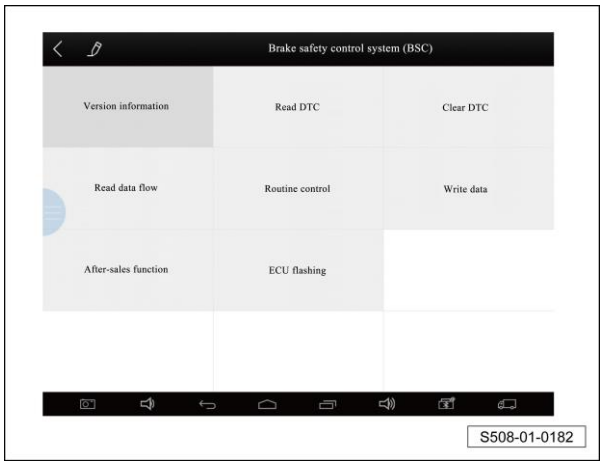
S508-01-0139

f. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.

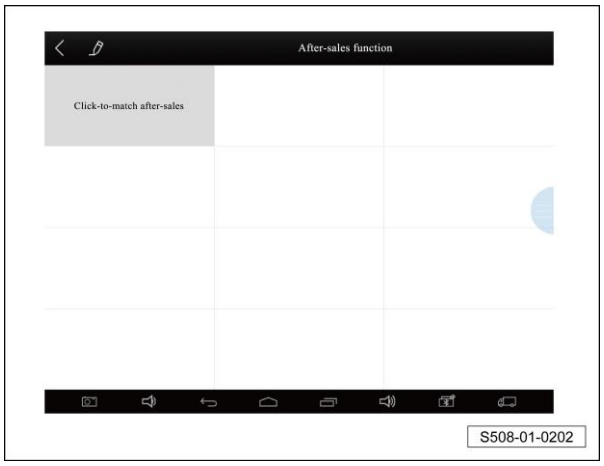


S508-01-0143

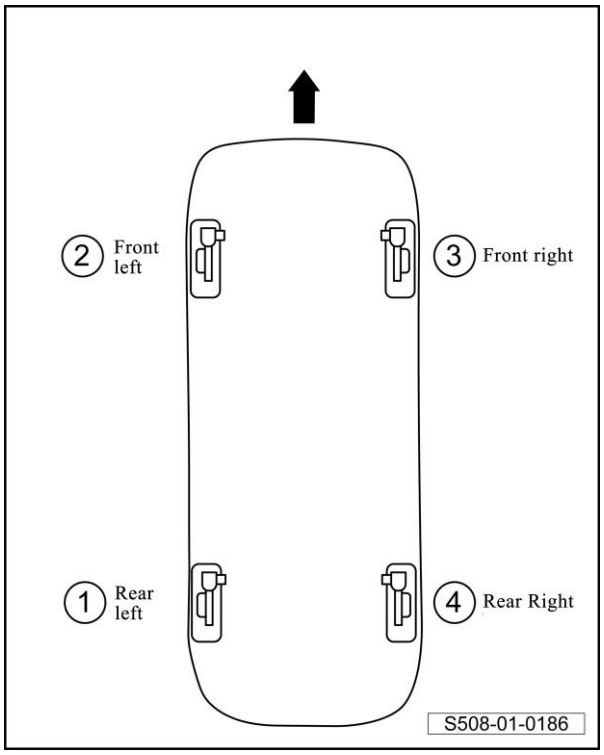
g. Select "Brake Safety Control System (BSC)" on the "System Selection" sub-function interface, and click to enter.



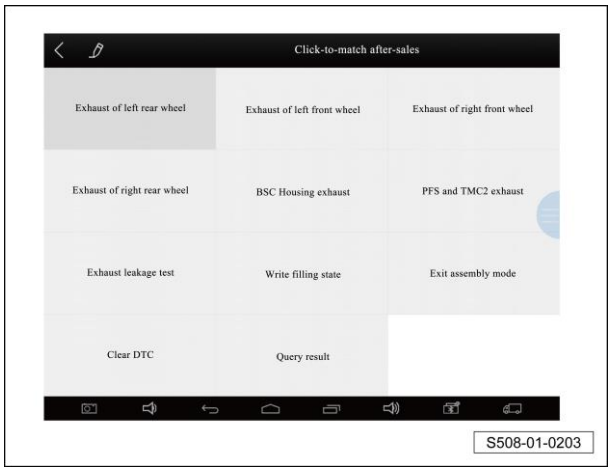
h. Select "After-sales Function" on the "Brake Safety Control System (BSC)" sub-function interface, and click to enter.

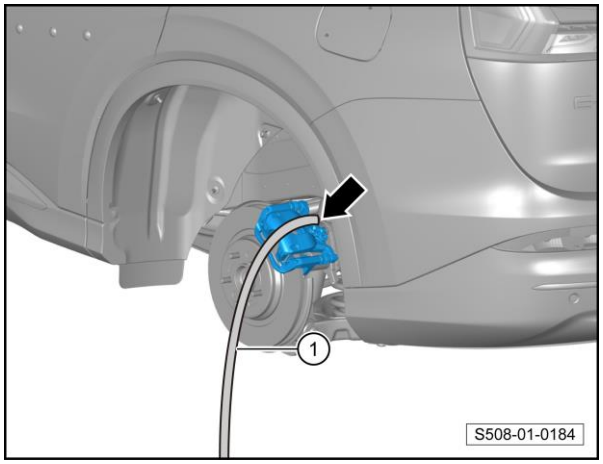


i. Select "Click-to-Match After-sales" on the "After-sales Function" sub-function interface and click to enter.



j. According to the order of ① to ④ in the figure, select the corresponding wheel exhaust in turn on the "One-key After-sales Matching" sub-function interface, so as to discharge the brake fluid inside the brake pipe and brake safety control system.





Tip:

Take the brake fluid discharge of the rear left wheel as an example, the other three wheels have similar brake fluid discharge operation.

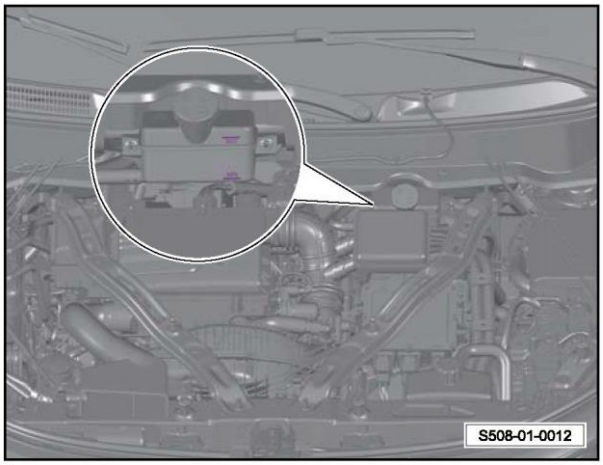
k. Lift up the vehicle.

l. Remove the brake caliper seal cap of the rear left wheel, and install the container ①.

m. Loosen the exhaust bolt of the rear left wheel brake caliper (see the arrow).

n. Select "Rear Left Wheel Exhaust" on the "One-key After-sales Matching" sub-function interface, and click to discharge the brake fluid of the rear left wheel.

o. Repeat the rear left wheel exhaust steps until the brake fluid is discharged.



p. Fill the new brake fluid to MAX (highest) line of the water reservoir after the brake fluid is discharged.

q. Exhaust the brake system. Refer to 1.4.3.53 Brake system exhaust

1.4.3.42 Replacing engine lubricating oil

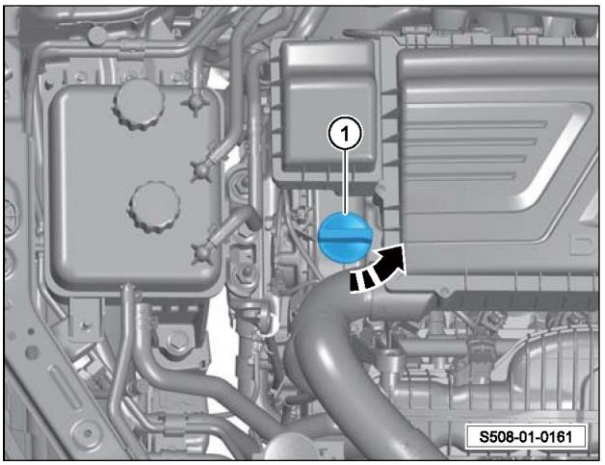
Discharging procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

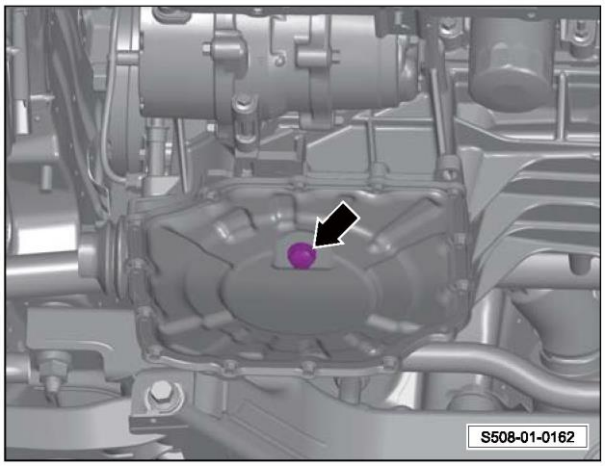
3 Remove the engine compartment trim panel assembly (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

4 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



5 Replace engine lubricating oil

a. Unscrew the engine oil filler cap ① along the direction of arrow.



b. Lift the vehicle.

c. Unscrew the engine oil drain plug (see the arrow). Collect the engine lubricating oil with a container with scale.

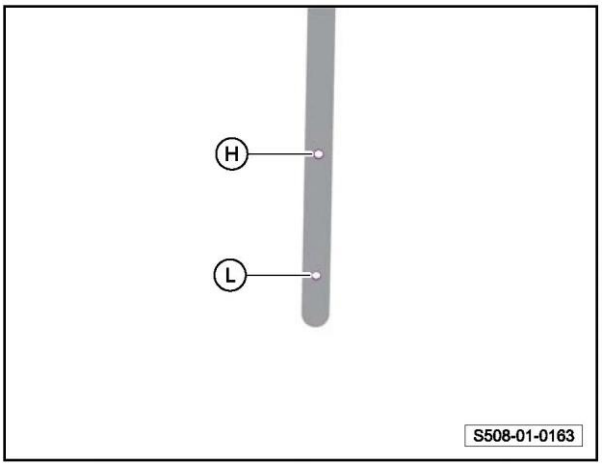
d. Tighten the engine oil drain plug (see the arrow) according to specified torque.

- Tightening torque of bolt: 35±3 N·m

Notes

Please dispose the drained engine oil according to specifications!

If the tightening torque is too large, the drain plug may leak, even the oil pan may be damaged.



Filling procedure

1 Filling

a. Pull out the oil dipstick, wipe it with a clean cloth, and then insert it to the bottom again.

b. Pull out the engine oil dipstick again. Check that the engine oil level shall be within the range between point H and point L.

c. Start the engine, and check the engine oil filter for leakage after the engine reaches the normal temperature

d. Shut down the engine, wait for 3~5 minutes and then pull out the oil dipstick to check whether the oil level is between the maximum level mark (see arrow H) and the minimum level mark (see arrow L).

Requirements for Filling Engine Lubricating Oil

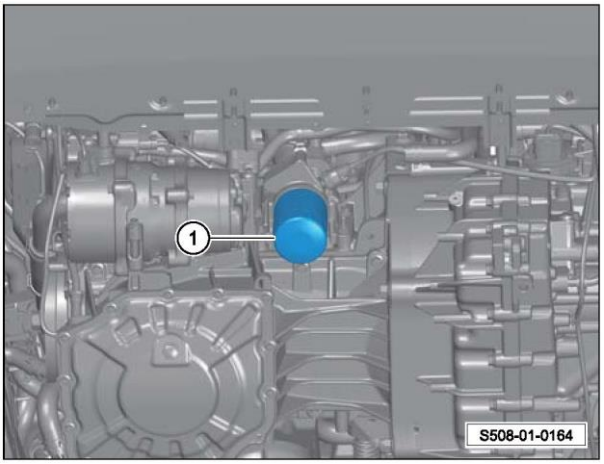
Oil grade/viscosity	Filling amount	Replacement
SP 0W-20	3.7L	3.2L

1.4.3.43 Replacing oil filter component

Replacement procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

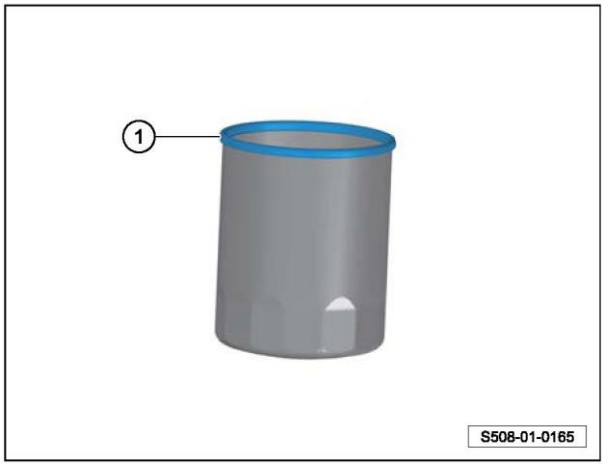


3 Replace the oil filter component.

a. Remove the oil filter ① with an oil filter remover.

- Tightening torque of oil filter: **12N·m**

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Clean the contact surface of engine oil filter.

– Apply a proper amount of clean lubricating oil to the new filter seal ring ①.

1.4.3.44 Replacing hybrid transmission fluid

Discharging procedures

Notes

Do not mix hybrid transmission fluid of different specifications, as that may cause abnormal noise or vibration, or damage the vehicle transmission.

Tip:

After replacing the hybrid transmission fluid, replace filter components of the hybrid transmission.

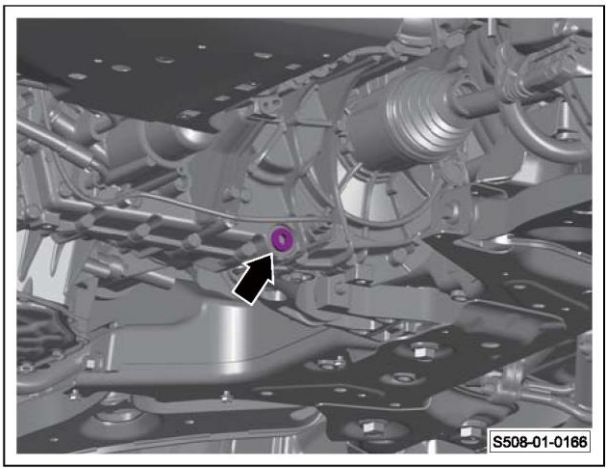
The sealing ring components of plug cannot be reused after removal.

The container with scales is helpful in estimating the filling amount.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Discharge the hybrid transmission fluid

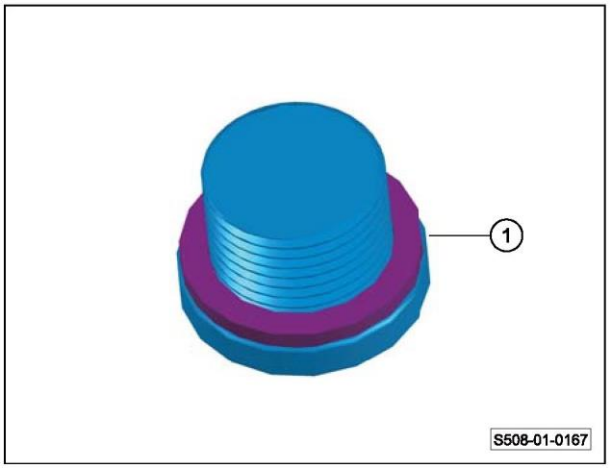
a. Lift the vehicle.

b. Remove the dust and foreign matters on the surface of the oil drain plug (see the arrow).

c. Unscrew the drain plug and sealing ring components (see the arrow). Collect the hybrid transmission fluid with a container with scales.

d. Discharge the hybrid transmission fluid.

- Tightening torque of oil drain plug: **50±3N·m**

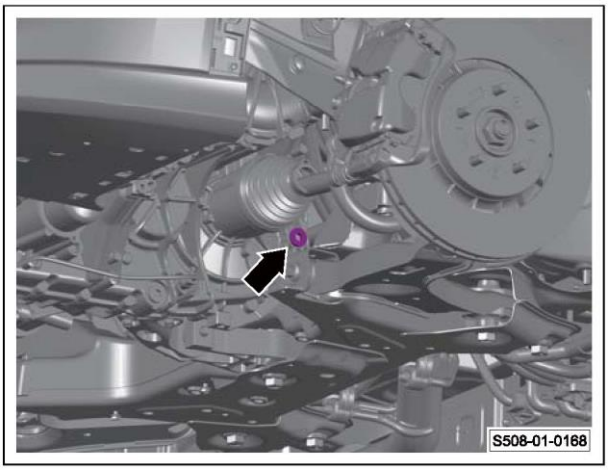


e. After the discharge, install the drain screw plug and sealing ring component.

Note:

Always replace with a new drain screw plug sealing gasket ① for every replacement of hybrid transmission fluid.

Filling procedure



6 Fill the hybrid transmission fluid

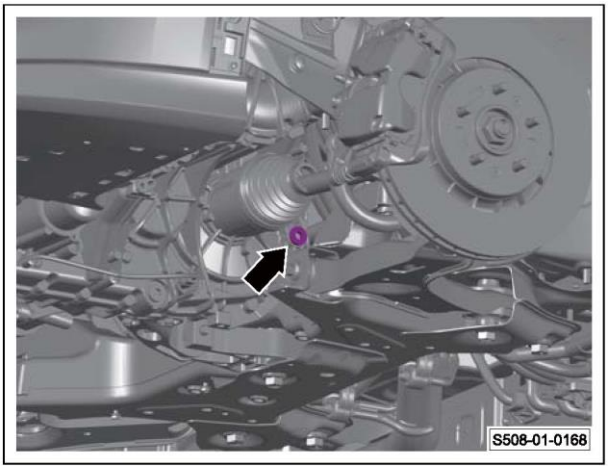
a. Remove the dust and foreign matters on the surface of the filling plug (see the arrow).

b. Unscrew filler screw plug and sealing ring component (see the arrow), and fill hybrid transmission fluid according to the amount of the scale container.

- Tightening torque of filler screw plug: **50±3N·m**
- Grade of hybrid transmission fluid: **EHSF-1**
- Lubricating oil filling amount: **3.0±0.1L** (for replacement); **3.6±0.1L** (for overhaul)

Tip:

Too much or too little hybrid transmission fluid will influence the performance of transmission.

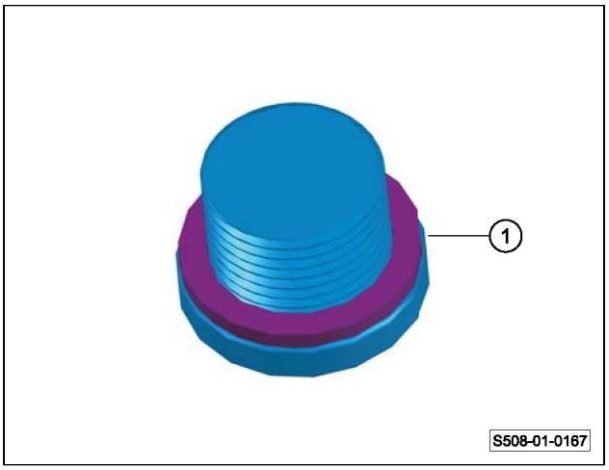


c. Wait for the engine to run idle for 30s so that all components are filled with oil. Keep the transmission in a hot state during inspection, and turn off the start switch.

d. Unscrew the oil filler plug and sealing ring component (see the arrow). If there is fluid dripping slowly, it indicates that the fluid level is normal. Otherwise, the fluid level is insufficient. In this case, replenish the fluid and repeat the above steps until the fluid slowly drips from the fluid level check plug port. If the fluid flows out quickly, it indicates excessively fluid filling. Wait until the fluid drips slowly from the level check port).

e. Tighten the filler screw plug and sealing ring component (see the arrow).

- Tightening torque of filler screw plug: **50±3N·m**



Notes

Always replace with a new overflow screw plug sealing gasket ① for every replacement of hybrid transmission fluid.

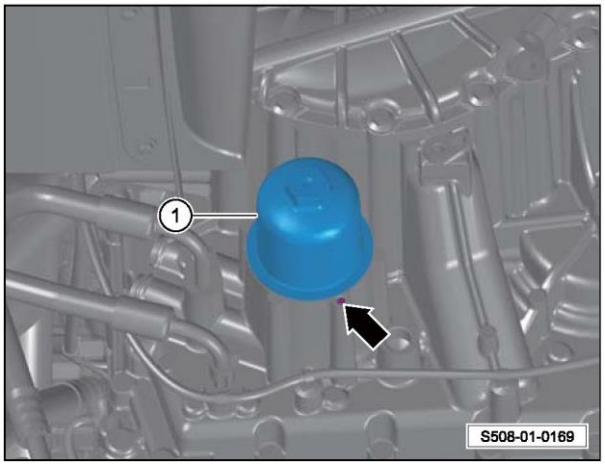
1.4.3.45 Replacement of filter components of hybrid transmission

Replacement procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the hybrid transmission fluid. Refer to 1.4.3.44 Replacement of hybrid transmission fluid

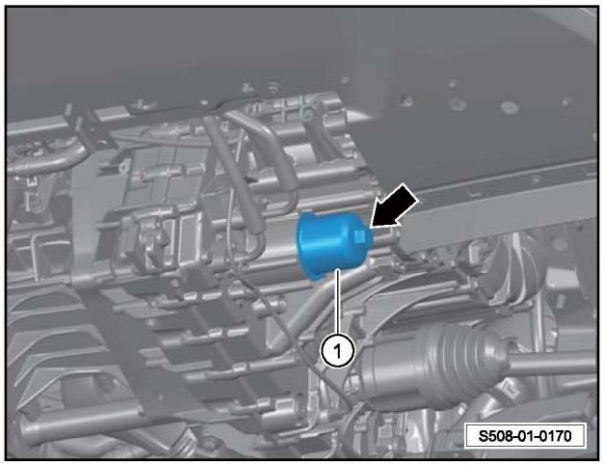
3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Replacement of transmission filter component

a. Unscrew the fixing bolt (see the arrow) of filter.

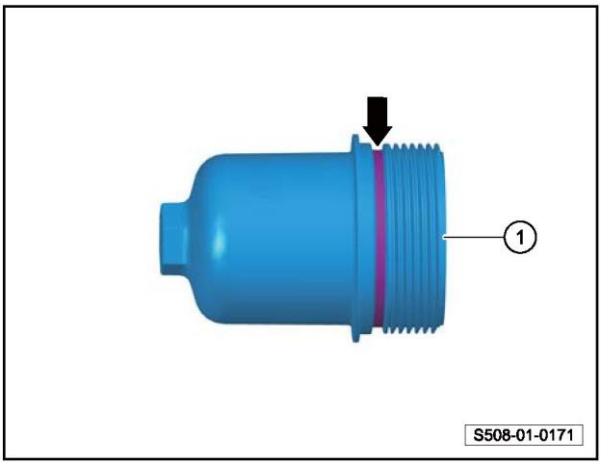
- Tightening torque of bolt: 6±1 N·m



b. Unscrew the transmission filter shell ① in the position of (the arrow).

c. Remove transmission filter component.

- Tightening torque of transmission filter shell: **22±3N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Apply a proper amount of clean lubricating oil to the new filter sealing ring ①.
- Check and fill the hybrid transmission fluid. Refer to 1.4.3.44 Replacement of hybrid transmission fluid

1.4.3.46 Removal and installation of air filter element

Disassembly procedures

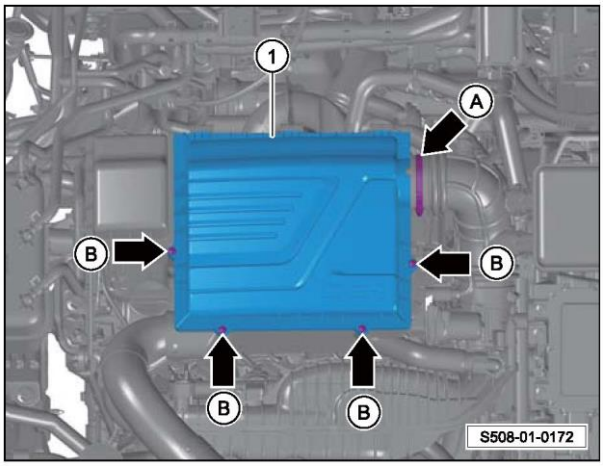
1 Turn off all the electrical appliances and turn off the Start switch.

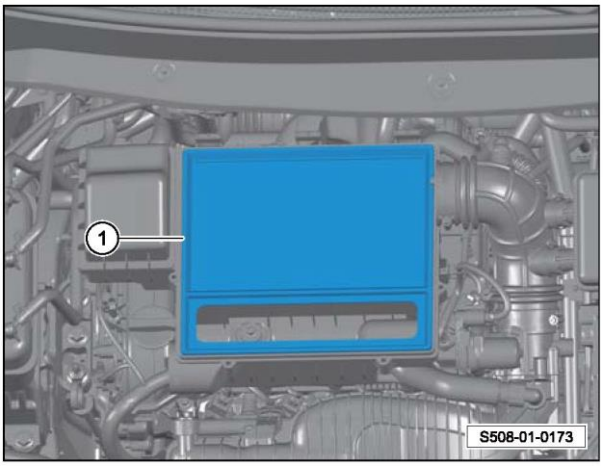
2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)





6 Remove the air filter element.

a. Loosen the fixing clamp (see arrow A) and disengage the air filterer outlet pipe assembly from the upper housing of air filter assembly.

b. Unscrew the fixing screw (see the arrow B).

c. Remove the air filter upper shell ①.

- Tightening torque of clamp (see arrow **A**): **2.2±1 N·m**
- Tightening torque of screw (see the arrow **B**): **3±1 N·m**

d. Take out the air filter element ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– For air filter element replacement, please use the genuine air filter element.

– Please clear the foreign matters in the air filter housing.

1.4.3.47 Replacing power battery coolant

Discharging procedures

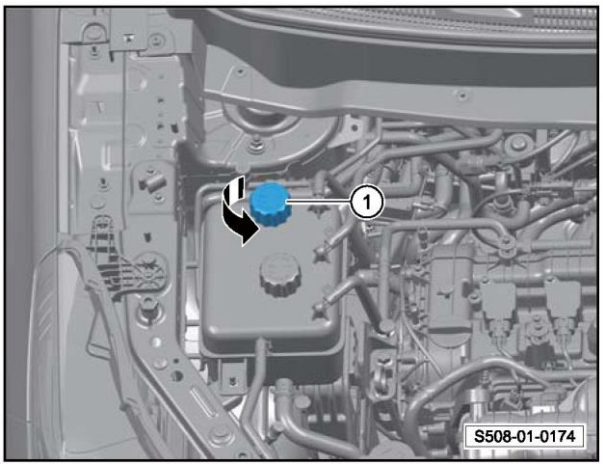
Tip:

Wait until the coolant completely cools down. Then discharge the coolant.

When the cover of expansion tank is opened, there will be hot steam flowing out. Take protective measures to avoid eye harm and skin scald. Cover the expansion tank cover with a piece of rag before open it, and then unscrew it carefully.

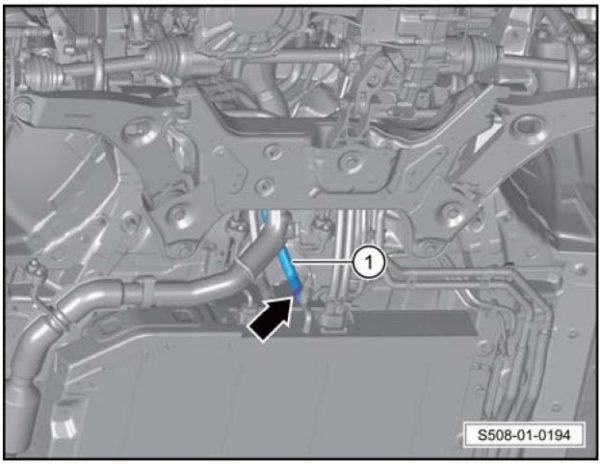
1 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

2 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)



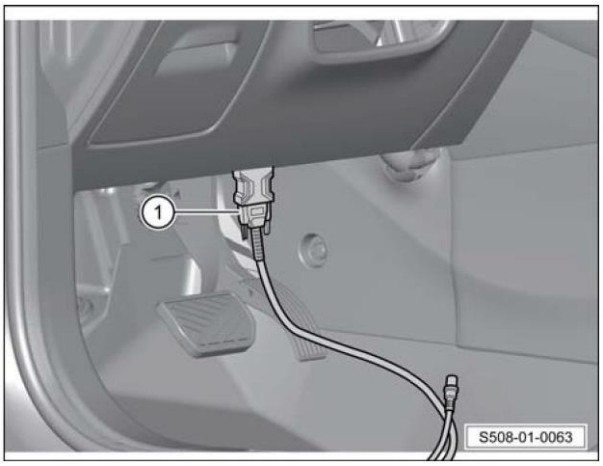
3 Drain the traction battery coolant

a. Unscrew the water reservoir water filling cover ① in the direction of (the arrow).



b. Place the coolant collection container at the bottom of the car.

c. Loosen the fixing clamp from battery pack connecting tube assembly ① to the battery pack assembly (see the arrow), and discharge coolant.



d. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

S508-01-0062

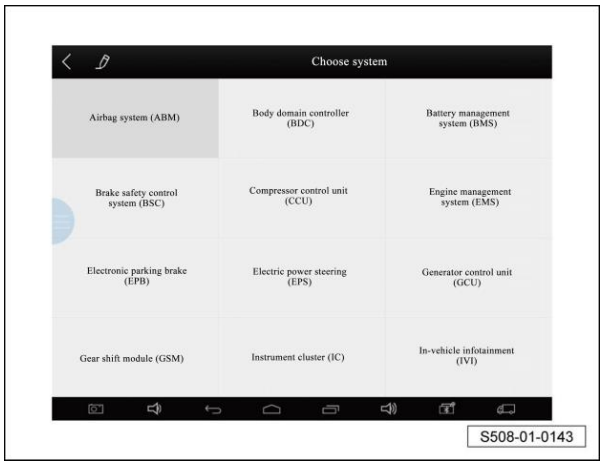
e. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

S508-01-0138

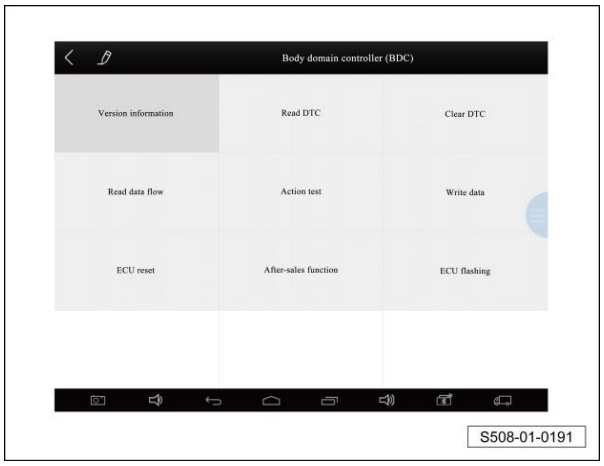
f. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

S508-01-0139

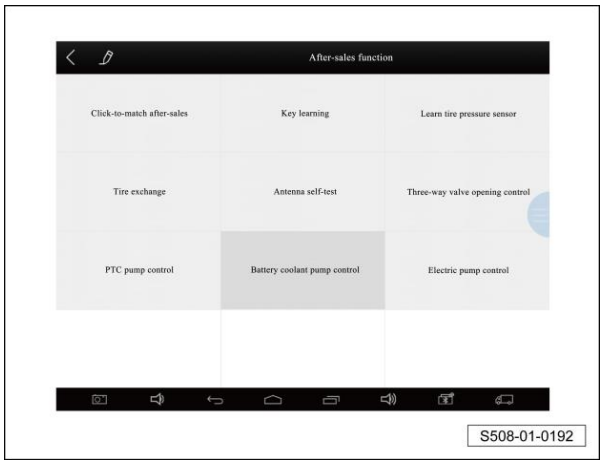
g. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.



h. Select "body domain controller (BDC)" on the "System Selection" sub-function interface and click to enter.



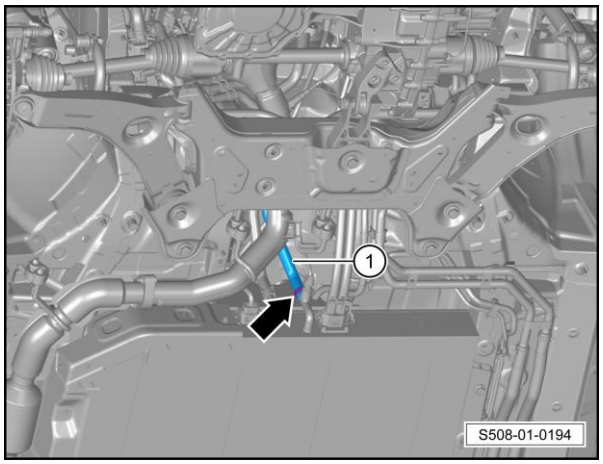
i. Select "After-sales Function" on the "body domain controller (BDC)" sub-function interface and click to enter.



j. Select "Battery Water Pump Control" on the "After-sales Function" sub-function interface and click to enter.

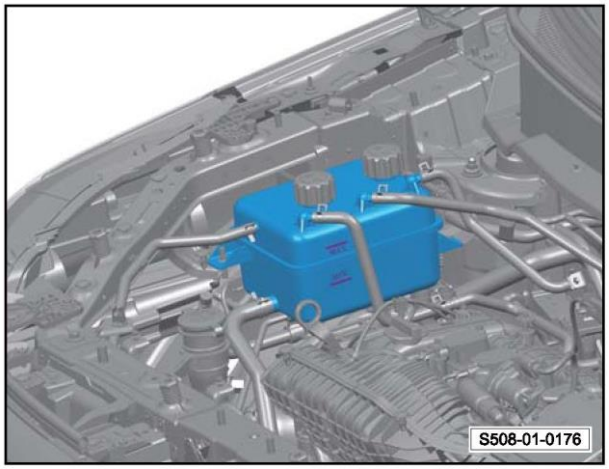
k. Select “PWM 60%” on the "Battery Pump Control" sub-function interface to run the battery pump.

l. After the battery coolant is discharged, select "Off" on the "Battery Pump Control" sub-function interface to put the battery pump out of operation.



m. Connect the battery pack connecting tube assembly ① to the battery pack assembly, and install the fixing clamp to the original position (see the arrow).

Filling procedure



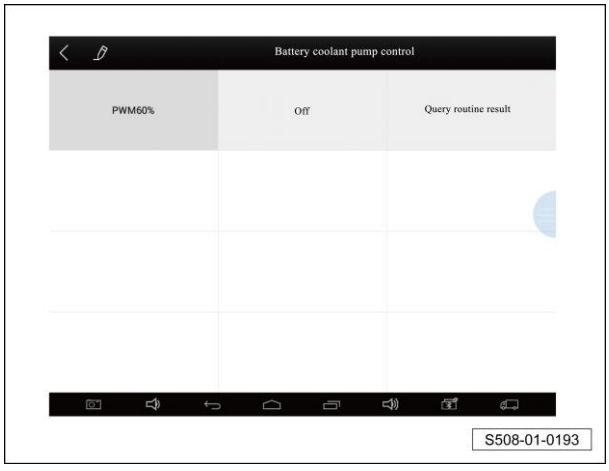
4 Coolant filling

a. Slowly fill the coolant until it reaches the "MAX" mark on the water reservoir.

b. Install water filling cover.

c. Connect the diagnostic scanner, select “PWM 60%” on the "Battery Pump Control" sub-function interface to run the battery pump.

d. Observe the coolant level, and fill coolant if necessary to between the -MAX- and -MIN-.



e. Observe the reflux pipe of the water reservoir, when there are no bubbles in the coolant from the reflux pipe, select "Off" on the "Battery Pump Control" sub-function interface to put the Battery pump out of operation.

Description

- Do not dilute the coolant at will.
- The coolant cannot be reused or mixed with other types of coolant. Also, it cannot be substituted with different colors of coolant.
- Coolant: FD-40 Filling amount: Vision (6.8L); Gotion (3.2L).
- The coolant can prevent frost, corrosion and scaling, as well as raising the boiling point. Therefore, the coolant must be refilled according to the standards.
- It is prohibited to use the coolant with phosphates or nitrates as preservative.
- In southern places with tropical climate, use the coolants of high boiling point.
- The proportion of additive and water in the

coolant should be at least 50%. Under the standard atmospheric pressure (101 kPa), the coolant boiling point is no less than 107°Cand the freezing point is no more than 35°C.

– The coolant must be recycled according to related national regulations.

1.4.3.48 Replacement of electric drive coolant

Discharging procedures

Tip:

Wait until the coolant completely cools down. Then discharge the coolant.

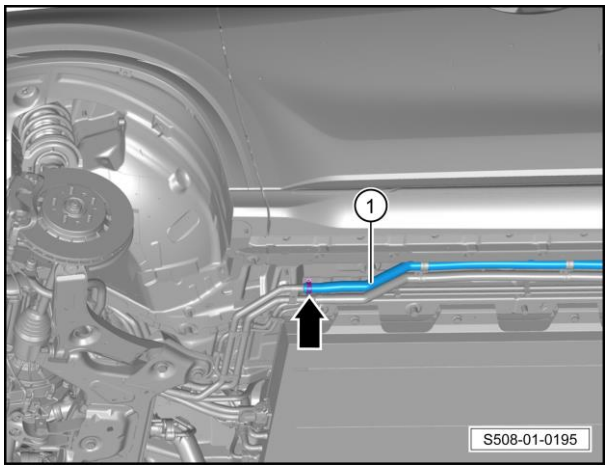
When the cover of expansion tank is opened, there will be hot steam flowing out. Take protective measures to avoid eye harm and skin scald. Cover the expansion tank cover with a piece of rag before open it, and then unscrew it carefully.

1 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

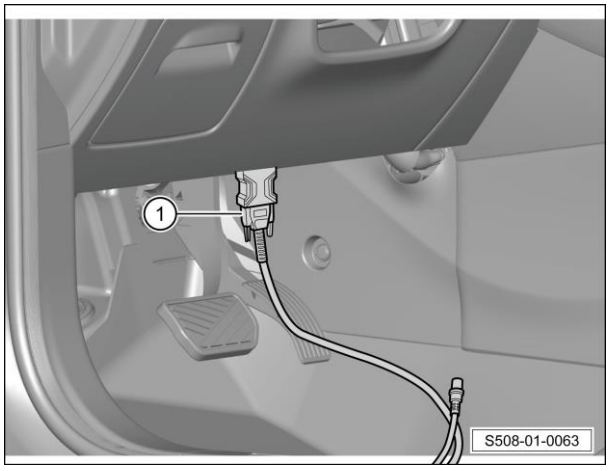
4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)



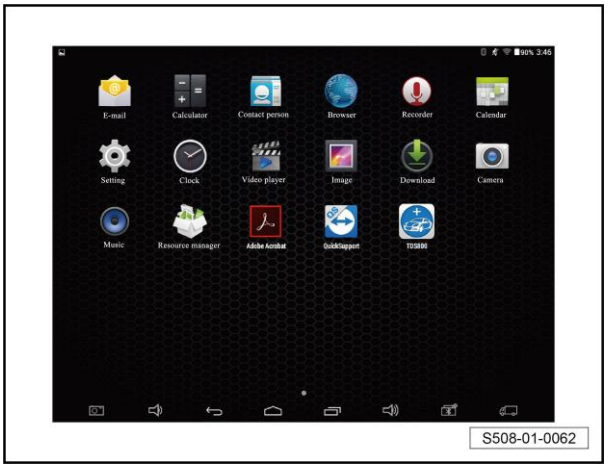
5 Drain the motor coolant

a. Place the coolant collection container at the bottom of the car.

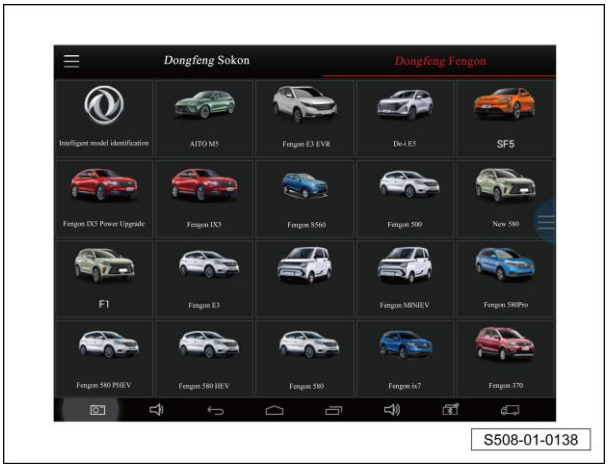
b. Loosen the clamp from the low-temperature water pipe component to DC-DC connecting water pipe assembly ① (see the arrow), and discharge coolant.



c. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

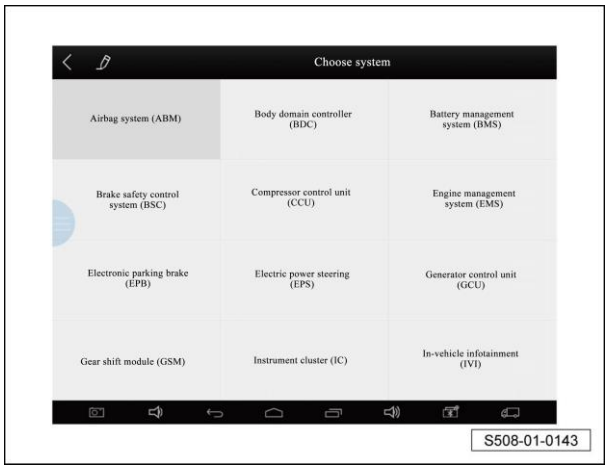


d. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

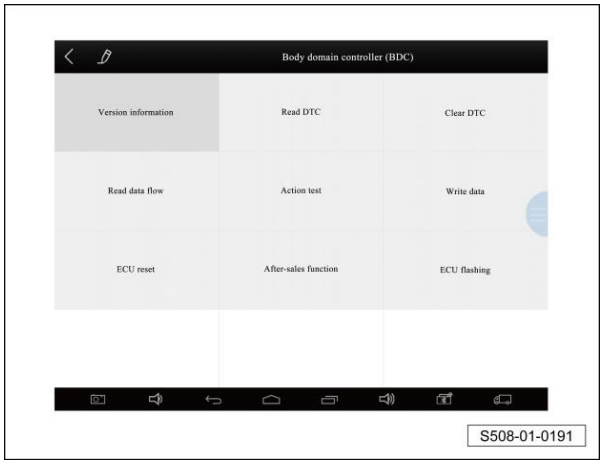


e. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

f. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.

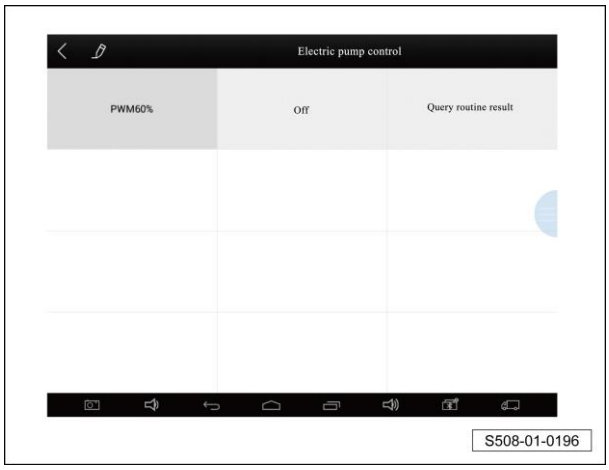


g. Select "body domain controller (BDC)" on the "System Selection" sub-function interface and click to enter.

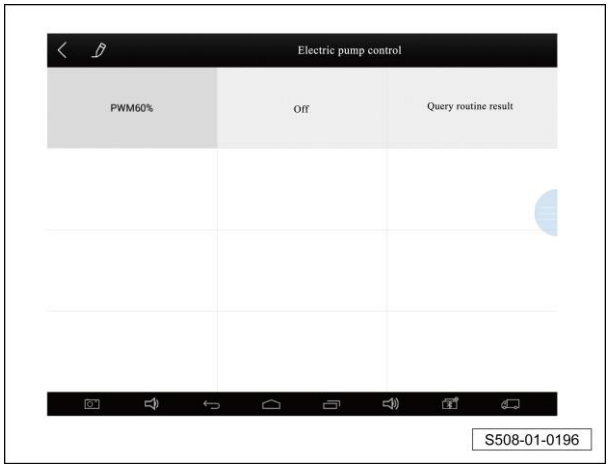


h. Select "After-sales Function" on the "body domain controller (BDC)" sub-function interface and click to enter.

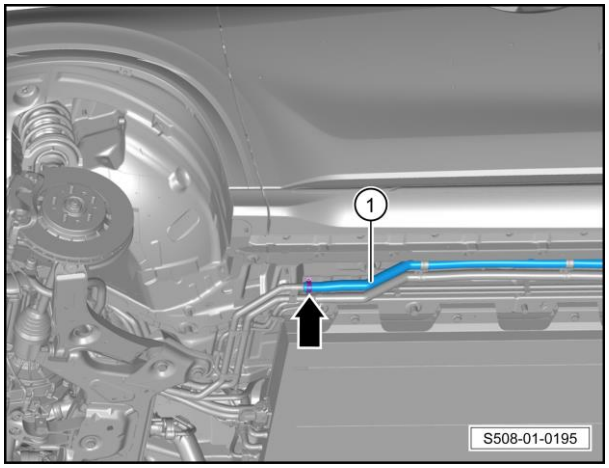
i. Select "Electric Control Pump Control" on the "After-sales Function" sub-function interface and click to enter.



j. Select “PWM 60%” on the "Electric Control Pump Control" sub-function interface to run the motor pump.

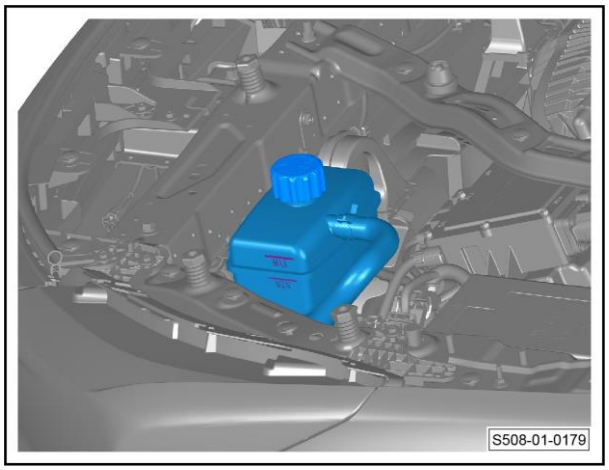


k. After the battery coolant is discharged, select "Off" on the "Electric Control Pump Control" sub-function interface to put the motor pump out of operation.



l. Connect the clamp from the low-temperature water pipe component to DC-DC connecting water pipe assembly ① (see the arrow), and install the fixing clamp to the original position.

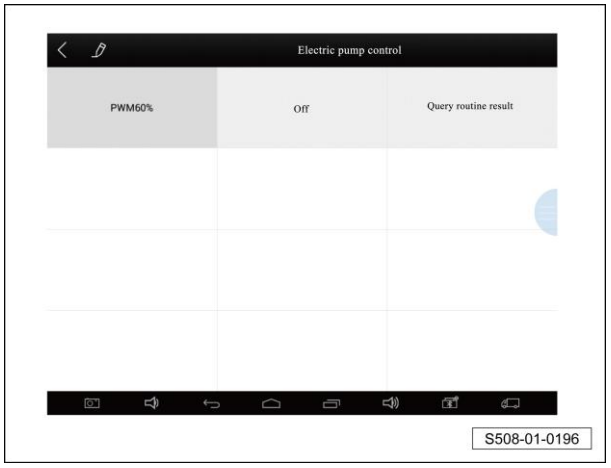
Filling procedure



6 Coolant filling

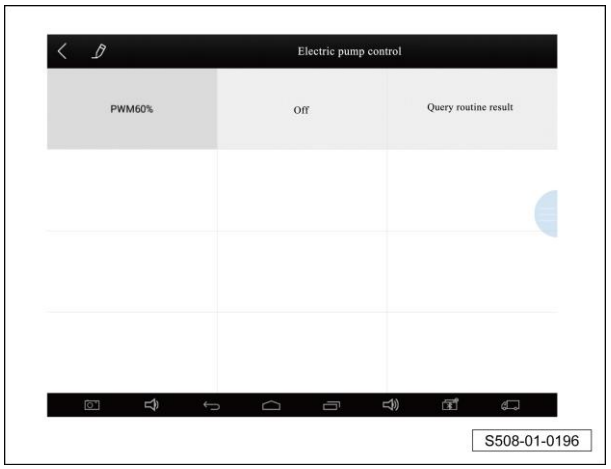
a. Slowly fill the coolant until it reaches the "MAX" mark on the water reservoir.

b. Install water filling cover.



c. Connect the diagnostic scanner, select “PWM 60%” on the "Electric Control Pump Control" sub-function interface to run the motor pump.

d. Observe the coolant level, and fill coolant if necessary to between the -MAX- and -MIN-.



e. Observe the reflux pipe of the water reservoir, when there are no bubbles in the coolant from the reflux pipe, select "Off" on the "Electric Control Pump Control" sub-function interface to put the motor pump out of operation.

Description

- Do not dilute the coolant at will.
- The coolant cannot be reused or mixed with other types of coolant. Also, it cannot be substituted with different colors of coolant.
- Coolant: FD-40, filling amount: 5.2L.
- The coolant can prevent frost, corrosion and scaling, as well as raising the boiling point. Therefore, the coolant must be refilled according to the standards.
- It is prohibited to use the coolant with phosphates or nitrates as preservative.
- In southern places with tropical climate, use the coolants of high boiling point.
- The proportion of additive and water in the

coolant should be at least 50%. Under the standard atmospheric pressure (101 kPa), the coolant boiling point is no less than 107°Cand the freezing point is no more than -35°C.

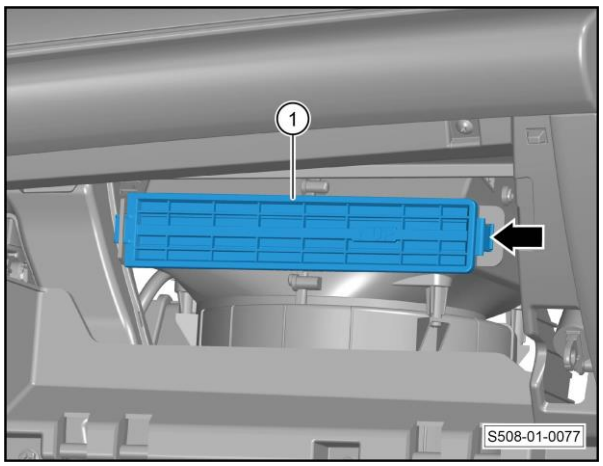
– The coolant must be recycled according to related national regulations.

1.4.3.49 Replacing A/C filter element

Disassembly procedures

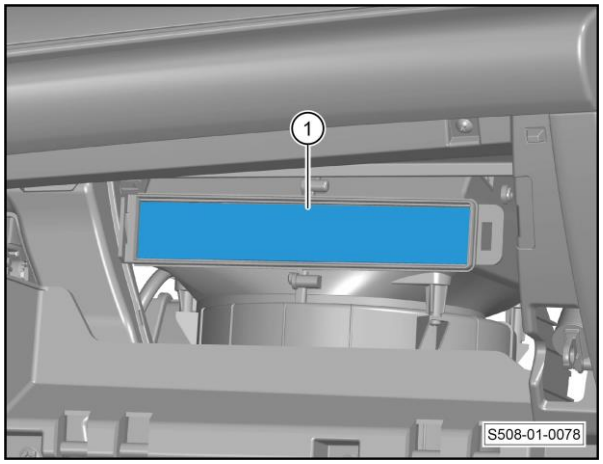
1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly



3 Remove the A/C filter element

a. Press the filter screen cover clip (see the arrow) and remove the filter screen cover ①.



b. Take out the A/C filter element ①.

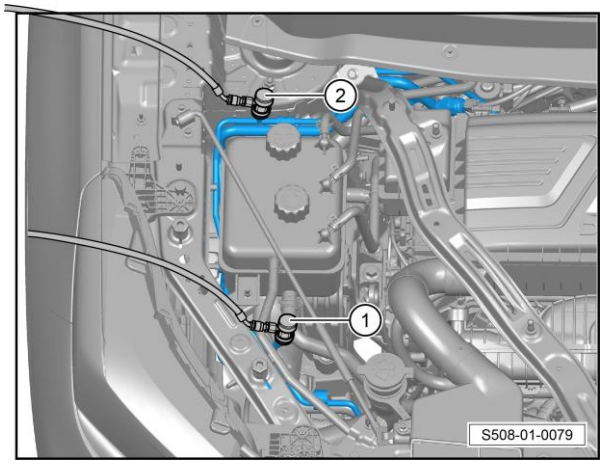
Installation procedures

The installation procedure is to be performed basically in the reverse order:

1.4.3.50 Refrigerant recovery and filling

1 Turn off all the electrical appliances and turn off the Start switch.

2 Switch on equipment power supply.



3 Refrigerant recovery

a. Connect the high and low pressure pipelines of the refrigeration circuit.

b. Turn on the appliance's low pressure valve switch ① and high pressure valve switch ②.

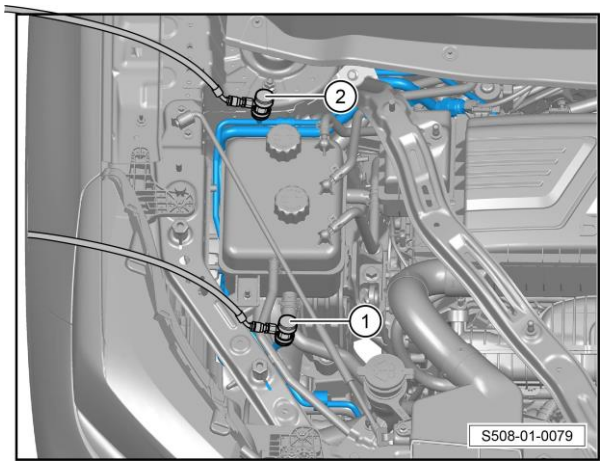
c. Select the "Refrigerant Recovery" option of the equipment, start the equipment and begin the recovery process.

d. Check the pressure value of the low pressure gauge of the equipment. When the pressure gauge reaches the vacuum degree of -34kPa, shut down the equipment and stop the recovery.

Tip:

Vacuumize the A/C system before filling the refrigerant.

Fill the refrigerant after adding the A/C compressor lubricating oil.



4 Fill refrigerant

a. Select the "Adding refrigerant" option, and adjust the filling amount.

b. Turn on the low pressure valve switch ①, turn off the high pressure valve switch ②, and start the appliance to fill the refrigerant.

c. Observe the equipment display. When the filling amount has reached the set value, the equipment screen will indicate that the refilling is complete.

d. Switch off the valve to complete the refilling.

Please fill the refrigerant according to the standards below.

Refrigerant type	Refrigerant filling amount
R134a	580±20g

If the appliance indicates slow filling speed, refer to the following filling methods

– Disconnect the high pressure joint of refrigerating circuit and only connect the low pressure end.

– Close the appliance's high and low pressure

valves.

– Shift the vehicle to the P gear. Start the vehicle, turn on the A/C and set the A/C to the low temperature mode.

– Open the appliance's low pressure valve to let the refrigerant flow into the refrigerant pipeline via the low pressure end.

– When the pressure gauge displays that the pressure has reached the standard value, disconnect the joint of the low-pressure end.

– Refrigerant refilling is finished.

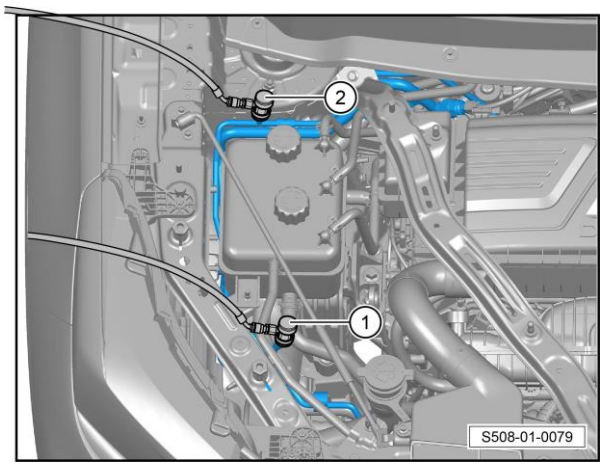
1.4.3.51 Recycling/filling compressor lubricating oil

Tip:

Discharge the A/C compressor lubricating oil only after refrigerant recycling is completed.

Recycle and dispose the waste lubricating oil and refrigerant according to related regulations.

Empty the filling machine oil collection bottle.



1 Discharge compressor lubricating oil

a. Connect the high and low pressure pipelines of the refrigeration circuit.

b. Turn on the appliance's low pressure valve switch ① and high pressure valve switch ②.

c. Turn on the start appliance of engine oil discharge valve on the control panel of the A/C refrigerant filling machine, and check if the A/C compressor lubricating oil is discharged into the collection bottle.

d. After the A/C compressor lubricating oil is discharged, stop discharging and close the engine oil discharge valve.

e. Inspect the collection bottle and record the oil amount.

Add compressor lubricating oil

Tip:

Add compressor lubricating oil after the refrigeration system is vacuumized.

Install the filling bottle, and add compressor lubricating oil according to the standards

- When replacing the A/C components with new ones, estimate the volume of oil in each original component, and add oil as per such volume.
- Addition of compressor lubricating oil
-

Replaced item	Lubricating oil to be added (ml)
Evaporator	34
Condenser	34
Pipeline	12

- Compressor lubricating oil model: **POE**
- If it is inevitable to release refrigerant for engine removal and installation or other reasons, and there is no refrigerant recycling machine, 20~30 mL compressor lubricating oil may be supplemented

appropriately. There is no need to supplement compressor lubricating oil if only refrigerant is supplemented.

– Connect the high and low pressure pipelines of the refrigeration circuit, and open the high pressure valve of the equipment and turn on the compressor lubricating oil refilling switch.

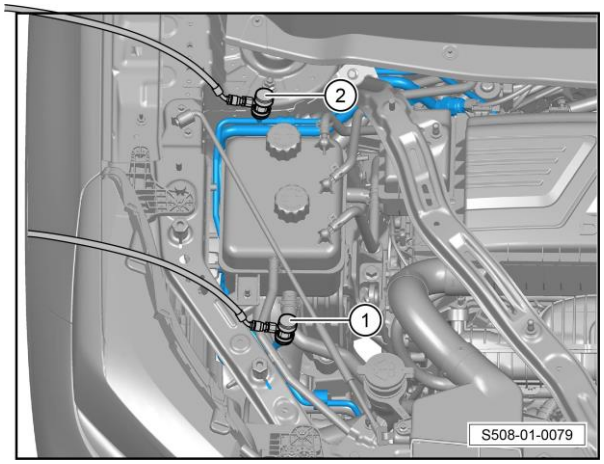
– Start the A/C refrigerant refiller and observe the height of the oil level in the refilling bottle until the required amount of oil is reached.

– Close the high pressure valve.

1.4.3.52 A/C system vacuumization

Tip:

After the refrigerant is recovered, vacuumize the A/C system.



1 A/C system vacuumization

a. Connect the high and low pressure pipelines of the refrigeration circuit.

b. Open the appliance's low pressure valve ① and high pressure valve ②, select "Vacuumizing" option, and set the time to 15 minutes. Start the appliance to vacuumize; when the time reaches the set value, the appliance stops automatically.

c. Close the high pressure valve ② and check the pressure value on the low pressure gauge.

d. If the pressure reaches the set value and does not increase again after a while, it means that the refrigerant circuit has no leakage, and the compressor lubricant and refrigerant can now be added.

e. If the pressure rises, check the cooling circuit for leakage.

1.4.3.53 Bleeding of brake system

Bleeding Procedure

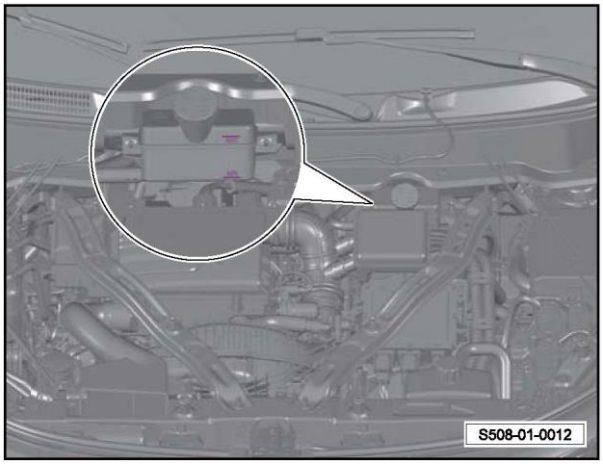
Tip:

Only the brake fluid approved by GAC MOTOR can be used. Other brake fluids may lead to corrosion and shorten the service life the brake system.

Make sure the brake fluid is not contaminated.

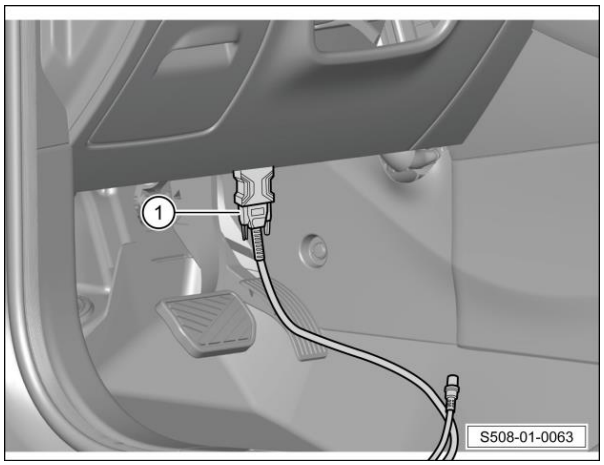
Never spill the brake fluid on the vehicle, as it will damage the paint. If the brake fluid is splashed on the paint, clean it with water immediately.

The brake fluid level in the tank must at the MAX (the highest level) line before exhaust. Every brake caliper must be checked for leakage after exhaust.

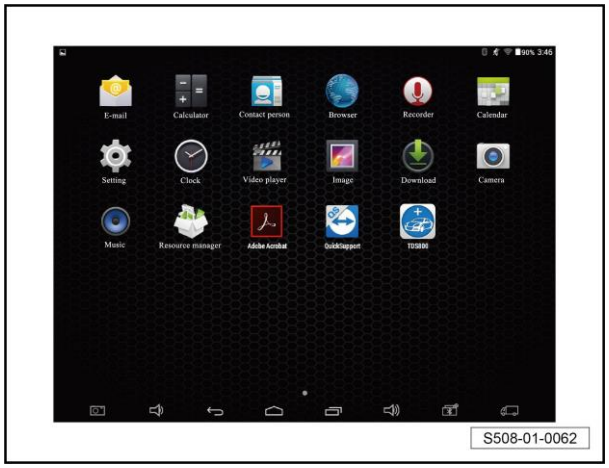


1 Bleed the brake system

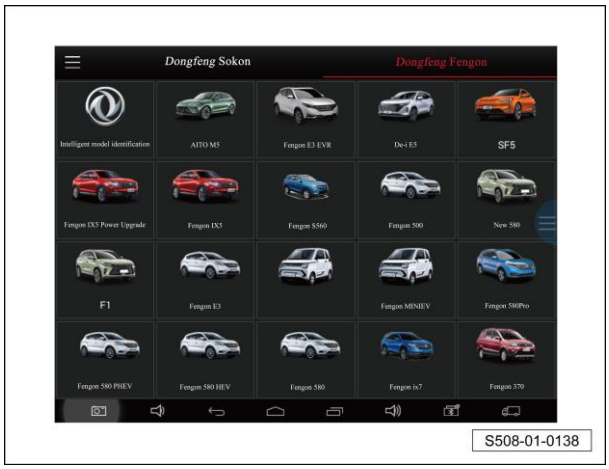
a. Confirm that the brake fluid level in the tank reaches the MAX (highest) line.



b. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

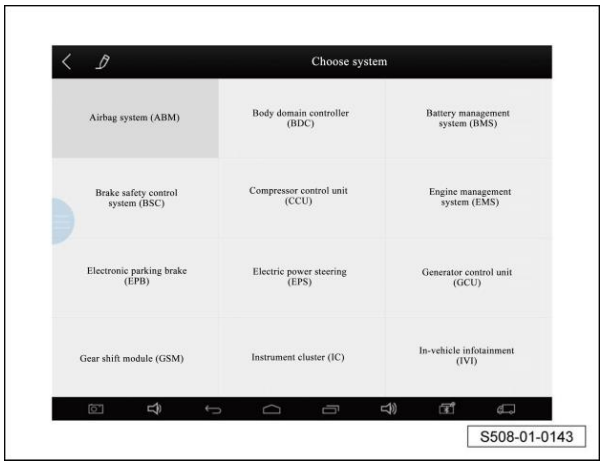


c. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

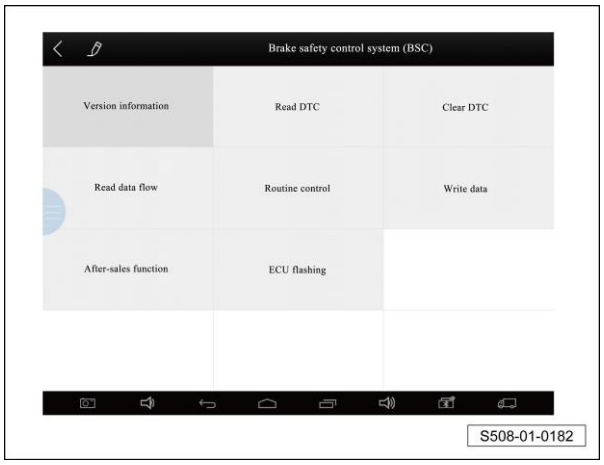


d. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

e. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.

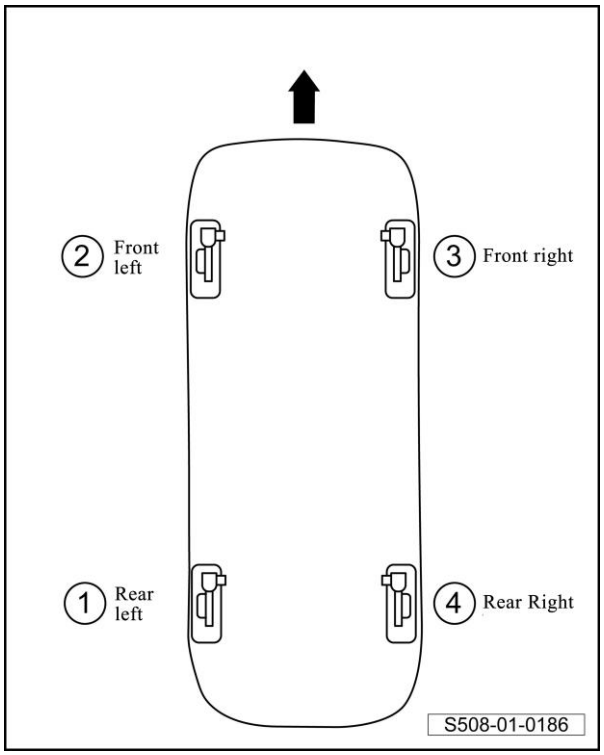


f. Select "Brake Safety Control System (BSC)" on the "System Selection" sub-function interface, and click to enter.

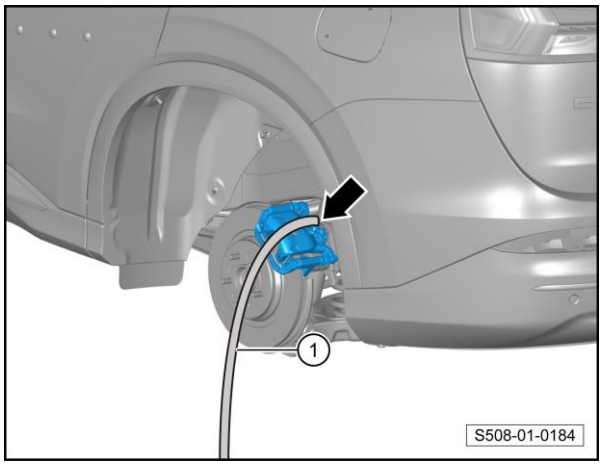


g. Select "After-sales Function" on the "Brake Safety Control System (BSC)" sub-function interface, and click to enter.

h. Select "Click-to-Match After-sales" on the "After-sales Function" sub-function interface and click to enter.



i. According to the order of ① to ④ in the figure, select the corresponding wheel turn on the "One-key After-sales Matching" sub-function interface for exhaust.



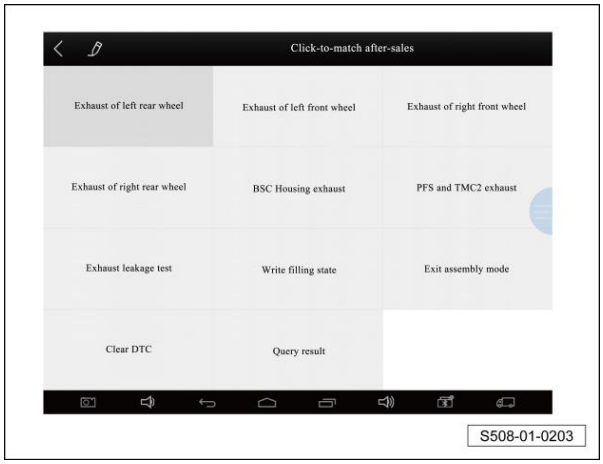
Tip:

Take the exhaust of the rear left wheel as an example, the other three wheels have similar exhaust operation

j. Lift up the vehicle.

k. Remove the brake caliper seal cap of the rear left wheel, and install the container ①.

l. Loosen the exhaust bolt of the rear left wheel brake caliper (see the arrow).



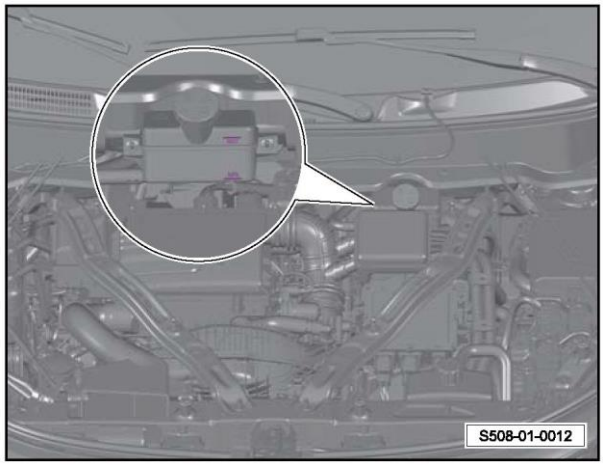
m. Select "Rear Left Wheel Exhaust" on the "One-key After-sales Matching" sub-function interface, and click to exhaust the rear left wheel, tighten the exhaust bolt after completion of exhaust (prompt will be given by the diagnosis equipment).

Tip:

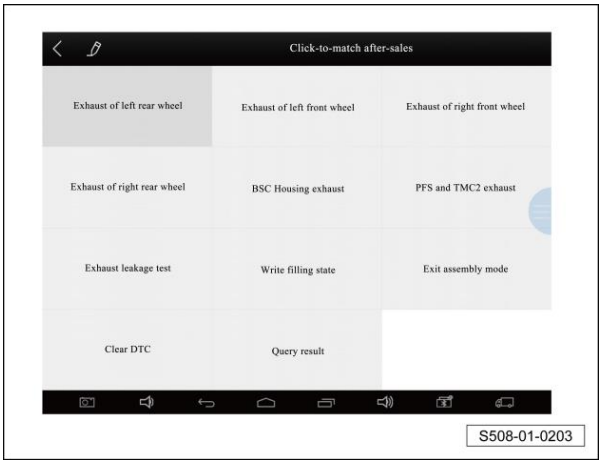
If there are still bubbles in the brake fluid from the exhaust port before completion of exhaust, it indicates that the air in the brake pipe of the wheel is not completely discharged. It is necessary to carry out exhaust of the wheel again.

Notes

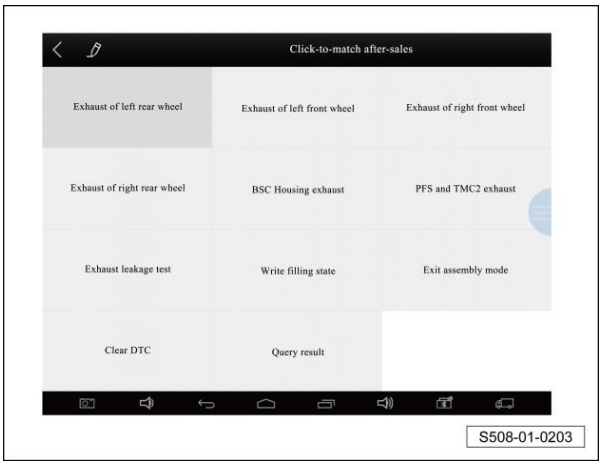
During exhausting, note that the brake fluid in reservoir shall not be lower than the "MIN" (minimum) mark.



n. Fill the brake fluid to the MAX (highest) line, and tighten the fluid reservoir cap.



o. Select "BSC Housing Exhaust" on the "One-key After-sales Matching" sub-function interface, and click to carry out BSC Housing exhaust, and wait for the completion of exhaust (prompt will be given by the diagnosis equipment).



p. Select "PFS and TMC2 Exhaust" on the "One-key After-sales Matching" sub-function interface, and click to carry out PFS and TMC2 exhaust.

q. Push the brake pedal in the frequency of once per 2s till completion of exhaust (prompt will be given by the diagnosis equipment).

r. Select "Exhaust Leakage Test" on the "One-key After-sales Matching" sub-function interface, and click to enter.

s. If the diagnosis equipment displays "torque and position limit reached", it indicates that the air in the brake safety control system has been effectively emptied, if not, carry out exhaust operation again.

t. After the leak test is calibrated successfully, there will be a prompt of "successful execution" after selecting "write filling state" on the "One-key After-sales Matching" sub-function interface.

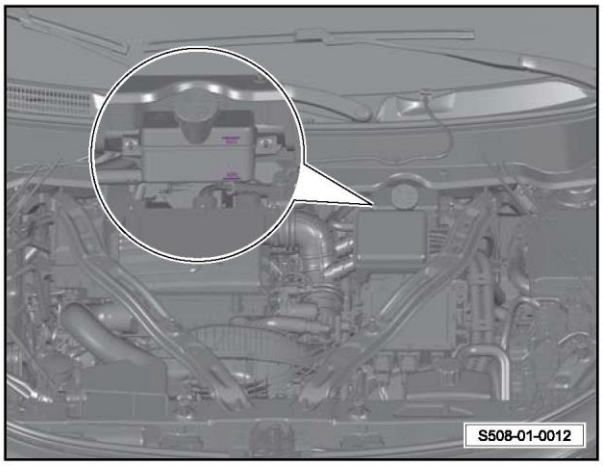
Tip:

If the filling state is not written, the brake safety system only provides mechanical braking function without electric power braking.

u. Select "Exit Assembly Mode" on the "One-key After-sales Matching" sub-function interface.

v. Select "Clear DTC" on the "One-key After-sales Matching" sub-function interface to clear DTC.

w. Select "Query Results" on the "One-key After-sales Matching" sub-function interface to query the exhaust results and confirm whether the operation is successful. If not, carry out the exhaust process again.



x. Check and fill brake fluid between the levels MIN (lowest) and MAX (highest) marks of the fluid reservoir.

Tip:

After the exhaust operation is completed, it is necessary to perform a clear DTC operation and sensor learning, and read the DTC again to confirm that the BSC is free of fault, and the exhaust work will not be completed until the ABS/ESP fault light of the instrument is turned off.

1.4.3.54 Lubrication of door lock

Lubricating procedure

1 Lubrication of door lock

a. Apply lubricating grease on the door lock (see the arrow).

1.4.3.55 Adjusting conditions of front combination light

Adjusting conditions of front combination light

- The tire inflation pressure is normal.
- There is no damage to or dirt on the headlight shade.
- The reflector and the bulb are normal.
- Drive the vehicle for a short distance. Compress the front and rear suspensions for several times to adjust the suspensions into place.
- The vehicle load must be added.

  Load: it is regarded as unloaded (empty weight) if there is only a person or material of 75kg on the driver seat.
- If the filled fuel is less than 90%, load the car according to the following steps:
  - Read the fuel level in the fuel tank via the fuel gauge.
  - Calculate the additional weight according to the table below, and then place the load into the trunk.

Additional weight:

Fuel level indicated by fuel gauge	Additional weight (kg)
1/4	30
1/2	20
3/4	10
Full	0

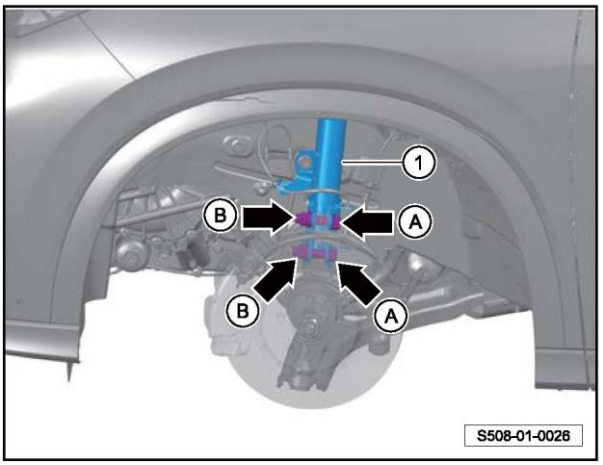
For example:

- When the fuel tank is filled to the half, additional 20kg weight must be loaded on the trunk.
- Car equipped with gas discharge light and headlight automatic adjustment
- If the car is equipped with gas discharge headlight, check the fault memory with car diagnostic apparatus before adjusting the headlight each time.
- Delete the fault memory, and set the headlight automatic adjustment to the basic setting.

1.4.3.56 Tightening chassis bolts

Tightening procedure

1 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

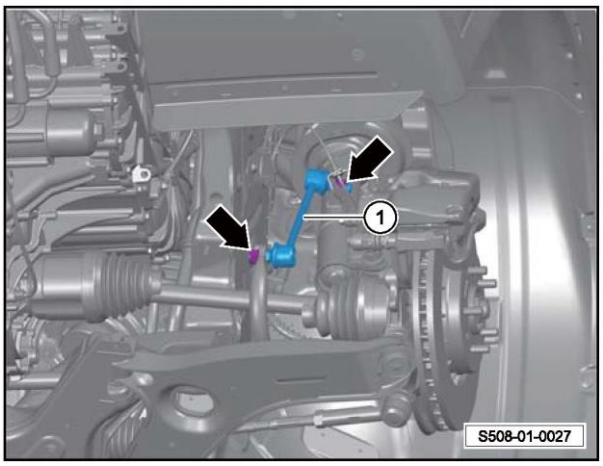


2 Tightening Chassis Bolts

a. Tighten the fixing bolt of the front damper assembly ① and the steering knuckle assembly (see arrow A).

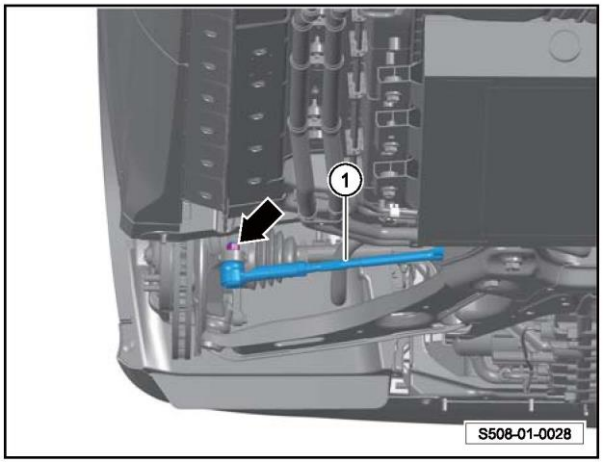
b. Tighten the fixing nut of the front damper assembly ① and the steering knuckle assembly (see arrow B).

- Tightening torque of bolt/nut: **300±15N·m**



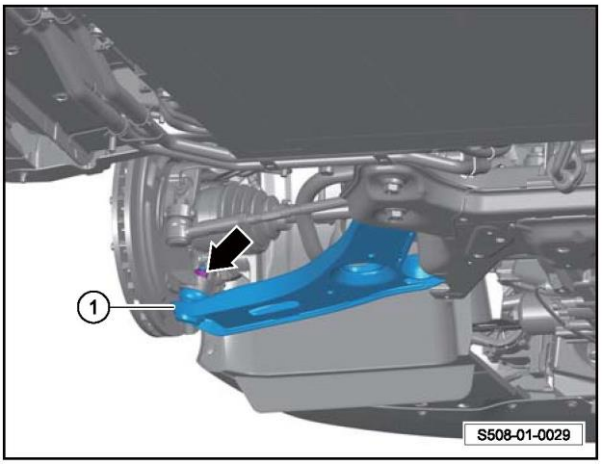
c. Tighten the nuts (see the arrows) fixing the front stabilizer bar joint assembly ①.

- Tightening torque of nut: 100±5 N·m



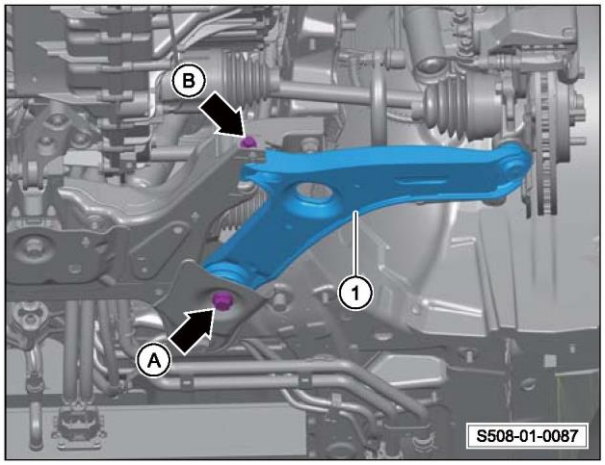
d. Tighten the fixing nut of the outer tie rod and ball joint assembly ① and the front steering knuckle (see the arrow).

- Tightening torque of nut: 60±6 N·m



e. Tighten the nuts (see the arrows) fixing the front swing arm assembly ① to the front steering knuckle.

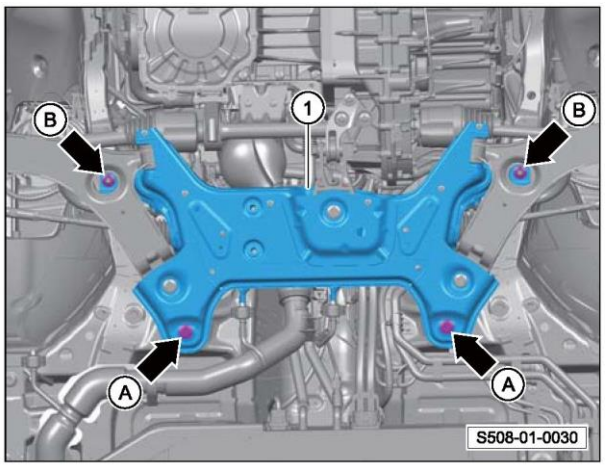
- Tightening torque of nut: **90±5 N·m**



f. Tighten the fixing bolt/nut of the front swing arm assembly ① and the subframe welding assembly (see arrow A).

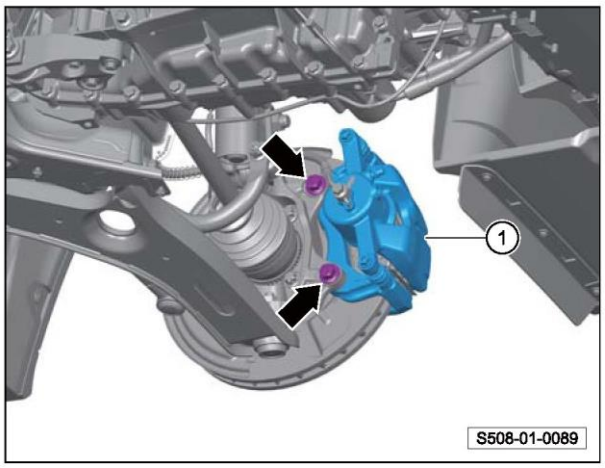
g. Tighten the fixing bolt of the front swing arm assembly ① and the subframe welding assembly (see arrow B).

- Tightening torque of bolt/nut (see arrow A): 200±10 N·m
- Tightening torque of bolt (see arrow B): 140±7 N·m



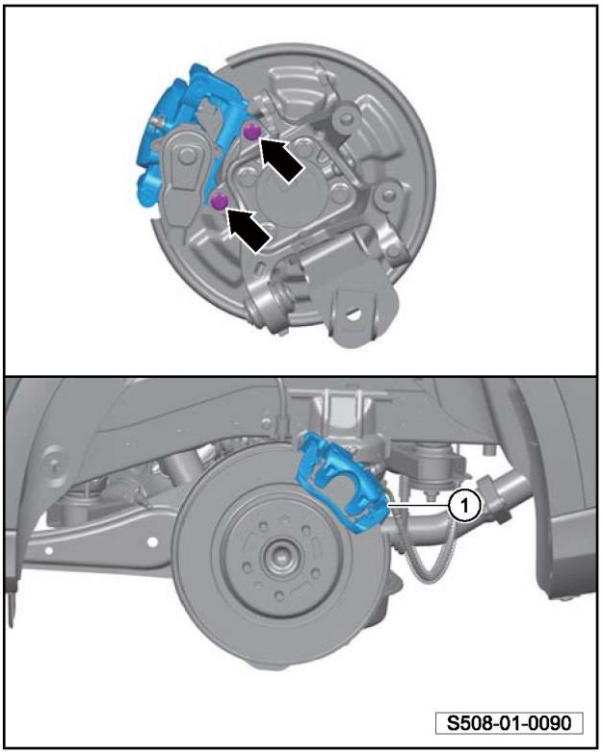
h. Tighten the fixing bolts (see arrows A) and nuts (see arrows B) connecting the front subframe ① to the body.

- Tightening torque of bolt (see arrows A): 200±10 N·m
- Tightening torque of nut (see arrow B): 200±10N·m



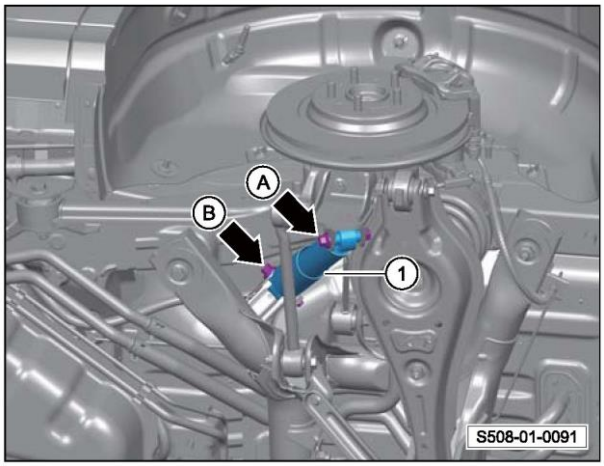
i. Tighten the fixing bolts (see the arrows) of front brake caliper ① bracket.

- Tightening torque of bolt: **160±15 N·m**



j. Tighten the fixing bolts (see arrows) of the rear caliper bracket ①.

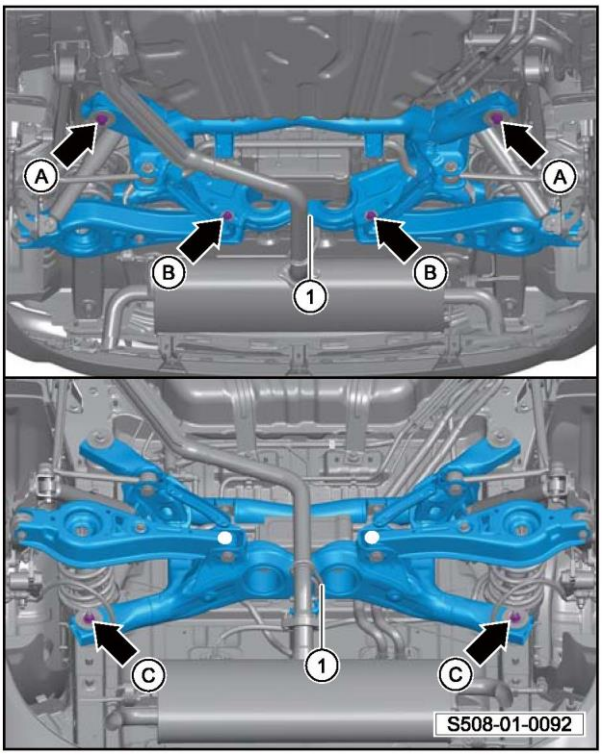
- Tightening torque of bolt: **70±5 N·m**



k. Tighten the fixing bolt/nut of the rear damper assembly ① (see arrow A).

l. Tighten the fixing bolts (see the arrow B) of the rear shock absorber assembly ①.

- Tightening torque of bolt/nut (see arrows A): 110±6 N·m
- Tightening torque of bolt (see arrow B): 110±6Nm

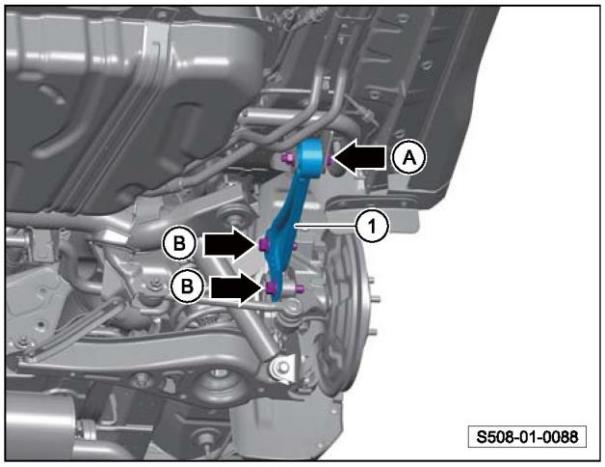


m. Tighten the fixing bolt connecting the rear subframe assembly ① to the body (see arrow A).

n. Tighten the fixing nut of the rear subframe assembly ① and the rear lower swing arm (see arrow B).

o. Tighten the fixing nut connecting the rear subframe assembly ① to the body (see arrow C).

- Tightening torque of bolt (see arrows A): 200±10 N·m
- Tightening torque of nut (see arrow **B**): **130±5 N·m**
- Tightening torque of nut (see arrow C): 200±10 N·m



p. Tighten the fixing bolt/nut of the rear longitudinal swing arm and the body (see arrow A).

q. Tighten the fixing bolt of the rear subframe assembly ① and the body (see arrow B).

- Tightening torque of bolt/nut (see arrow A): 200±10 N·m
- Tightening torque of bolt (see arrow **B**): **300±15 N·m**

1.4.3.57 Test drive

The items below are depended on the vehicle configurations and road conditions (urban/rural).

Assess the following items during the trial run:

- Normal temperature of the drive motor and the power battery.
- Engine: power, idling status, acceleration and warm start condition
- Transmission: position of gearshift lever, shift performance
- Service brake: function, free stroke, effect, brake distance, run-out and brake noise
- Steering system: function, steering clearance; the steering wheel must be centered when running along a straight line
- Radio and navigation system: function, receiving and interference
- A/C: function test at low temperature
- Wheel: off track when running straight on even road
- Unbalance: wheel and drive shaft
- Wheel bearing: noise
- Seat belt: operation conditions of automatic retractor
- Instrument cluster: operation conditions of all instruments

1.5 Health and safety

1.5.1 Description and operation

1.5.1.1 Description

Many of the operations related to vehicle maintenance and repair could affect personal safety or health. This section lists some dangerous operations, materials and equipment, as well as the safety rules to avoid such hazards.

Not all matters related to health and safety are covered in this Section, so all operations and procedures and material handling shall be carried out in a safe and healthy manner. Check the product instruction manual provided by the manufacturer or supplier before using any of the products.

1.5.1.2 Acids and alkalis

Refer to 1.5.1.7 Battery acid.

Examples are corrosive sodium carbonate, sulfuric acid. They are suitable for the cleaning of batteries and other materials.

Acids and alkalis are irritant or erosive to eyes, skin, smell and throat, and they may cause burns to human body and damage ordinary protective clothing.

Avoid splashing acids and alkalis into eyes and onto skin and clothes. Wear appropriate protective clothing, gloves and goggles, and avoid inhaling the spray of them.

Flushing installations (e.g., eye rinsing bottles and soap) must be provided nearby for timely rescue in case of splashing events.

Set up eye hazard signs in conspicuous locations.

1.5.1.3 Airbag

Refer to 1.5.1.9 Chemical materials and Refer to 1.5.1.14 Fire.

The airbags are installed in the steering wheel, front passenger seat back, passenger front instrument panel, columns B and C as an auxiliary safety system.

Each airbag expander contains a high-energy propellant, which can produce extremely high-temperature gas (with a temperature of 2500 °C/4532 °F) if ignited.

This propellant is stored in a sealed airbag module and the gas will fill the entire airbag when the airbag deploys. It is prohibited to open the airbag during maintenance, because it will lead to contact with the propellant and endanger the operator. If the gas generator is found broken, wear full-protective clothing when dealing with the overflow material.

Wear safety goggles and gloves during repair after the airbag is normally deployed.

Deployed airbags should be disposed of in accordance with the relevant local laws and regulations.

After direct contact with gas derivatives, be sure to:

- Flush the contact part with clean water thoroughly
- Seek for medical assistance as appropriate.

Airbag - operations to be performed

For your safety, please wear protective equipment before performing the following operations. When removing an airbag, ensure to set the start switch at “OFF”, and disconnect the battery negative

terminal and wait for 90s before disassembly.

- Store the airbag assembly upright.
- Keep the airbag module dry during storage.
- When handling the airbag module, be careful not to touch the electrodes with your hands and keep the airbag as far away from your body as possible.
- Place the airbag module with its protective cover facing upwards.
- Check carefully whether the airbag module is damaged.
- When connecting the airbag, disconnect the battery negative terminal first and stand on the side of the airbag assembly after 90s.
- Correct and maintain all equipment accurately.
- Be sure to wash hands after handling a deployed airbag.

Airbag - Operations to Be Avoided

- Do not store flammable materials with the assembly and gas generator.
- Do not immerse the airbag assembly in water or contact it with other liquids.
- Do not store the gas generator at the place with a temperature higher than 80ºC/176ºF.
- Do not store the assembly upside down.
- Do not attempt to open the gas generator enclosure.
- Do not expose the gas generator to open flames or heat sources.
- Do not place other items on the assembly cover.
- Do not use any damaged assembly.
- Do not touch the airbag module or gas generator within 10 min after the airbag module is deployed.
- Do not use any electrical probes on the circuit.

1.5.1.4 A/C refrigerant

Skin exposure to refrigerant may lead to cold injury.

Follow the instructions from the manufacturer and wear appropriate goggles and gloves.

If the skin or eyes come into contact with any refrigerant, rinse the area immediately with water, Flush the eyes with an appropriate flushing solution, but do not rub them. Seek medical assistance as needed.

A/C Refrigerant - Operations to Be Avoided

- Do not store the refrigerant in exposure to sunlight or heat source.
- During charging, do not put the refrigerant cylinder upright, but keep the valve facing down.
- Do not expose the refrigerant cylinder to frost and snow.
- The refrigerant cylinder must not fall.
- Do not directly discharge the refrigerant into the atmosphere under any circumstance.

- Do not mix refrigerants, such as R12 (dichlorodifluoromethane) and R134a (tetrafluoroethane).

1.5.1.5 Adhesives and sealants

Caution About Use of Adhesives and Sealants

Before any adhesive/sealant is used, clean the area to be applied with such material and wipe the area with special washer so as not to affect the bonding effect. When applying, do not let room temperature-cured sealant enter the tapped blind hole. If room temperature-cured sealant enters the tapped blind hole, the fastener will be hydraulically locked when it is tightened. Hydraulic locking of the fastener will cause damage to the fastener and other components, and failure to reach a proper clamp force during tightening. An improper clamp force may lead to leakage due to improper sealing. If the fastener fails to be tightened properly, components will get loose or disengaged, causing serious damage to the engine.

Health and safety

Materials adopted for adhesives/sealants contain hazardous substances, and long-term contact with it will cause acute and chronic poisoning, occupational diseases, skin diseases and other diseases. Use ventilation devices to maintain the ventilation of the workplace when applying the adhesive/sealant. Wear protective gloves, masks and protective clothing during operation. After the work, wash your hands carefully and keep the workplace clean, tidy and hygienic.

- Wastes contaminated by waste rubber or solvent should be cleared away in time, and long-term accumulation of them is not allowed.
- Store the products in a non-smoking are. Keep hygienic and use an applicator or container as far as possible during operation.

Maintenance of Adhesive/Sealant

- Generally, vehicle faults or accidents will lead to body deformation, steel plate cracking, welding joint falling off, local damage to engine, chassis and other parts assembled, and falling-off of and damage to adhesive/sealant. During vehicle maintenance, select the adhesive of the same performance based on the material and function requirements of the component. A list of adhesives/sealants which may be used during maintenance of the vehicle is provided below for your selection.

Body Repair

After the body interior and steel plate are cracked or deformed, the adhesive applied on the body may fall off or break. It is required to repair the part with adhesive during maintenance.

- Remove the adhesive on the surface of the body with a tool first and clean the remaining adhesive with alcohol.
- Wipe the area covered by adhesive with a special cleaning agent to avoid residual impurities such as adhesive remaining on the surface to be applied with new adhesive.
- Apply the adhesive for repair on the affected location for bonding and sealing.

Maintenance of parts and components

Part of interior components or reducer damaged should be bonded and sealed with adhesives. When applying sealant, clean the area to be bonded to prevent burrs and cracks from affecting the bonding effect.

Construction Precautions

- The adhesive/sealant is designed to prevent water and dust entering the vehicle and prevent corrosion. Original sealed joints are obvious. If these seals are damaged, they should be resealed. When sealing an open seam with an adhesive/sealant, use a high-consistency filler. Follow the instructions for the selected material.
- When applying any adhesive/sealant, take preventive measures to prevent such materials entering the component openings (such as lock, window channel, window regulator and seat belt retractors) and other movable and rotatory components. After applying adhesive/sealant, ensure that all bleeding holes on the body are opened.
- Wear goggles and gloves to prevent injury during operation.
- When the vehicle leaves the factory, all metal plates of the vehicle body have been subject to coating treatment. After overhaul and replacement of parts, all exposed metal surfaces must be treated with anti-rust primer for glue spreading.
- After maintenance by applying adhesive/sealant, it is required to dry some adhesive/sealant for curing under the drying conditions of (70 - 80)°C and for 20-30 min.

1.5.1.6 Coolant of drive motor and HV appliance assembly

When the coolant of the drive motor and HV appliance assembly is heated to high temperature, it may produce steam, which shall be avoided from inhalation as far as possible.

After direct contact with the coolant of the drive motor and HV appliance assembly, the coolant dose of the drive motor and HV appliance assembly directly absorbed by the skin may reach toxic or harmful dose. Anyone mistakenly drink the coolant of the drive motor and HV appliance assembly may have life endangered, and shall be sent to the hospital for medical assistance immediately.

This kind of products should never be handled with food or connected to drinking water system.

1.5.1.7 Battery acid

The gas released during battery charging is explosive. Do not carry out any open fire operation near the charged battery or the battery that has been charged recently. Keep the environment well-ventilated.

1.5.1.8 Brake fluid

The brake fluid is a little irritating to eyes and skin. Avoid direct contact of the brake fluid with skin and eyes as far as possible. It is not very risky to inhaled brake fluid vapor at room temperature because the vapor pressure is very low.

1.5.1.9 Chemical materials

Be careful to use, store and handle such chemical materials as solvent, sealant, adhesive, coating, resin foam, battery acid, engine coolant, brake fluid, and lubricating oil and grease. They may be toxic, harmful, corrosive, irritant or highly flammable, and have highly dangerous odor and dust.

Long-term overexposure to chemicals may lead to immediate or chronic, temporary or permanent, cumulative or superficial, or life-threatening effect or it may affect the life span.

Chemical Materials - Operations to Be Executed

- Carefully read and abide by all warnings and notes on raw material containers, and any attached leaflets, posters or other instructions for use. The health and safety data sheets of raw materials

may be obtained from relevant manufacturers.

- After contact with any chemical material, remove it from the skin and clothing as soon as possible. Take off and thoroughly wash the sodden clothes immediately.
- Strictly follow the working instructions and wear protective clothing to prevent chemical materials from directly contacting with skin and eyes.
- Be sure to wash hands before taking a rest, eating, smoking or using toilet facilities during the handling of chemical materials.
- Keep the working area clean and tidy and do not spill chemical materials.

Chemical Materials - Operations to Be Avoided

- Unless otherwise specified by the manufacturer, do not mix chemical materials at will. Some chemical substances can form into other toxic or harmful ones, which may release other toxic or harmful gases and may lead to explosion or other accidents once they are mixed.
- Do not spray any chemical material in a closed environment.
- Do not heat chemical materials unless otherwise stated by their manufacturers, because some chemical materials are highly flammable, while others may release toxic and hazardous gases.
- Do not keep the container of any chemical material open. The gas released by the chemical material may accumulate and become toxic, harmful or explosive. Some gases are heavier than air and accumulate in an enclosed space.
- Do not put any chemical material into an unlabeled container.
- Do not wash hands and clothes with chemical materials, especially the solvents and fuels. Such materials may dry up the skin or lead to skin inflammation. In addition, some toxic and harmful substance can be absorbed by skin directly, affecting health.
- Do not use an empty container to store chemical materials at will unless the container is cleaned under supervision.
- Do not sniff or smell any chemical material. Short exposure to a gas of high concentration may still lead to poisoning or injury.

1.5.1.10 Dust

Powder, dust and particles may be irritant, harmful or toxic. Avoid inhaling powdery chemicals and dust raised by dry friction operation. In case of poor ventilation, wear a protective breathing mask to prevent inhaling dust.

The dust of combustible materials may lead to explosion. Therefore, keep such dust away from fire sources.

1.5.1.11 Electric shock

If the electrical equipment is not used correctly, electric shock may occur.

Be sure to maintain the electrical equipment within the specified time and test it frequently. Mark faulty equipment or move it out of the working area.

Never cause wear, twist, cut-off, rupture or other damage to wires, cables, plugs and sockets. Do not contact electrical equipment and wires with water.

Make sure that the electrical equipment is protected by the correct fuse.

Do not misuse electrical equipment or use any equipment with potential faults. Otherwise, personal safety may be affected.

Make sure that cables of the electrical equipment is not pinched and damaged during moving.

It is necessary to provide basic first aid training for specialized electrical operators.

In case of any electric shock:

- Turn off the power supply before touching the victim.
- If power cannot be turned off, isolate it with dry insulation material.
- Those who have received special first aid training shall give first aid on site immediately.
- Seek for medical assistance.

1.5.1.12 Exhaust gas

The exhaust contains toxic and harmful chemicals such as carbon oxides, nitrogen oxides, acetaldehyde, lead and aromatic hydrocarbons. The engine can only be started with proper exhaust equipment or general ventilation equipment in open space.

1.5.1.13 Fiber isolation

Refer to 1.5.1.10 Dust

It is used to isolate noise and sound.

Fibrous substances and sharp edges on the fiber surface may cause skin allergy.

Instructions for operation procedures should be observed and gloves should be worn during operation to avoid excessive skin contact with fibers.

1.5.1.14 Fire

Many materials related to vehicle maintenance are extremely flammable. Some materials will produce poisonous and harmful gases after burning.

Be sure to observe the instructions for fire safety when storing and handling flammable materials or solvents, especially in places close to electrical equipment or locations where welding operations are in progress.

Be sure to confirm that there is no fire hazard before using any electrical and welding equipment.

Have a fire extinguisher nearby when welding or using heating equipment.

1.5.1.15 First aid

In addition to complying with the law, it is preferable to have professional first aid trained personnel in the workplace.

If a liquid splashes into the eyes, wash the eyes with clean water for at least 10 min.

If skin is affected, wash the skin with soap and clean water.

In case of frostbite, the injured shall be transferred for medical help as soon as possible, and attention shall be paid to keeping the injured warm during transfer to prevent trauma.

Quick rewarming with warm water shall be carried out immediately after arrival at the medical unit.

In case of inhaling toxic gas, immediately transfer the victim to the location with fresh air. If adverse reactions persist, immediately send the victim to the hospital for medical assistance.

In case of accidental ingestion of liquid, the information indicated on the container or label shall be informed to the doctor. Unless otherwise specified on the label, blind vomiting is not allowed.

1.5.1.16 Foam - polyurethane

Cured foam is used as the cushions for seats and trimmings.

Comply with manufacturer's instructions.

Foam components without chemical action are irritating and they may be harmful to skin and eyes, so gloves and goggles should be worn during operation.

People with chronic respiratory diseases, asthma, bronchial problems, or hereditary allergies, should not handle or approach uncured substances.

The spares, steam or spray of foam can cause direct irritation and allergic reaction and may be toxic and harmful.

Remember not to inhale the steam or spray of foam materials. Such materials must be used with good ventilation and protected breathing. Do not remove the mask immediately after spraying. Wait until the steam and spray are completely dissipated and then remove the mask.

Burning of uncured components and cured foam will produce toxic and harmful gases. Smoking and using open flame and electrical equipment are prohibited during foam-related operations unless the steam and spray have been completely removed. Any hot cutting of foam materials or special foam materials should be carried out in a well-ventilated environment.

1.5.1.17 Fuel

Minimize direct skin contact with fuel. If your contact with any fuel, immediately wash the skin with soap and water.

Gasoline

It is combustible. You should observe “no-smoking” regulations.

Gasoline will irritate mouth and throat if swallowed by mistake, and lead to weakness and unconsciousness if absorbed in stomach. A small amount of gasoline could endanger a children. It is dangerous for anyone to inhale some gasoline into the lung.

Gasoline can cause dry skin. Long or frequent exposure to gasoline could cause skin allergies and dermatitis. Gasoline into the eyes will cause severe eye pain.

Motor gasoline may contain a large amount of benzene. When inhaled, it can cause poisoning. Therefore, gasoline vapor concentration must be kept at low. Gasoline vapor at high concentration may irritate eyes, nose, and throat, and lead to nausea, headache, dejection, drunkenness, and other illness. Gasoline vapor at extremely high concentration could lead to loss of consciousness in a short time.

When handling gasoline, keep the environment well-ventilated. Take special care during operation in a closed space and avoid inhaling gasoline vapor due to splash.

Take special care when cleaning and maintaining gasoline container.

Gasoline cannot be used as a detergent nor sucked with mouth.

1.5.1.18 Gas cylinders

Oxygen, acetylene, argon and propane gases are generally stored in gas cylinders at 13.8Mpa

(2001psi). Be careful when handling those cylinders. Avoid mechanical damage of the cylinders or valves. The gas filled in the cylinder should be clearly and appropriately marked.

Such cylinders should be stored in a well-ventilated place without ice, snow or direct sunlight. The cylinders filled with such fuels as acetylene or propane should not be stored with oxygen cylinders.

Take special care to prevent gas cylinder and line from leaking and keep them from fire source.

Only professionally trained personnel are permitted to carry out work related to gas cylinders.

1.5.1.19 General workshop tools and equipment

It is important to always keep all tools and equipment in good working conditions and operate them correctly.

Remember not to use tools or equipment for purposes contrary to their designed functions. Do not have such equipment as crane, jack, axle and chassis support or sling bear any load exceeding its maximum load limit. The damage caused by overload may not appear immediately, but may result in a serious accident in the next use.

Do not use tools or equipment that are damaged or in poor working conditions, especially some high-speed equipment, such as grinding wheels. A damaged grinding wheel may crumble without warning and cause serious injury.

Wear proper eye protective equipment when using grinding wheel, chisel or sandblasting equipment.

Wear appropriate respirators when operating sand blasting equipment, handling materials containing asbestos, or using spray equipment.

There must be ventilation equipment for control of dust, spray and smoke content.

1.5.1.20 Lubricating oil and grease

Avoid repeated contact with mineral oils for a long time, because all lubricating oils and greases are irritant to eyes and skin.

Used engine oil

Long-time and repeat exposure to mineral grease can cause the loss of natural skin oils, dryness, irritation and dermatitis. In addition, the used engine oil is likely to contain harmful substances which can cause skin cancer. Be sure to use skin protection equipment and make sure that proper flushing installations are provided.

Do not use any used engine oil as lubricating oil or for any other purpose that may be in direct contact with skin.

Safety rules for health protection

- Avoid long-time and repeated contact with engine oil, especially the used engine oil.
- Wear protective clothing, including impermeable gloves.
- Do not put any wiping cloth contaminated by engine oil in the pocket.
- Prevent the engine oil from contaminating clothing, especially underclothes.
- Do not wear the clothes or shoes that are highly contaminated with engine oil. Wash work clothes regularly and keep them clean.
- First aid to open wounds shall be obtained in time.

- During working, apply protective cream onto the skin as far as possible to avoid direct contact between the skin and the engine oil.
- Wash all engine oil out with soap and clean water. Application of protective agent containing lanolin will help to replace the natural grease removed from the skin.
- Seek medical assistance immediately if skin lesions occur.
- Remove residual engine oil from the component as much as possible before operation.
- Wear goggles, such as chemical goggles or face masks, if there is a possibility of direct contact with eyes. In addition, eye washing installations must be provided.

Environment Note

Used engine oil and engine oil filters should be recycled and disposed by authorized or licensed waste disposal operators, or waste engine oil recyclers. In case of doubt, contact the relevant department of the local competent authority for the disposal site in time.

It is illegal to pour used engine oil directly into the ground, sewer, drainage system or water pipe.

Engine

2.1 Warnings and notes 6
2.1.1 Warnings and notes 6
2.1.1.1 Warnings and notes 6
2.1.1.2 Warnings for operations related to HV electric control system.....8
2.1.1.3 Preparations for operations related to HV electric control system.....9
2.2 Inspection and Measurement.....10
2.2.1 Inspection 10
2.2.1.1 Check the crankshaft 10
2.2.1.2 Inspection of VVT assembly and exhaust camshaft sprocket.....10
2.2.1.3 Inspection of spark plug 11
2.2.1.4 Checking oil pressure.....12
2.2.1.5 Inspection of chain guide plate and chain tension pulley 12
2.2.1.6 Inspection of timing chain and oil pump chain.....14
2.2.2 Measurement 15
2.2.2.1 Measurement of axial clearance of crankshaft 15
2.2.2.2 Measurement of axial clearance of crankshaft 15
2.2.2.3 Measurement of cylinder block inner diameter 15
2.2.2.4 Measurement of piston ring opening clearance 17
2.2.2.5 Measurement of piston ring groove height and clearance.....17
2.2.2.6 Measurement of piston diameter 17
2.2.2.7 Measurement of the thickness of crankshaft thrust plate.....19
2.2.2.8 Measurement of cylinder pressure 19
2.2.2.9 Measurement of height of cylinder head and plane warpage of cylinder block 21
2.2.2.10 Measurement of the perpendicularity of valve spring 21
2.2.2.11 Measurement of the plane warpage at the intake and exhaust sides of cylinder head ..23
2.2.2.12 Measurement of connecting rod big end oil film clearance.....23
2.2.2.13 Measurement of main journal oil film clearance 26
2.2.2.14 Repairing valve seat 28
2.3 Fuel system 30
2.3.1 Specification..... 30
2.3.1.1 Fastener specifications 30
2.3.2 Description and operation..... 31
2.3.2.1 Overview.....31
2.3.3 System working principle..... 32
2.3.3.1 System working principle 32
2.3.4 Component position..... 33
2.3.4.1 Component position 33
2.3.5 Exploded view..... 34
2.3.5.1 Exploded view of fuel system 34
2.3.6 Electrical schematic diagram..... 36
2.3.6.1 Electrical schematic diagram.....36
2.3.7 Diagnosis information and steps 38
2.3.7.1 Diagnostic instructions.....38
2.3.7.2 Visual inspection 38
2.3.7.3 Too low fuel pressure 38
2.3.7.4 Excessive fuel consumption 38
2.3.7.5 Frequent automatic fuel gun stop during refueling 42
2.3.8 Special tool..... 43
2.3.8.1 List of special tools.....43
2.3.9 Removal and installation 44
2.3.9.1 Release of fuel system pressure 44
2.3.9.2 Removal and installation of 1# oil inlet pipe 46
2.3.9.3 Removal and installation of 2# oil inlet pipe 48
2.3.9.4 Removal and installation of 3# oil inlet pipe 48
2.3.9.5 Removal and installation of fuel tank assembly 51
2.3.9.6 Removal and installation of electronic fuel pump.....54
2.3.9.7 Removal and installation of fuel filling hose 56
2.3.9.8 Removal and installation of fuel filling pipe assembly 56
2.3.9.9 Removal and installation of fuel distributor component 59
2.3.9.10 Removal and installation of oil pump controller 67
2.4 Auxiliary emission control system....70
2.4.1 Description and operation..... 70
2.4.1.1 Overview.....70
2.4.2 Component position 71
2.4.2.1 Component position.....71
2.4.3 Exploded view..... 72
2.4.3.1 Exploded view.....72
2.4.4 Electrical schematic diagram..... 74
2.4.4.1 Schematic diagram of working principle....74
2.4.5 Removal and installation 75
2.4.5.1 Removal and installation of canister assembly 75
2.4.5.2 Removal and installation of canister mounting bracket.....77
2.4.5.3 Removal and installation of 1# clean air duct. 78
2.4.5.4 Removal and installation of 2# clean air duct. 79
2.4.5.5 Removal and installation of air filter 80
2.4.5.6 Removal and installation of 2# air filter duct .

.....81
2.4.5.7 Removal and installation of fuel tank leakage diagnosis module assembly.....82
2.4.5.8 Removal and installation of 1# canister desorption pipe.....83
2.4.5.9 Removal and installation of 2# canister desorption pipe.....84
2.4.5.10 Removal and installation of 3# canister desorption pipe.....85
2.4.5.11 Removal and installation of fuel tank isolation valve assembly 86
2.4.5.12 Removal and installation of 1# fuel vapor pipe 87
2.4.5.13 Removal and installation of 2# fuel vapor pipe 89

2.5 Exhaust system 90
2.5.1 Specification 90
2.5.1.1 Fastener specifications 90
2.5.2 Description and operation..... 91
2.5.2.1 Overview.....91
2.5.3 Working principle..... 92
2.5.3.1 Working principle 92
2.5.4 Component position..... 93
2.5.4.1 Component position 93
2.5.5 Exploded view 96
2.5.5.1 Exploded view 96
2.5.6 Special tool 98
2.5.6.1 List of special tools 98
2.5.7 Diagnosis information and steps..... 99
2.5.7.1 Diagnostic instructions.....99
2.5.7.2 Visual inspection.....99
2.5.7.3 Exhaust system blockage 99
2.5.7.4 Exhaust system leakage.....101
2.5.7.5 Exhaust system noise 103
2.5.8 Removal and installation 106
2.5.8.1 Removal and installation of oxygen sensor I.. 106
2.5.8.2 Removal and installation of oxygen sensor II 106
2.5.8.3 Removal and installation of three-way catalytic converter assembly 108
2.5.8.4 Removal and installation of rear three-way catalytic converter assembly 112
2.5.8.5 Removal and installation of front silencer assembly.....114
2.5.8.6 Removal and installation of rear silencer assembly.....116
2.5.8.7 Removal and installation of EGR valve outlet pipe 116
2.5.8.8 Removal and installation of EGR valve component.....118
2.5.8.9 Removal and installation of 1# outlet hose of EGR valve cooler.....121
2.5.8.10 Removal and installation of 1# inlet pipe component of EGR valve cooler 121
2.5.8.11 Removal and installation of EGR valve temperature sensor 123

2.6 Intake system.....125
2.6.1 Specification..... 125
2.6.1.1 Fastener specifications.....125
2.6.2 Description and operation..... 126
2.6.2.1 Description and operation.....126
2.6.3 System working principle..... 127
2.6.3.1 System working principle.....127
2.6.4 Component position 128
2.6.4.1 Component position.....128
2.6.5 Exploded view..... 130
2.6.5.1 Exploded view.....130
2.6.6 Diagnosis information and steps 132
2.6.6.1 Diagnostic instructions 132
2.6.6.2 Visual inspection 132
2.6.6.3 Intake system blockage.....132
2.6.6.4 Intake system leakage.....132
2.6.7 Removal and installation 135
2.6.7.1 Removal and installation of air filter 135
2.6.7.2 Removal and installation of air filter element 137
2.6.7.3 Removal and installation of air filter intake pipe assembly 140
2.6.7.4 Removal and installation of air filter exhaust pipe assembly 141
2.6.7.5 Removal and installation of intake manifold component 143
2.6.7.6 Removal and installation of electronic throttle body assembly.....150
2.6.7.7 Removal and installation of intake pressure and temperature sensor 153

2.7 Ignition system 154
2.7.1 Specification..... 154
2.7.1.1 Fastener specifications.....154
2.7.2 Description and operation..... 155
2.7.3 Component position 157
2.7.3.1 Component position.....157
2.7.4 Exploded view..... 158
2.7.4.1 Exploded view.....158
2.7.5 Electrical schematic diagram.....159
2.7.5.1 Electrical schematic diagram.....159
2.7.6 Diagnosis information and steps 160
2.7.6.1 Diagnostic instructions 160
2.7.6.2 Visual inspection 160
2.7.6.3 No power output of main relay.....160
2.7.6.4 Unstable idle speed of engine 161
2.7.6.5 Acceleration failed due to insufficient engine power.....162
2.7.7 Removal and installation 164
2.7.7.1 Removal and installation of ignition coil..164
2.7.7.2 Removal and installation of spark plug 166
2.7.7.3 Removal and installation of knock sensor 167
2.7.7.4 Removal and installation of crankshaft position sensor.....170
2.7.7.5 Removal and installation of camshaft phase sensor.....171

2.8 Control system.....174
2.8.1 Specification..... 174
2.8.1.1 Fastener specifications..... 174
2.8.2 Description and operation..... 175
2.8.2.1 Description and operation..... 175
2.8.3 Component position..... 177
2.8.3.1 Component position..... 177
2.8.4 Exploded view..... 179
2.8.4.1 Exploded view..... 179
2.8.5 Electrical schematic diagram..... 180
2.8.5.1 Electrical schematic diagram..... 180
2.8.6 Diagnosis information and steps..... 182
2.8.6.1 Diagnostic instructions..... 182
2.8.6.2 Visual inspection..... 182
2.8.6.3 ECU terminal..... 182
2.8.6.4 Data list..... 186
2.8.6.5 DTC list..... 186
2.8.6.6 DTC: P010700, P010800..... 192
2.8.6.7 DTC: P011200, P011300..... 199
2.8.6.8 DTC: P011600, P011700 204
2.8.6.9 DTC: P012200, P012300..... 208
2.8.6.10 DTC: P013300, P124D00..... 211
2.8.6.11 DTC: P014000, P013700..... 216
2.8.6.12 DTC: P218300, P218400..... 222
2.8.6.13 DTC: P022100, P022200... 225
2.8.6.14 DTC: P056200, P056300..... 230
2.8.6.15 DTC: P033600, P033700..... 233
2.8.6.16 DTC: P034100, P034200... 236
2.8.6.17 DTC: P014100, P003700 241
2.8.6.18 DTC: P020100, P026100 248
2.8.6.19 DTC: P020200, P026400 253
2.8.6.20 DTC: P020300, P026700 257
2.8.6.21 DTC: P020400, P027000 262
2.8.6.22 DTC: P035100, P230000... 266
2.8.6.23 DTC: P035200, P230300..... 272
2.8.6.24 DTC: P035300, P230600... 278
2.8.6.25 DTC: P035400, P230900... 282
2.8.6.26 DTC: P030000, P030100..... 288
2.8.6.27 DTC: P044400, P045800 292
2.8.6.28 DTC: P210000, P210100 296
2.8.6.30 DTC: P001600, P001100..... 305
2.8.6.32 DTC: P050700, P017100 309
2.8.6.33 DTC: P044200, P045500..... 315
2.8.6.34 DTC: P123F00, P124000 318
2.8.6.35 DTC: P040100, P040200..... 322
2.8.6.36 DTC: P040500, P040600..... 327
2.8.6.37 DTC: P040C00, P040D00..... 330
2.8.6.38 DTC: P048700, P048900 336
2.8.6.39 DTC: P045200, P045300..... 340
2.8.6.40 DTC: U029387..... 346
2.8.6.41 DTC: U016487..... 347
2.8.6.42 DTC: U012287..... 350
2.8.6.44 DTC: U015587..... 357
2.8.6.45 DTC: U010987..... 361
2.8.6.46 DTC: U007588..... 364
2.8.7 Removal and installation..... 367
2.8.7.1 Removal and installation of PCJ control valve..... 367
2.8.7.2 Removal and installation of central electromagnet..... 368
2.8.7.3 Removal and installation of electronic accelerator pedal assembly..... 370
2.8.7.4 Removal and installation of electronic control unit (ECU) assembly..... 370
2.9 Cooling system 373
2.9.1 Specification..... 373
2.9.1.1 Fastener specifications..... 373
2.9.2 Description and operation..... 374
2.9.2.1 Overview and operation..... 374
2.9.3 Component position..... 375
2.9.3.1 Component position..... 375
2.9.4 Exploded view..... 378
2.9.4.1 Exploded view of cooling system..... 378
2.9.5 Electrical schematic diagram..... 380
2.9.5.1 Electrical schematic diagram..... 380
2.9.6 Diagnosis information and steps 382
2.9.6.1 Diagnostic instructions..... 382
2.9.6.2 Visual inspection..... 382
2.9.6.3 Engine coolant temperature too high..... 382
2.9.7 Removal and installation..... 385
2.9.7.1 Replacement of engine coolant..... 385
2.9.7.2 Removal and installation of water reservoir assembly..... 394
2.9.7.3 Removal and installation of electronic thermostat component..... 398
2.9.7.4 Removal and installation of cylinder block thermostat..... 401
2.9.7.5 Removal and installation of engine electric coolant pump..... 402
2.9.7.6 Removal and installation of radiator water tank assembly..... 404
2.9.7.7 Removal and installation of radiator fan motor assembly..... 408
2.9.7.8 Removal and installation of radiator water outlet hose..... 410
2.9.7.9 Removal and installation of radiator water inlet hose..... 413
2.9.7.10 Removal and installation of 1# water tank hose..... 414
2.9.7.11 Removal and installation of water reservoir outlet hose..... 416
2.9.7.12 Removal and installation of engine outlet hose..... 417
2.9.7.13 Removal and installation of engine coolant temperature sensor..... 418
2.9.7.14 Removal and installation of radiator water tank coolant temperature sensor..... 420
2.9.7.15 Removal and installation of coolant pump outlet pipe component..... 420
2.9.7.16 Removal and installation of coolant pump inlet pipe component..... 422
2.10 Engine assembly mechanism 425
2.10.1 Specification..... 425

2.10.1.1 Fastener specifications 425
2.10.2 Removal and installation 427
2.10.2.1 Removal and installation of powertrain ... 427
2.10.2.2 Separation of engine and hybrid transmission 437
2.11 Engine mount 442
2.11.1 Specification 442
2.11.1.1 Fastener specifications 442
2.11.2 Component position..... 443
2.11.2.1 Component position 443
2.11.3 Exploded view 444
2.11.3.1 Exploded view 444
2.11.4 Removal and installation 445
2.11.4.1 Removal and installation of power suspension assembly (left) 445
2.11.4.2 Removal and installation of power suspension assembly (right) 447
2.11.4.3 Removal and installation of suspension mounting bracket (rear)..... 449
2.11.4.4 Removal and installation of power suspension assembly (rear)..... 450
2.12 Mechanical system 451
2.12.1 Specification 451
2.12.1.1 Fastener specifications 451
2.12.1.2 Specifications of mechanical system..... 451
2.12.2 Description and operation..... 453
2.12.2.1 Overview..... 453
2.12.3 System working principle..... 454
2.12.3.1 Working principle of engine 454
2.12.4 Component position..... 456
2.12.4.1 Component position 456
2.12.5 Exploded view 457
2.12.5.1 Exploded view 457
2.12.6 Diagnosis information and steps..... 462
2.12.6.1 Diagnostic instructions..... 462
2.12.6.2 Visual inspection..... 462
2.12.6.4 Slight engine vibration during warming... 463
2.12.6.5 Engine misfire with abnormal noise..... 464
2.12.6.6 Cylinder Pressure Too Low with Insufficient Engine Power 467
2.12.6.7 Cylinder pressure too high with engine knocking..... 468
2.12.7 Special tool 471
2.12.7.1 List of special tools 471
2.12.8 Removal and installation 473
2.12.8.1 Removal and installation of crankshaft damping pulley..... 473
2.12.8.2 Removal and installation of cylinder head cover assembly..... 475
2.12.8.3 Removal and installation of timing cover 479
2.12.8.4 Removal and installation of timing chain. 485
2.12.8.5 Removal and installation of timing chain tensioner..... 491
2.12.8.6 Removal and installation of timing chain guide plate component 493
2.12.8.7 Removal and installation of timing chain tension plate component 498
2.12.8.8 Removal and installation of intake VVT component 502
2.12.8.9 Removal and installation of intake and exhaust camshaft 505
2.12.8.10 Removal and installation of exhaust camshaft sprocket .507
2.12.8.11 Removal and installation of cylinder head 510
2.12.8.12 Removal and installation of cylinder block skirt rack component 518
2.12.8.13 Removal and installation of intake and exhaust valves ..523
2.12.8.14 Removal and installation of valve oil seal components..526
2.12.8.15 Removal and installation of dual-mass flywheel 528
2.12.8.16 Removal and installation of crankshaft signal disc.....530
2.12.8.17 Tightening sequence of main bearing cap bolts 533
2.12.8.18 Assembling relationship of main bearing cap.....533
2.12.8.19 Assembling relationship of main bearing bush.....534
2.12.8.20 Removal and installation of crankshaft rear oil seal component 535
2.12.8.21 Removal and installation of crankshaft front oil seal component 537
2.12.8.22 Removal and installation of crankshaft timing sprocket.539
2.12.8.23 Assembling position of piston ring 539
2.12.8.24 Removal and installation of piston and connecting rod assembly 539
2.12.8.25 Assembling relationship of piston and connecting rod.545
2.12.8.26 Removal and Installation of piston ring 545
2.13 Lubrication system 550
2.13.1 Specification..... 550
2.13.1.1 Fastener specifications.....550
2.13.2 Description and operation..... 551
2.13.2.1 Overview 551
2.13.3 Working principle..... 552
2.13.3.1 Working principle of lubrication system ..552
2.13.4 Component position 553
2.13.4.1 Component position.....553
2.13.5 Exploded view..... 554
2.13.5.1 Exploded view.....554
2.13.6 Diagnosis information and steps 555
2.13.6.1 Diagnostic instructions 555
2.13.6.2 Visual inspection 555
2.13.6.3 Low engine oil pressure.....555

2.13.6.4 Diagnosis process for abnormal oil consumption 556
2.13.7 Special tool 558
2.13.7.1 List of special tools 558
2.13.8 Removal and installation 559
2.13.8.1 Checking oil level 559
2.13.8.2 Replacing engine lubricating oil 561
2.13.8.3 Replacing oil filter component 563
2.13.8.4 Removal and installation of oil cooler 564
2.13.8.5 Removal and installation of oil pump 566
2.13.8.6 Removal and installation of oil pump chain 568
2.13.8.7 Removal and installation of oil pump sprocket 571
2.13.8.8 Removal and installation of oil pressure switch 573
2.13.8.9 Removal and installation of oil dipstick duct seat 573
2.13.8.10 Removal and installation of oil cooling nozzle 577
2.13.8.11 Removal and installation of oil pan component 579

2.1 Warnings and notes

2.1.1 Warnings and notes

2.1.1.1 Warnings and notes

Warnings on disconnection of battery terminal

Warning!

Unless otherwise stated in the operating procedures, power off all electrical appliances and turn off the start switch before repairing electrical components. If tools or equipment are easy to be in touch with exposed electrical terminals, disconnect the battery negative terminal. Violation of these safety instructions may cause serious personal injury or vehicle damage.

Exhaust repair warning

Warning!

To avoid being scalded, wait for the exhaust system to cool naturally before repairing it.

Warnings about fuel system maintenance

Warning!

To avoid the risk of fire and personal injury, please observe the following points:

- When removing and installing the fuel system or its pipelines, it is strictly prohibited to use electric tools, which are prone to generate electric sparks.
- Replace all fuel pipes that are bruised, scratched or damaged during operation. Do not attempt to repair the fuel pipe.
- When installing a new fuel pipe, do not hammer directly the fuel pipe clamp.
- When connecting the fuel pipe joint, make sure that it is reconnected correctly to avoid fuel leakage.

Warnings about Fuel Storage

Warning!

Gasoline or gasoline vapor is very combustible. To prevent fire or explosion, it is strictly prohibited to store fuel in an open container, and dry powder fire extinguishers shall be provided nearby.

Warnings about release of fuel system pressure

Warning!

Release the fuel system pressure before repairing the fuel system to reduce the risk of personal injury. After releasing the fuel system pressure, place a rag underneath to absorb the leaked fuel when repairing the fuel pipeline, fuel pump or joint.

Warnings about Removal of Expansion Tank Cover

Warning!

To avoid being scalded, do not remove the expansion tank cover before the engine cools down. If the expansion tank cover is forcibly removed before the engine and radiator cool down, high-pressure liquid and vapor will be released from the cooling system.

Warnings for road test

Warning!

Road test the vehicle and observe all traffic laws and regulations on the premise of safety. Do not try any operation which may endanger the vehicle control. Violation of the above safety instructions will cause serious personal injury and damage to the vehicle.

2.1.1.2 Warnings for operations related to HV electric control system

Warning!

The vehicle is a hybrid power system and is equipped with 393.1V HV power battery.

Be sure to operate the system correctly according to the instructions in this Manual. Otherwise, serious injury or electrocution may be caused. Do not touch any HV cable and HV component. If necessary, follow the instructions below:

- Do wear HV protective articles such as: HV insulated gloves, insulated shoes and special insulated tools for HV operation.
- During the use of the vehicle, the HV system may be in a state of high voltage and high temperature. Please follow the warning sign instructions to avoid high voltage and high temperature injury.
- Insulate the removed cable with insulating tapes.

When the HV system is repaired, the following precautions must be noted to prevent possible personal injuries:

Turn off all the electrical appliances and turn off the Start switch.

Disconnect the 12V battery negative terminal.

During operation of the HV system, HV protective articles such as HV insulated gloves, insulated shoes and special tools for HV insulation must be worn.

HV electricians shall ensure that the power supply is cut off and wait for 10min before operation.

Relevant HV electricians shall be consulted in case of any doubt. Before performing any operation of the HV system and repairing the vehicle body, HV electricians must cut off the power supply of the system.

If the power supply of the HV system cannot be cut off, only professional electricians can carry out the maintenance.

Notes for inspection and repair of HV circuit:

Technicians must be professionally trained before they can repair and inspect HV systems.

The "Warning: High Voltage! Do Not Touch" sign shall be used to inform other technicians of that the HV system is being inspected or repaired.

All HV harnesses and connectors shall be orange. Power battery and other HV parts are provided with "High Voltage" warning labels. Please do not touch these harnesses or parts without permission.

Do not lean your body or put the tools against any HV circuit and its components. Never use any cutting-formed and sharp tools near HV components and circuits.

Do not use any power supply, such as those for fusion welding, brazing, thermal bonding and operations with hot air, near HV components and circuits.

Do not seriously twist or bend the HV circuits. In case of any abnormality or doubt, consult the HV electrician or professional electrician.

No attempt shall be made to repair any harness or connector if such harness or connector of the HV circuit is faulty. Please directly replace the damaged or faulty HV cable or connector.

The one wearing an artificial cardiopulmonary aid is not allowed to work on vehicles equipped with

HV systems. Artificial cardiopulmonary aids include built-in analgesic pump, implantable defibrillator, cardiac pacemaker, insulin pump, hearing-aid, etc.

2.1.1.3 Preparations for operations related to HV electric control system

Personal preparations:

- •Before operation of the HV system, do wear HV protective articles such as HV insulated gloves, insulated shoes, etc.
- Do not carry metal articles during operation.
- Confirm breakage before using 1000V durable insulated gloves.

Site inspections:

- Put a triangular warning sign "warning: high voltage, do not touch" in a visible position (such as vehicle roof) to warn other personnel.
- Before parking the vehicle to be repaired in the repair work area, make sure that there is no water on the ground, and do not operate in humid environment.
- Make sure that the work area is equipped with carbon dioxide fire extinguishers.

Preparation of maintenance tools:

- Use special insulated tools for HV operation or the tools with insulation treatment.

Cutting off power supply of HV system:

- Turn off all the electrical appliances and turn off the Start switch.
- Disconnect the 12V battery negative terminal.

2.2 Inspection and Measurement

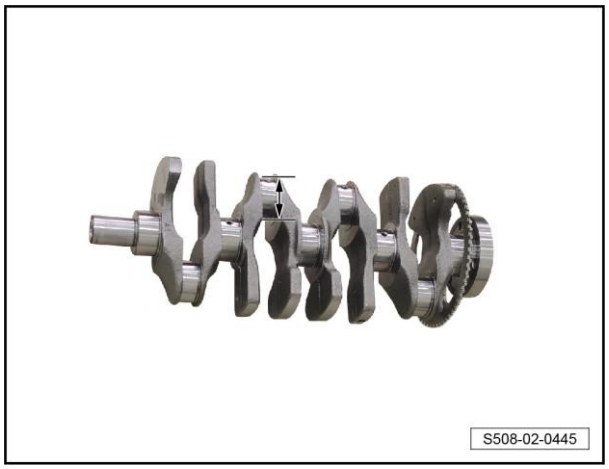
2.2.1 Inspection

2.2.1.1 Check the crankshaft

Check the crankshaft

a. Measure the diameter of each main journal with micrometer at the position shown in the figure, if the measured value is not within the standard range, check the oil film clearance of the crankshaft.

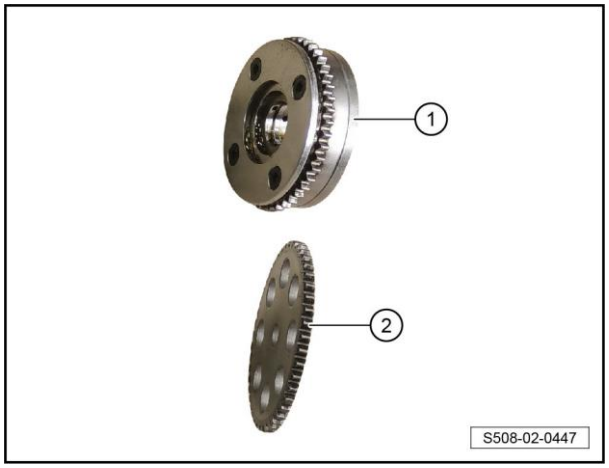
- Diameter of main journal: **42.986~43mm**



b. Measure the diameter of each connecting rod journal with micrometer at the position shown in the figure; if the measured value is not within the standard range, check the oil film clearance of the connecting rod.

- Diameter of connecting rod journal: **39.985~40mm**

2.2.1.2 Inspection of VVT assembly and exhaust camshaft sprocket



Inspection of VVT assembly and exhaust camshaft sprocket

a. Check the VVT component and exhaust camshaft sprocket for wear or damage. If any, replace the VVT component ① and the exhaust camshaft sprocket ②.

2.2.1.3 Inspection of spark plug

Inspection of spark plug

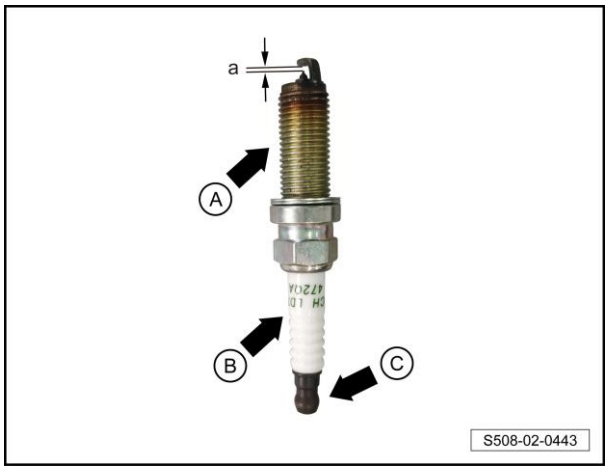
a. In situ N-gear HEV/sport mode, step on the accelerator pedal deeply to quickly increase the speed to more than 4000 rpm and run for 5 minutes.

b. Remove all spark plugs.

c. Observe the spark plug electrode for ablation.

d. If the electrode is dry, the spark plug is in good condition.

e. If the electrode is damp, proceed to the following steps.



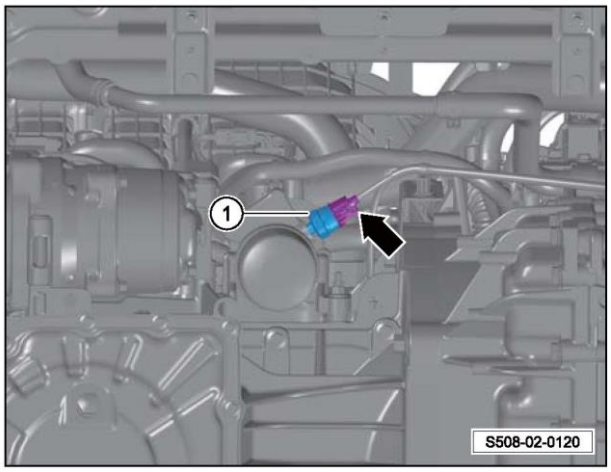
f. Check whether there is any damage to the thread of the spark plug in the position of (arrow A); whether there is creeping or breakage on the surface of the insulation head in the position of (arrow B); whether there is breakage or rotation of ceramic small head in the position of (arrow C), and in case of one of them, replace the spark plug.

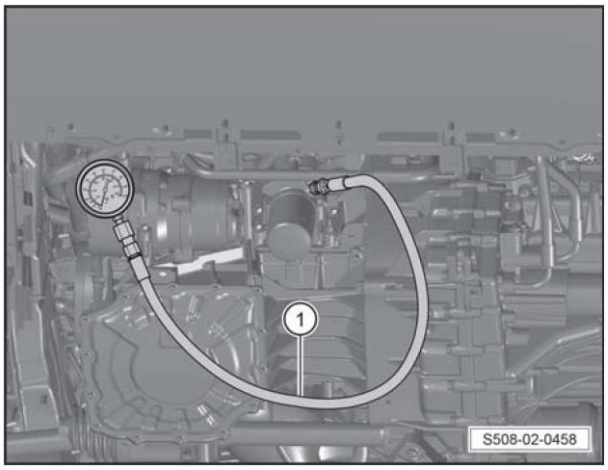
g. Check spark plug electrode gap (a) which shall range from 1.05mm to 1.15mm.

Tip:

If the electrode clearance of a new spark plug needs to be adjusted, only the root of electrode can be adjusted. The head of electrode cannot be adjusted. No adjustment is allowed for the used spark plug.

2.2.1.4 Checking oil pressure





Checking oil pressure

a. Disconnect the connector (see the arrow) of the oil pressure switch.

b. Use the engine oil pressure switch removal and installation socket to remove the engine oil pressure switch ①.

Notes

As the oil temperature of hot engine is very high, scald will be caused easily. Therefore, do not conduct operations until the engine gets cool down after shutdown.

– Connect the oil pressure gauge ① and oil pressure switch mounting hole using a special service adapter.

– Start the engine and warm up it to the normal working temperature (≥80 °C).

– Make the engine speed increase to the set speed and read the reading of oil pressure gauge.

– Oil pressure: 200~350kPa (2,000 r/min, low pressure mode)

Engine RPM (r/min)	Standard fuel pressure (kPa)
2000r/min	Over 200Kpa

– Tip:

The oil pressure of oil with different viscosity and temperature may be different; if the pressure is not within the specified range, check the causes and repair or replace it as necessary.

Do not install the engine within 1 hour after the oil pressure switch is installed.

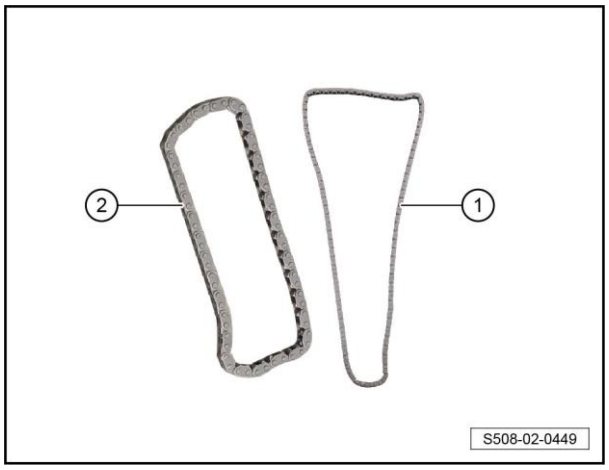
2.2.1.5 Inspection of chain guide plate and chain tension pulley

Check the chain guide plate and chain tensioning plate

a. Check the wear of chain guide plate ① and chain tension plate ②. If the wear exceeds the standard value, replace the worn part.

- Wear limit of chain guide plate and chain tension plate: **0.5 mm**

2.2.1.6 Inspection of timing chain and oil pump chain

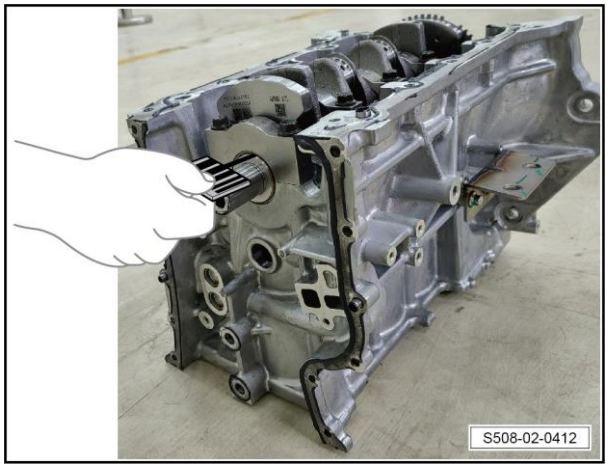


Check the timing chain and oil pump chain

a. Observe the chain for serious wear or cracks, if any, replace timing chain ①, oil pump chain ②, and check corresponding sprocket.

2.2.2 Measurement

2.2.2.1 Measurement of axial clearance of crankshaft



Measuring method

– Remove the main bearing cap and clean the main bearing cap and journal.

– Place the plastic clearance gauge on the journal and in the bearing bush according to the width of the bearing (the plastic clearance gauge must be located at the center of the bearing bush).

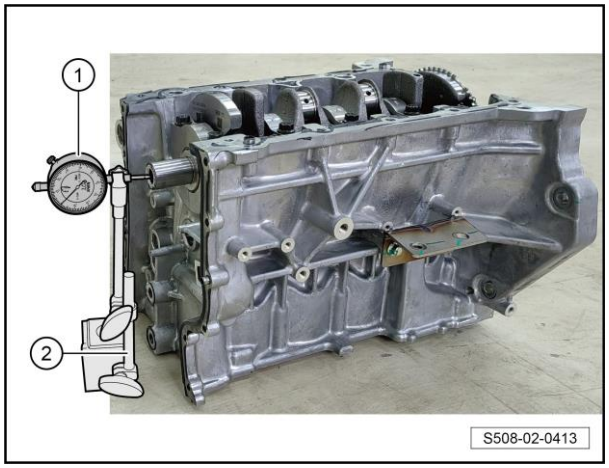
– Install the main bearing cap (do not mix it with the used bearing bush), tighten it to the specified torque, and do not operate the crankshaft at the same time.

– Remove the main bearing cap again.

– Compare the width of the plastic clearance gauge with the measuring scale.

- Radial clearance: **0.018~0.047 mm**
- Wear limit: **0.0705 mm**

2.2.2.2 Measurement of axial clearance of crankshaft



Measuring method

– Fasten the crankshaft main bearing cap fixing bolt with the standard tightening torque.

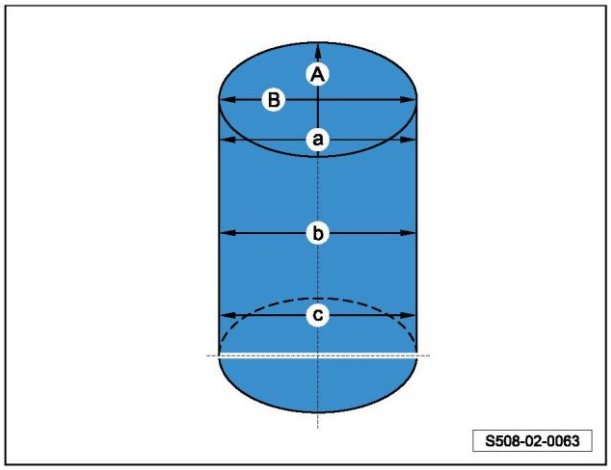
– Install the dial indicator ① onto the dial indicator (magnetic gauge stand) ②.

– Place the measuring rod of the dial indicator against the front end of the crankshaft. Reset the dial indicator to zero.

– Push the crankshaft in the axial direction (do not rotate the crankshaft) and read the axial clearance from the dial indicator.

- Standard axial clearance: **0.1~0.27 mm**
- Wear limit: **0.45 mm**

2.2.2.3 Measurement of cylinder block inner diameter



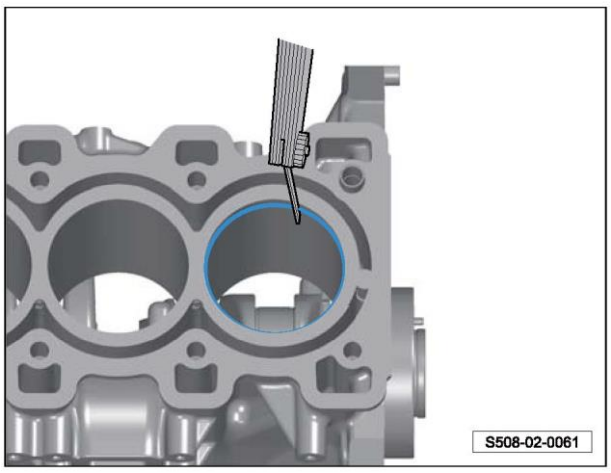
Measuring method

– Measure the inner diameter of the cylinder block bore using a precise inner diameter measuring instrument (50~100 mm).

– Measure the inner diameter of the cylinder block bore along the transverse -B- and longitudinal -A- directions on 3 planes a, b and c in each cylinder.

• The deviation from the rated dimension is no more than 0.05mm (cylindricity).

2.2.2.4 Measurement of piston ring opening clearance

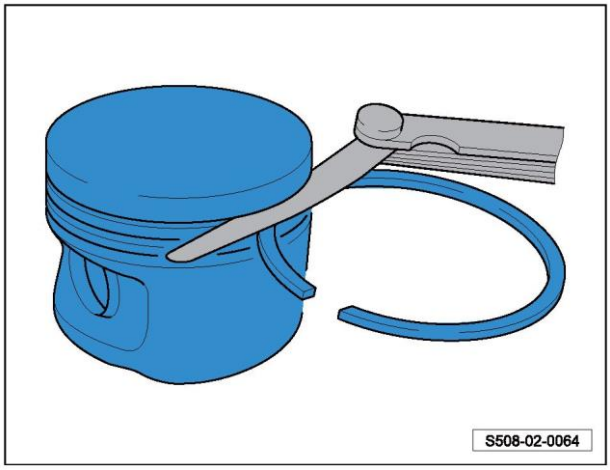


Measuring method

- Use a piston without piston ring to push the piston ring straight into the cylinder along the cylinder wall until it's 15~20 mm above the bottom of the cylinder.
- Measure the piston ring opening clearance using a feeler gauge.

Piston ring	Standard value (new)/mm	Service limit/mm
First compression ring	0.15~0.25	1.0
Second compression ring	0.25~0.4	1.0

2.2.2.5 Measurement of piston ring groove height and clearance

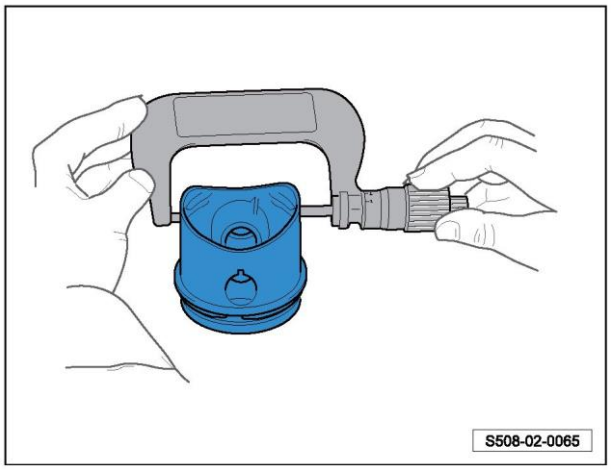


Measuring method

- Clean the piston ring groove and the piston ring before measurement.
- Insert the piston ring and feeler gauge vertically into the piston ring groove to measure the clearance.

Piston ring groove	Standard value (new)/mm	Service limit/mm
First compression ring	0.04~0.08	0.15
Second compression ring	0.03~0.07	0.15

2.2.2.6 Measurement of piston diameter

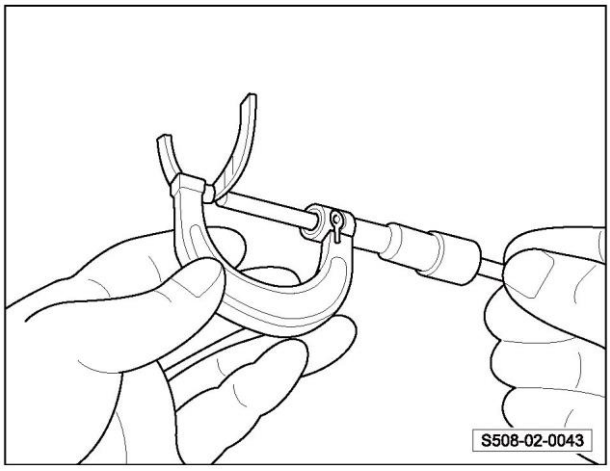


Measuring method

- Measure at a distance of 10 mm from the bottom of the piston with an outside micrometer, and the measuring direction shall be perpendicular to the axis direction of the piston pin hole.

Standard value (new)/mm	Maximum deviation/**mm**
72.004	0.04

2.2.2.7 Measurement of the thickness of crankshaft thrust plate



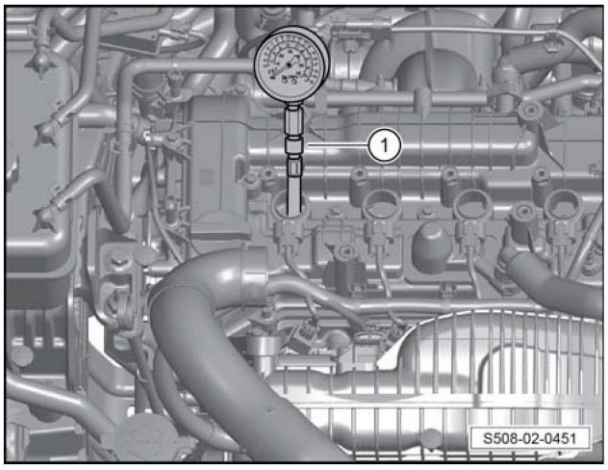
Measuring method

– As is shown in the figure, measure the thickness of crankshaft thrust plate with a micrometer.

– If the measured value is not within the standard range, replace the crankshaft thrust plate.

- Standard thickness: **2.45~2.5mm**

2.2.2.8 Measurement of cylinder pressure



Measuring method

– Turn off the start switch, remove the plug from the fuel pump control unit before inspection.

– Warm up the engine to its normal working temperature and then shut down the engine.

– Remove the spark plug in the cylinder which is to be inspected.

– Connect the cylinder pressure gauge ① into the spark plug threaded hole and pre-tighten it.

– Fully depress the accelerator pedal and run the engine.

– Start the engine and keep it running until the pressure gauge no longer shows a pressure rise.

– Record the maximum reading on the pressure gauge.

	Standard pressure **(MPa)**
Cylinder pressure value	1±0.2

Tip:

If the pressure in the cylinder is too low, or the pressure difference between cylinders far exceeds the upper limit, drop a few drops of oil into the cylinder via the spark plug hole and then re-measure the cylinder compression pressure.

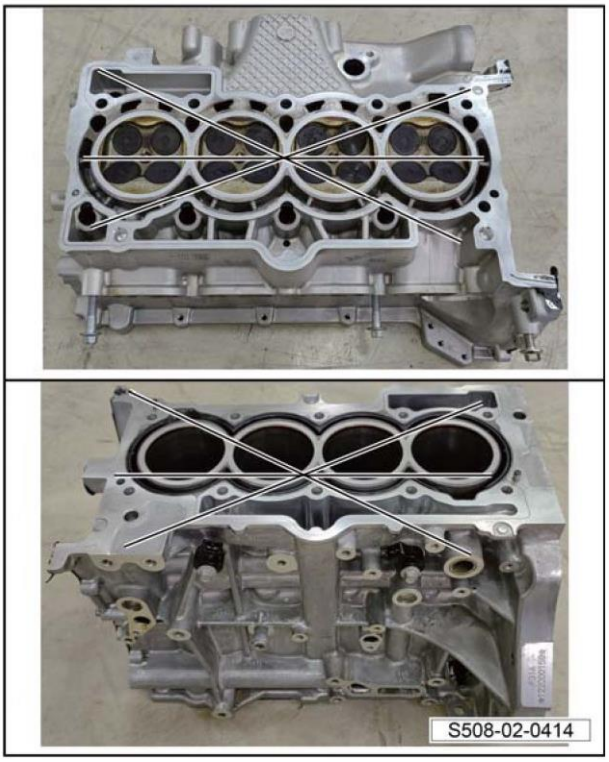
If the compression pressure rises after oil dripping, the piston, piston ring and cylinder wall may be worn

and an overhaul is needed.

If the compression pressure is still very low, it indicates that the valve may get stuck or the sealing surface is in poor contact and an overhaul is needed.

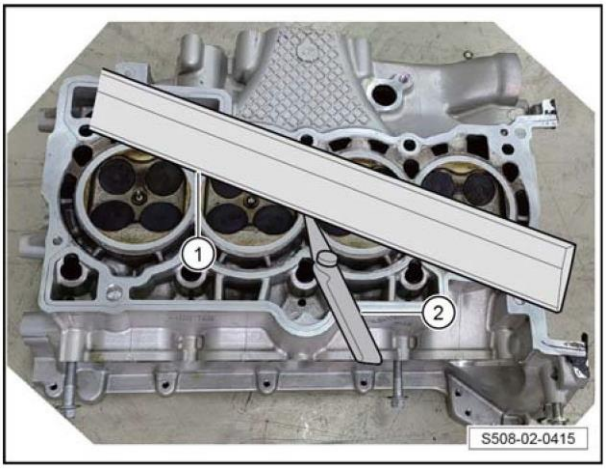
If the pressure of adjacent cylinders is low, it indicates that the cylinder head gasket may be damaged or the cylinder head may be deformed and overhaul is required.

2.2.2.9 Measurement of height of cylinder head and plane warpage of cylinder block



Measuring method

– As shown in the figure, inspect the plane warpage along the edge and 3 straight lines crossing the center.

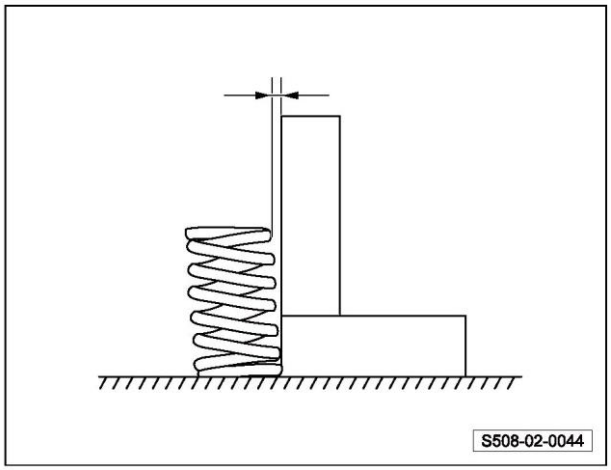


– Use the precision straight edge ① and feeler gauge ② to check the cylinder head deformation at different positions on each straight line.

– If the warpage of the cylinder head is less than 0.05mm, there is no need to repair or grind the joint surface of cylinder head. If the warpage is above 0.1mm, replace the cylinder block.

- Maximum flatness: **0.05 mm**
- Service limit: **0.1 mm**

2.2.2.10 Measurement of the perpendicularity of valve spring



Measuring method

– Use a right-angle ruler and feeler gauge to measure the valve and check the verticality of the valve spring (see the arrow).

– Replace the valve spring if the measured value is greater than the maximum clearance.

• Maximum clearance: **1.5 mm**

2.2.2.11 Measurement of the plane warpage at the intake and exhaust sides of cylinder head

Measuring method

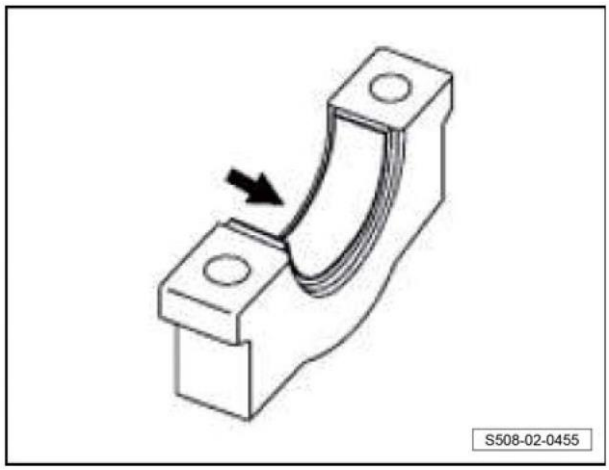
– As shown in the figure, inspect the plane warpage of cylinder head intake/exhaust side along the edge and 3 lines crossing the center.

- If the plane warpage at the intake side is above 0.05mm, replacement is required.
- If the plane warpage at the exhaust side is above 0.05mm, replacement is required.

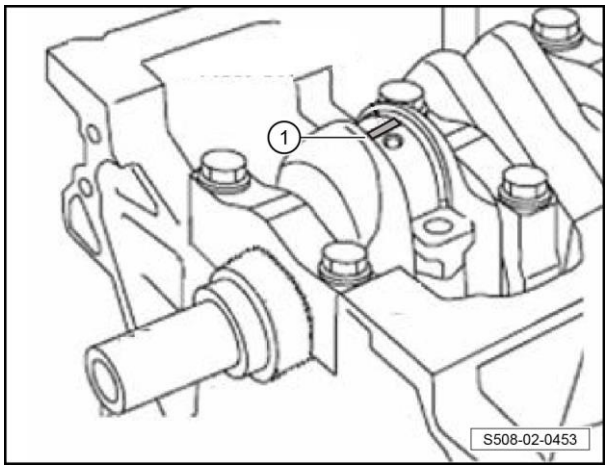
2.2.2.12 Measurement of connecting rod big end oil film clearance

Measurement of connecting rod big end oil film clearance

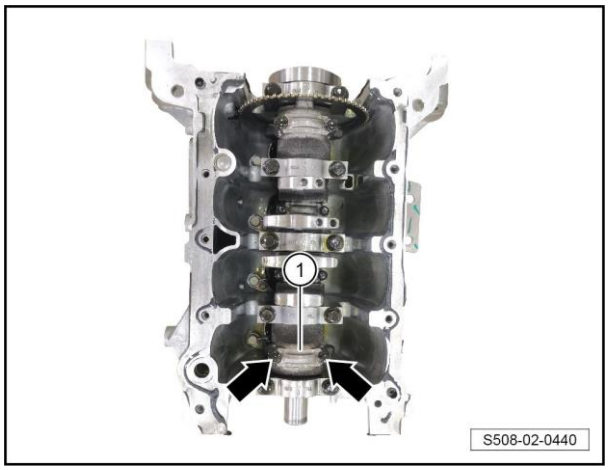
a. Unscrew the connecting rod fixing bolt (see the arrow), and take out the connecting rod cover and connecting rod bearing bush ①.



b. Wash the connecting rod bearing bush and connecting rod journal.



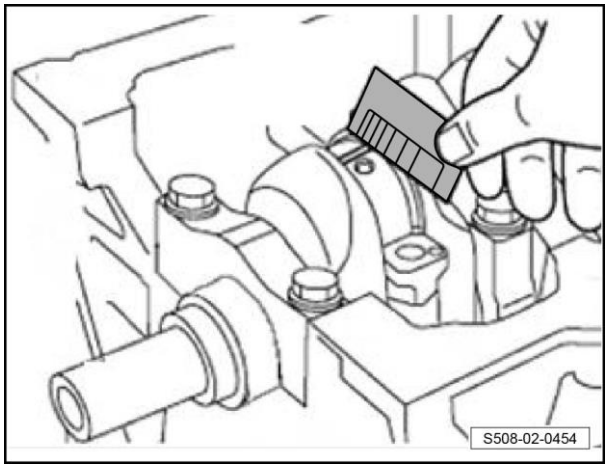
c. Place a plastigauge ① on the connecting rod journal.



d. Apply engine oil on the connecting rod bolt thread and shoulder, then cover the connecting rod cover and the connecting rod lower bush ①, screw in the fixing bolt (see the arrow), and tighten according to the specified torque.

e. Then unscrew the connecting rod fixing bolt (see the arrow) again, take out the connecting rod cover and the connecting rod lower bush ①, and set marks.

- Tightening torque of bolt: **16±2N·m+(90±5)°**



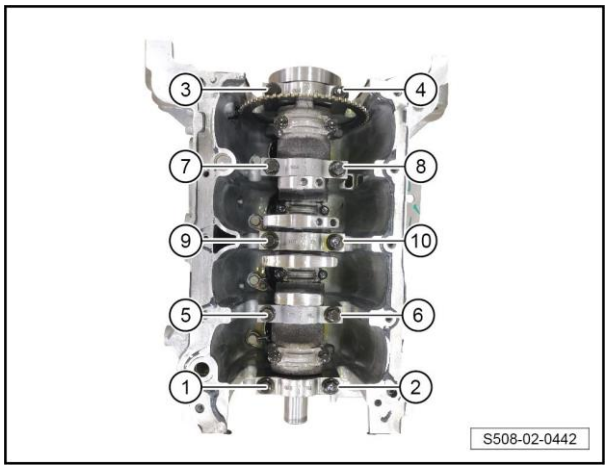
f. At the widest part of the plastic wire gap gauge, use the width measuring card to measure the oil film clearance.

- Standard clearance of oil film: **0.027~ 0.055 mm**
- Maximum clearance of oil film: **0.0825 mm**
- Tip:

Do not turn the crankshaft when measuring the oil film clearance. After measurement, be sure to completely clear the plastigauge.

If the measured value is larger than the maximum oil film clearance, replace the connecting rod bearing bush; if the measured value is still larger than the maximum oil film clearance after replacement, replace the crankshaft.

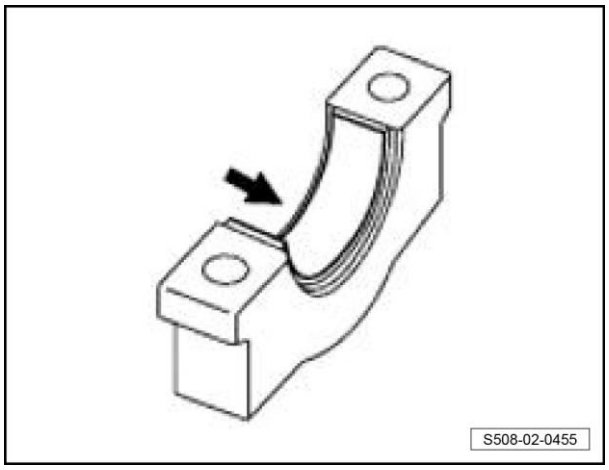
2.2.2.13 Measurement of main journal oil film clearance



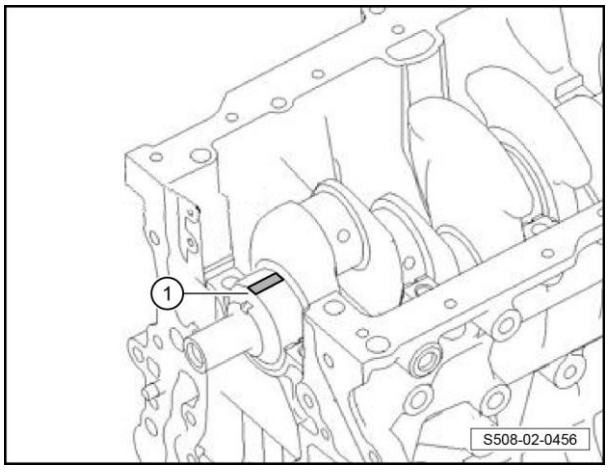
Measurement of main journal oil film clearance

a. Unscrew the main bearing cap bolts ① to ⑩ in the sequence shown in the figure.

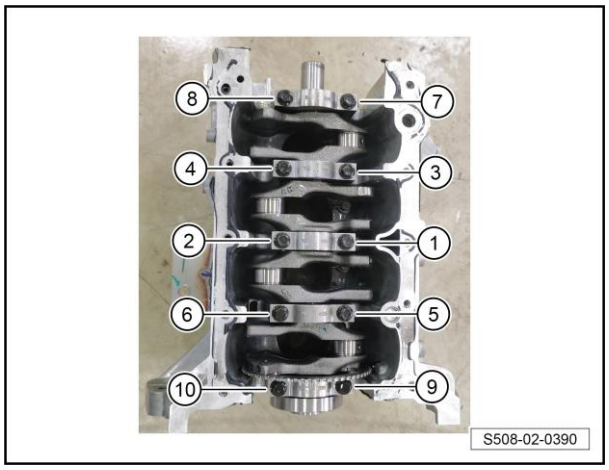
- Bolt tightening torque: **24N·m+60°+60°**



b. Wash the inner surface of the main bearing bush, main bearing cap, main journal and crankshaft;

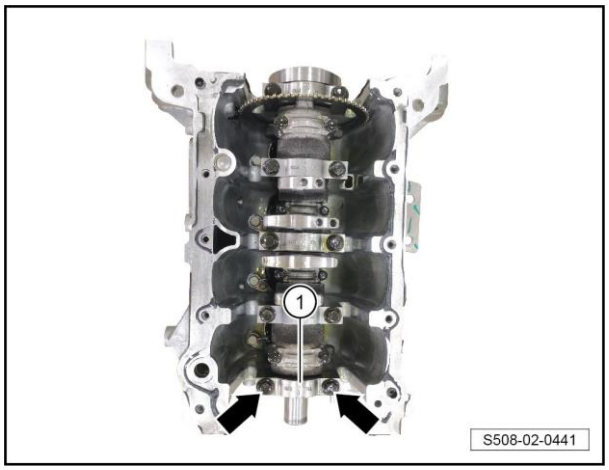


c. Place a plastigauge ① on the crankshaft main journal.



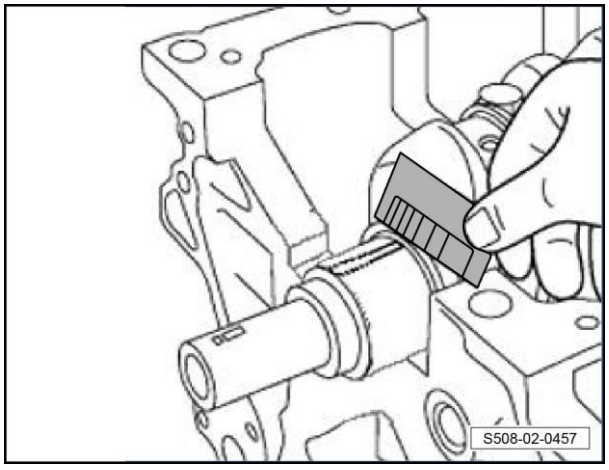
d. Install the main bearing cap, screw in the main bearing cap bolts ① to ⑩ in the order shown in the figure, and tighten the bolts in 2~3 times.

- Bolt tightening torque: **24N·m+60°+60°**



e. Unscrew the fixing bolt of 1st gear main bearing cap (see the arrow), and take out the main bearing cap ①.

- Bolt tightening torque: **24N·m+60°+60°**



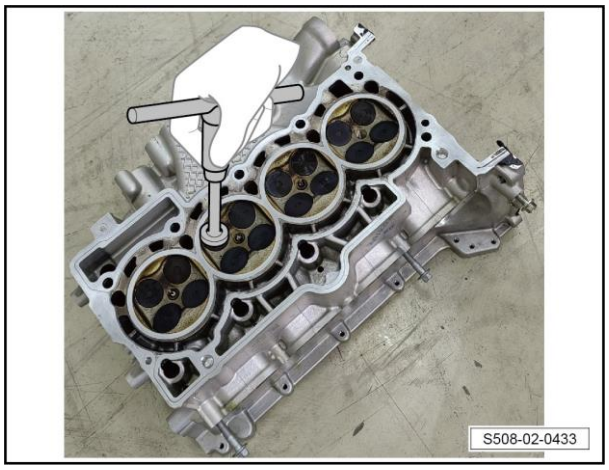
f. At the widest part of the plastic wire gap gauge, use the width measuring card to measure the oil film clearance.

- Standard clearance of oil film: **0.018 ~ 0.047 mm**
- Maximum clearance of oil film: **0.0705 mm**
- Tip:

Do not turn the crankshaft when measuring the oil film clearance. After measurement, be sure to completely clear the plastigauge.

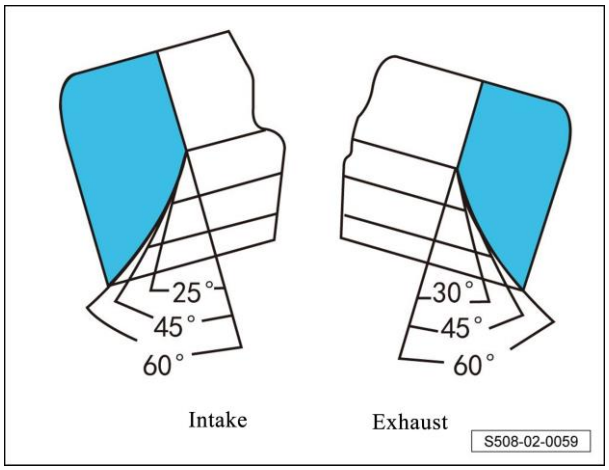
Replace the crankshaft if the measured value is stall greater than the maximum allowable clearance after the main bearing bushing is replaced.

2.2.2.14 Repairing valve seat



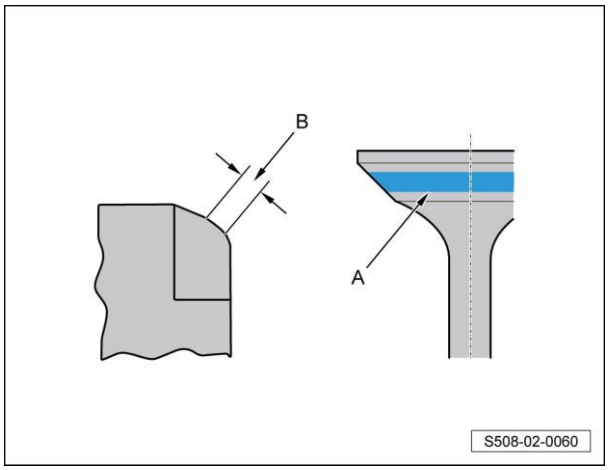
Method for repairing valve seat

- Check the clearance between the valve tappet and guide pipe.
- If the valve shaft guide is worn, then replace it before reaming the valve seat.
- As shown in the figure, use a valve seat reamer to repair the valve seat in the cylinder head.
- Carefully ream a valve seat with a 45° angle. Only ream a minimum amount of metal and ensure that the valve seat is smooth and concentric.



- Use a valve seat reamer as shown in the figure.
- Cut at 25° for the first time, 60° for the second time and 45°for the third time. For the second cutting, it is necessary to repair the contact width of conical surface (intake valve seat) that meets the requirements.
- Make 30° cutting for the first time, 60° cutting for the second time and 45° cutting for the third time. Be sure to get the contact width of the conical surface (exhaust valve seat) that meets the requirements in the second cutting.
- Check the width of valve seat and make corresponding adjustment.
- Use the 45° reamer to ream again slightly in order to remove all burrs that may be produced while using other reamers.
- The valve seat width is shown in the following table:

Size	Intake (mm)	Exhaust (mm)
Standard	**1.1~1.3**	**1.5~1.7**



- After trimming the valve seat again, check whether the valve seat is smooth. Apply compound to the conical surface of the valve (see arrow A).
- Insert the valve into the original position in the cylinder head. Raise the valve and place it closely against the valve seat for several times.
- As shown in the figure, the actual valve seat joint surface (see arrow B) should be at the center of valve seat.
- For the last time of reaming, always use the 45° reamer.

Tip:

If it is too high (closer to the valve tappet), use a 60°

reamer (for intake valve seat) and a 60° reamer (for exhaust valve seat) to ream for the second time in order to make it move downwards. Then use a 45° reamer to ream again in order to resume the valve seat width.

If it is too low (closer to the valve edge), use a 25° reamer (for intake valve seat) and a 30° reamer (for exhaust valve seat) to ream for the second time in order to make it move upwards. Then use a 45° reamer to ream again in order to resume the valve seat width.

If the wear limit is exceeded, use a new valve and measure again. If the wear limit is still exceeded, then replace the cylinder head.

2.3 Fuel system

2.3.1 Specification

2.3.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Fuel tank assembly and vehicle body	Hexagon head flange bolt M6×1.25×40	50±3
Fuel distributor and intake manifold	Bolt	25

2.3.2 Description and operation

2.3.2.1 Overview

Overview of fuel system

The fuel system functions to store, filter and transport fuel, and according to the requirements of the engine, inject fuel into the cylinder at a fixed time, quantity, and constant pressure according to certain injection rules to mix fuel with air for combustion, and then discharge exhaust gas into the atmosphere.

The fuel supply system is to provide the right amount of fuel for engine in any working conditions. The fuel is jetted into the engine through fuel injector. The fuel tank is used for storing fuel. The electrical fuel pump is installed in the fuel tank, and it pumps the fuel into the fuel distribution pipe assembly. The fuel pressure provided by the pump exceeds the pressure required by fuel injector. The fuel pressure regulator is part of fuel pump assembly, and it keeps the regulated pressure to provide fuel to the fuel injector. .

Overview of fuel distribution pipe and fuel injector

Fuel distribution pipe and fuel injector are important components in the fuel supply subsystem of the gasoline engine management system. The assembly plays a very important role in configuring the optimal air-fuel ratio for the EMS.

The fuel distribution pipe and fuel injector components are used to distribute fuel evenly and reasonably, provide ideal air-fuel ratio and atomize fuel for the engine. The major function of the fuel distribution pipe and fuel injector is to distribute fuel into each cylinder at a certain fuel pressure so that the fuel injected by the fuel injector can be mixed with air in the cylinder and directly participate in combustion.

In the EMS, the fuel injector is directly driven and controlled by the ECU, which is the core control element of the EMS. In the engineering development process of EMS, calibration engineers and technicians will carry out calibration optimization commissioning (also known as calibration matching) in advance according to the fuel flow control characteristics of the fuel injector, geometric parameters of the engine, accessories and vehicle, and state parameters of combustion medium, so that the system can edit and input corresponding control parameters in ECU according to the transient combustion conditions of the engine. In the actual working process of the engine, the fuel injector will timely and accurately inject an appropriate amount of atomized fuel into the engine cylinder through the ECU to mix fuel with air for combustion.

2.3.3 System working principle

2.3.3.1 System working principle

System working principle

The intake manifold absolute pressure sensor measures or detects the vacuum degree. When more fuel amount is needed, the intake manifold absolute pressure will be in low vacuum state, such as the fully opened throttle. The engine control module uses this information to concentrate the mixed gas, so as to increase the connecting time of fuel injector and jet the fuel with correct amount. When decelerating the engine, the vacuum degree detected by the intake manifold absolute pressure sensor will be increased, and the engine control module will shorten the fuel injector connecting time according to the variation to decrease the fuel supply amount.

Start mode

When connecting the Ignition switch, the engine control module is connected to the fuel pump relay. Then, the fuel pump establishes the fuel pressure. The engine control module also checks the engine coolant temperature sensor and throttle position sensor, and confirms the most suitable air-fuel ratio for engine startup. The engine control module controls the fuel supply amount in the start mode by changing the ON and OFF time of the fuel injector. This is realized by controlling the fuel injector through pulsation with extreme short duration.

Acceleration mode

The ECM responds to the quick change of the throttle position and the flow and supplies extra fuel.

Deceleration mode

The ECM responds to the change of the throttle position and the air flow and reduces the fuel supply volume.

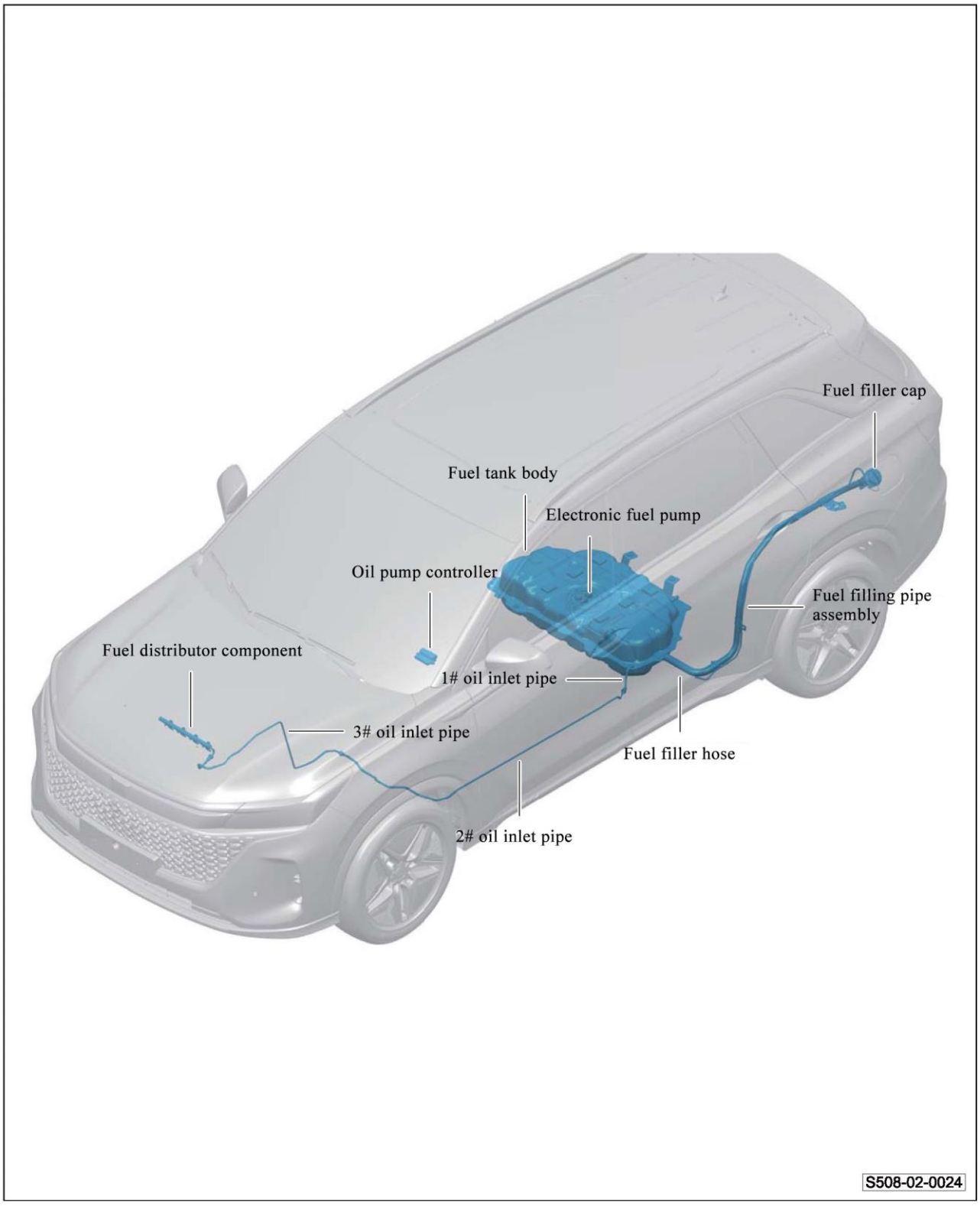
Fuel cut-off mode

The fuel rail injector does not inject fuel when the ignition switch is turned off. In this way, the continuous ignition or unfulfillable shutdown of the engine can be avoided. In addition, if no reference pulse is received from the electrical center, the fuel pump will not provide fuel to prevent oil spillage.

2.3.4 Component position

2.3.4.1 Component position

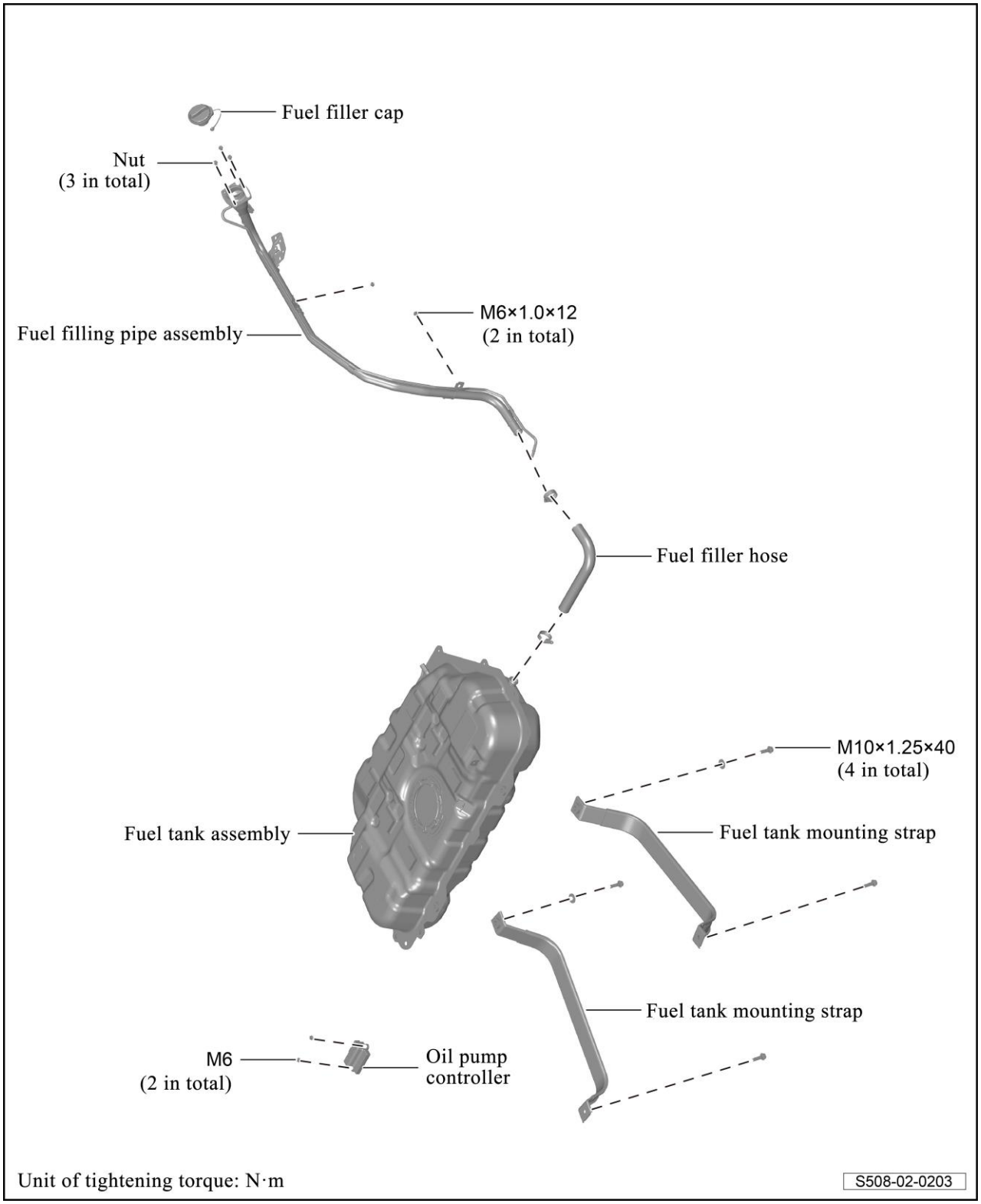
Component position of fuel tank assembly



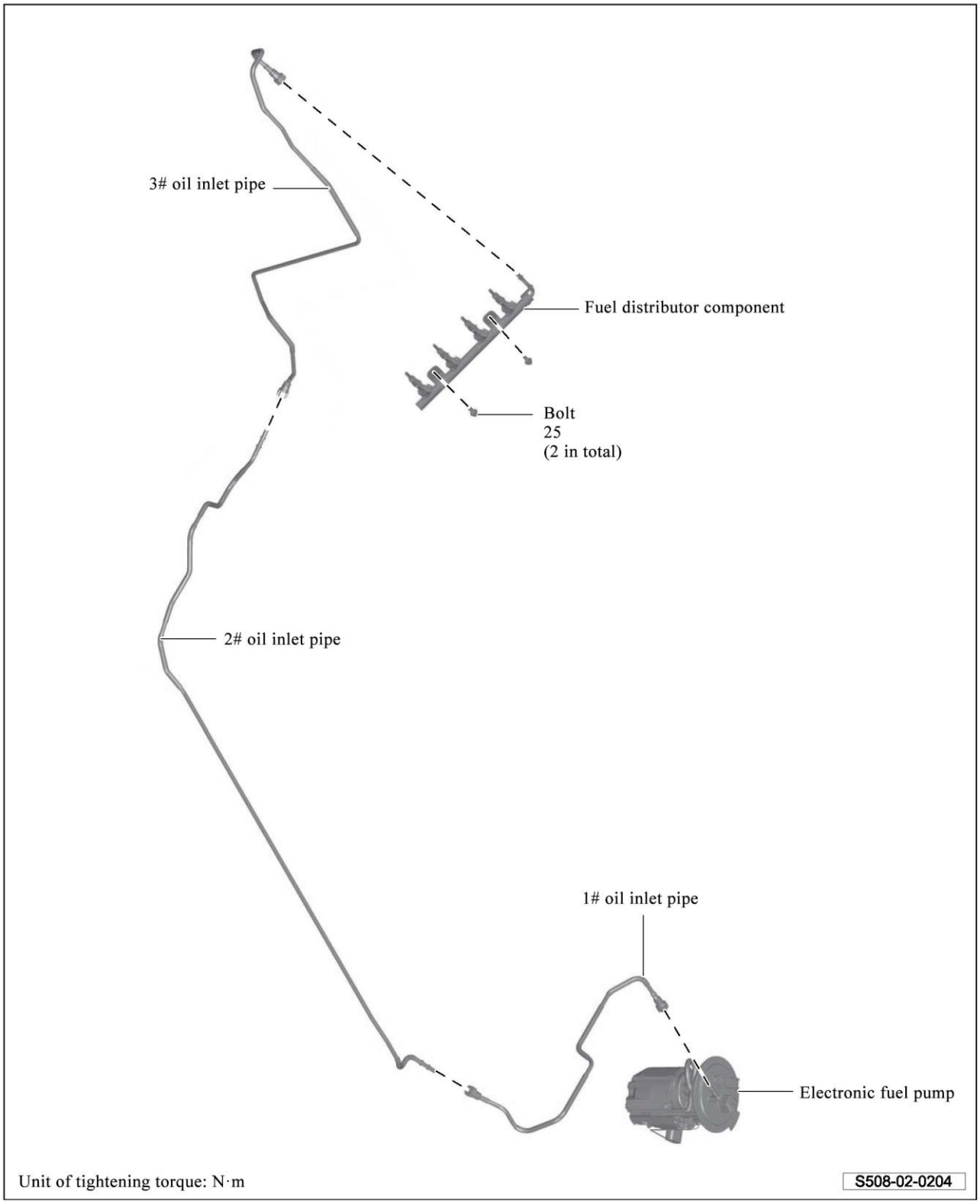
2.3.5 Exploded view

2.3.5.1 Exploded view of fuel system

Exploded view 1

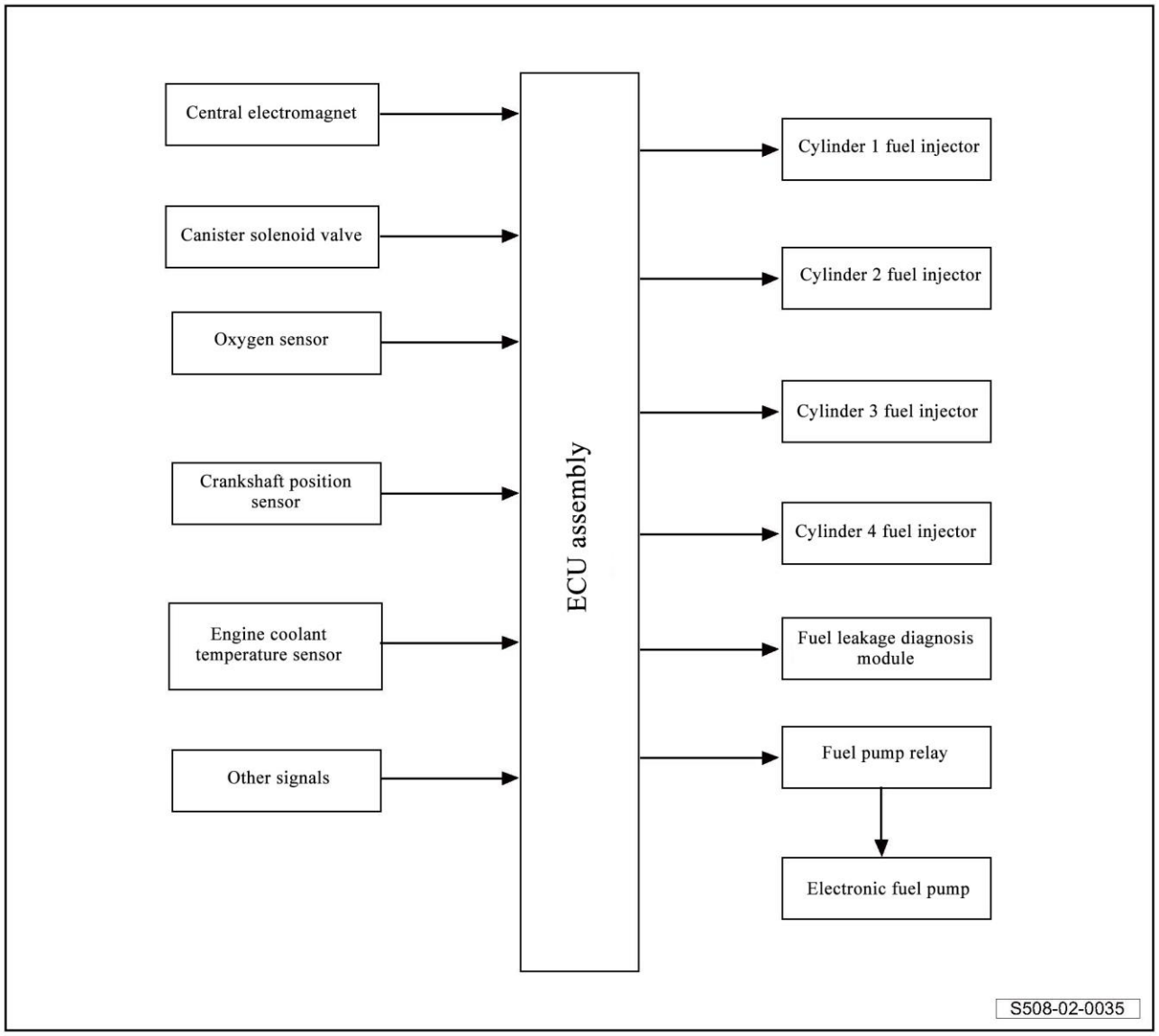


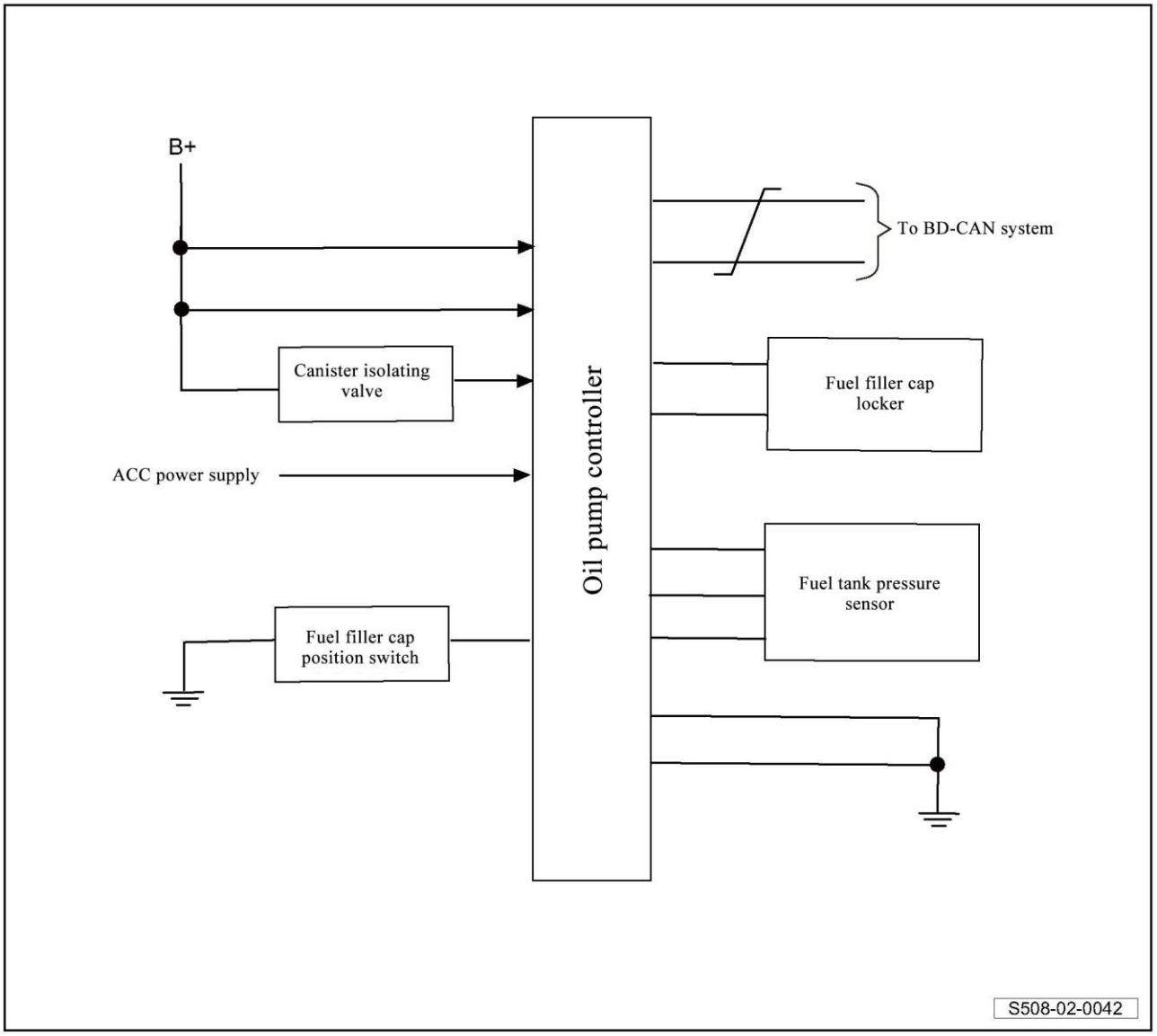
Exploded view 2



2.3.6 Electrical schematic diagram

2.3.6.1 Electrical schematic diagram




B+
Canister isolating valve
ACC power supply
Fuel filler cap position switch
Oil pump controller
To BD-CAN system
Fuel filler cap locker
Fuel tank pressure sensor
S508-02-0042

2.3.7 Diagnosis information and steps

2.3.7.1 Diagnostic instructions

Be sure to be familiar with the system functions and operations before starting system diagnostics, which will help you determine the cause of fault, and more importantly, help determine whether the symptoms described by the customer are normal.

2.3.7.2 Visual inspection

- Check whether there is any added device that may affect the operation of fuel system.
- Check the system components easily accessible or visible to confirm whether they are obviously damaged or leaked externally.
- Check whether the fuel in the fuel tank is the recommended one and enough.

2.3.7.3 Too low fuel pressure

Diagnosis steps

Step 1	Check the fuel pipeline for pressure relief.

A Check whether the fuel pump pressure relief valve is damaged.

Yes → Check and repair the faulty part.

No

Step 2	Check fuel filter.

A Check whether the fuel filter is too dirty and blocked.

Yes → Replace the fuel filter.

No

Step 3	Check the fuel pump

A Check whether the suction pipe strainer of the fuel pump is blocked.

B Check whether the fuel pump motor is damaged.

Yes → Clean the filter screen of the fuel pump suction pipe or replace the fuel pump.

Next

Step 4	The diagnosis is over.

2.3.7.4 Excessive fuel consumption

Diagnosis steps

Step 1	Check the fuel pipeline

A Check the fuel pipeline for leakage.

Yes → Check and repair the fuel pipeline.

No

Step 2	Check the coolant temperature sensor.

A Check whether the coolant temperature sensor is normal.

No → Repair the circuit or replace the coolant temperature sensor.

Yes

Step 3	Check the electronic throttle.

A Check the electronic throttle for excessive carbon deposit and jamming.

Yes → Wash the carbon deposits in the electronic throttle.

No

Step 4	Check the fuel pressure.

A Check if the pressure of the fuel system is normal.

No → Repair the fuel system.

Yes

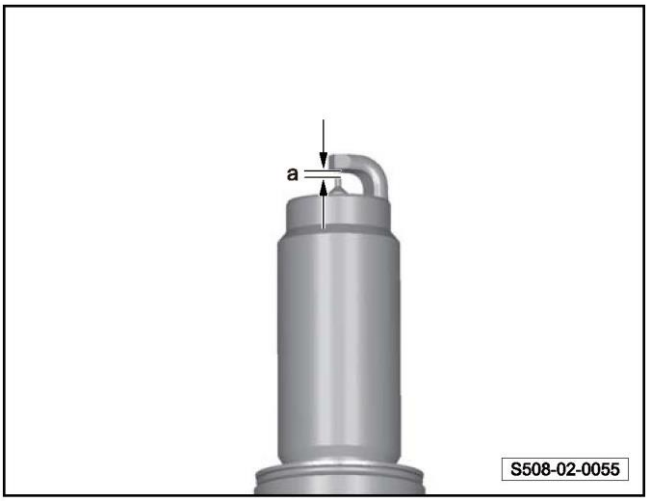
Step 5	Check the fuel injector.

A Check the fuel injector for dripping, leakage or poor atomization.

Yes → Replace the fuel rail injector assembly.

No

Step 6	Check the spark plug.



A Remove the spark plug and check if the spark plug clearance (a) is normal.

Standard spark plug gap: **1.05~1.15mm**

B Confirm whether the spark plug gap a reaches the standard value.

No → Replace the spark plug.

Yes

Step 7	Check the ignition coil.

A Check whether the jump-spark of ignition coil is normal.

No → Replace the ignition coil.

Yes

Step 8	Inspect the cylinder pressure.

A Check whether the cylinder pressure is OK.

No → Repair the mechanical part of engine.

Yes

Step 9	Check the oxygen sensor.

A Check whether the oxygen sensor works normally.

No → Replace the oxygen sensor.

Yes

Step 10	Replace the ECU.

A Replace the ECU.

B Is the fault eliminated after replacing the ECU?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.3.7.5 Frequent automatic fuel gun stop during refueling

Diagnosis steps

Step 1	Check the fuel filling pipe assembly

A Check whether the fuel filling pipe assembly is flattened or blocked by foreign matters.

Yes → Replace the fuel filling pipe assembly.

No

Step 2	Check the canister filter

A Check whether the canister filter is blocked by dust and sediment.

Yes → Replace the canister filter.

No

Step 3	Check the canister assembly

A Check whether the canister assembly and connecting pipeline are blocked or damaged.

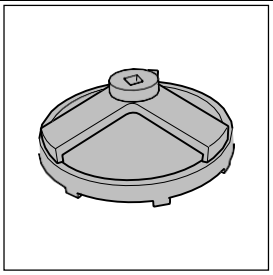
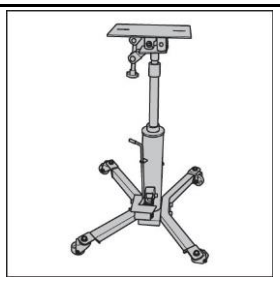
Yes → Replace the canister assembly or canister connecting pipeline.

No

Step 4	Troubleshoot from other symptoms

2.3.8 Special tool

2.3.8.1 List of special tools

S/N	Symbol	Description	Function
1		Fuel pump mounting cover removal and installation tool	For removing and installing electronic fuel pump mounting cover
2		Lifting device	For supporting the removal of fuel tank assembly

2.3.9 Removal and installation

2.3.9.1 Release of fuel system pressure

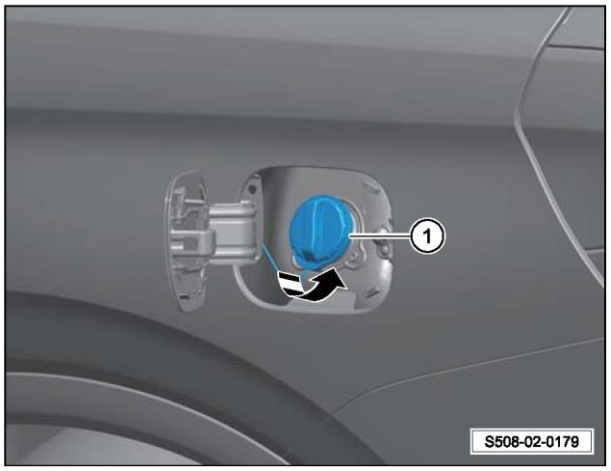
Disassembly procedures

1 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

2 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

3 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

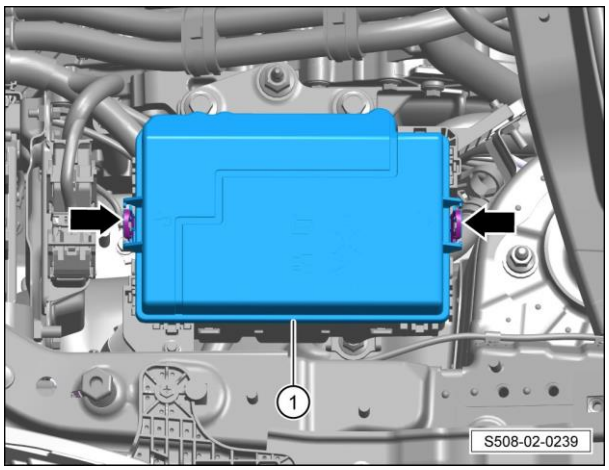
4 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



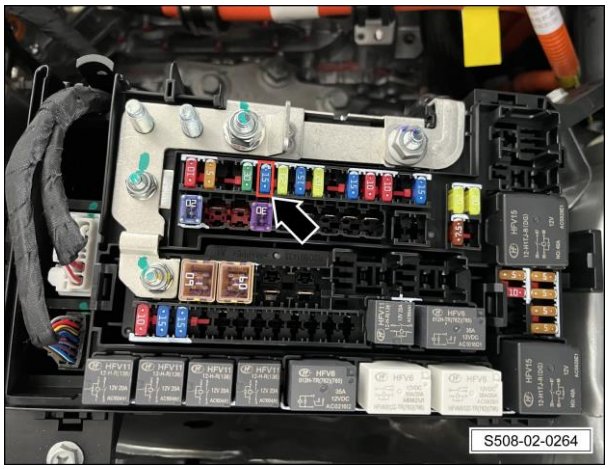
5 Release the fuel system pressure

a. Open the fuel tank cap.

b. Unscrew the fuel filler cap assembly ① in direction of the arrow, release the fuel vapors in the fuel tank assembly to lower the pressure in the fuel tank assembly, and then reinstall the fuel filler cap ①.



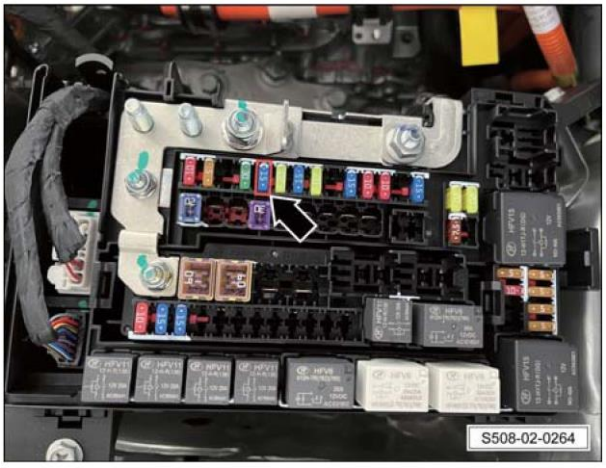
c. Press the fixing clip (see the arrow) and take out the front engine compartment fuse box cover ①.



d. Remove the fuel pump fuse LF05 (see the arrow) in the engine compartment fuse box.

e. Start the engine until the remaining fuel in the fuel pipeline is consumed. At this time, the fuel pipeline is in a safe maintenance state.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After maintenance, reinstall the fuel pump fuse LF05 (see the arrow).

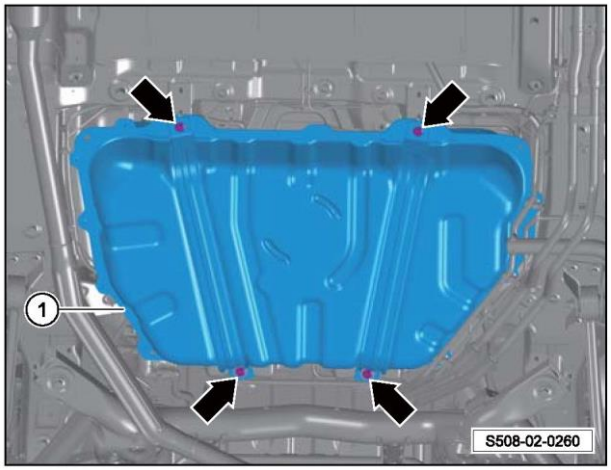
2.3.9.2 Removal and installation of 1# oil inlet pipe

Disassembly procedures

1 Release the fuel system pressure. Refer to 2.3.9.1 Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

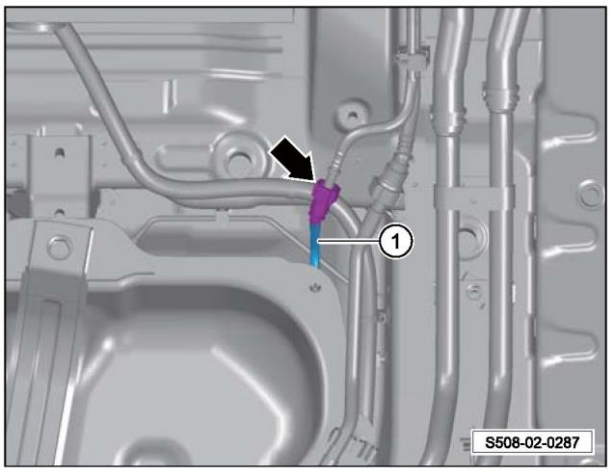


4 Removal of 1# oil inlet pipe

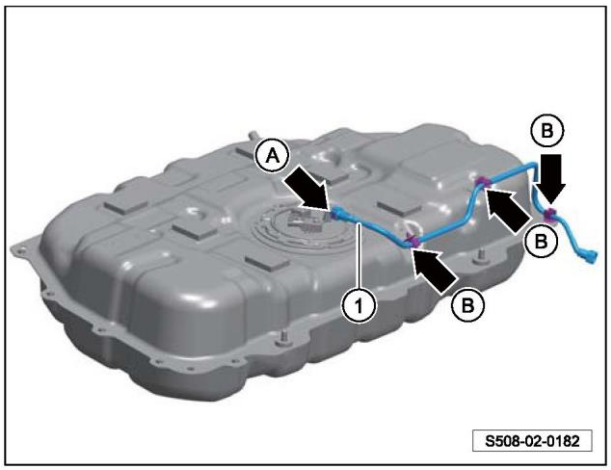
a. Support the fuel tank assembly by using a lifting device.

b. Unscrew the fixing bolt (see the arrow), and remove the fuel tank mounting strip.

c. One technician adjusts the lifting device to slowly lower the fuel tank assembly ① to a certain height, while another technician pays attention to observe whether the fuel tank assembly ① interferes with other components of the vehicle body.



d. Press the quick connector (see the arrow) and disengage the fuel inlet pipe 1 ① from the fuel inlet pipe 2.



e. Press the quick connector (see arrow A) and disengage the fuel inlet pipe 1 ① from the fuel pump.

f. Disengage the fixing pipe clamp (see arrow B), and remove 1# oil inlet pipe ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

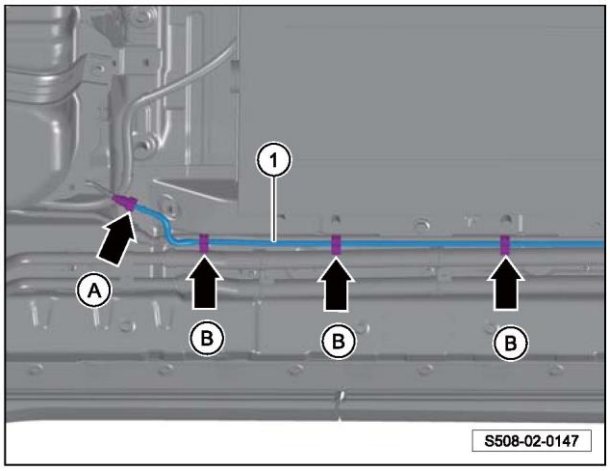
2.3.9.3 Removal and installation of 2# oil inlet pipe

Disassembly procedures

1 Release the fuel system pressure. Refer to 2.3.9.1 Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

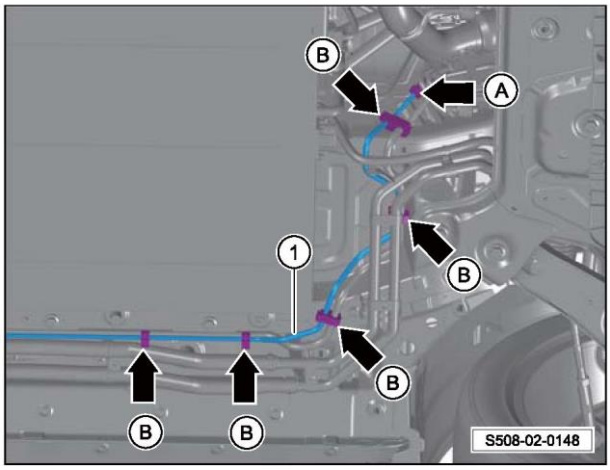


4 Removal of 2# oil inlet pipe

a. Lift the vehicle.

b. Press the quick connector (see arrow A) and disconnect the fuel inlet pipe 2 ① from the fuel inlet pipe 1.

c. Disengage the fixing pipe clamp of 2# oil inlet pipe ① (see arrow B).



d. Press the quick connector (see arrow A) and disconnect the fuel inlet pipe 2 ① from the fuel inlet pipe 3.

e. Disengage the fixing pipe clamp (see arrow B), and remove 2# oil inlet pipe ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.3.9.4 Removal and installation of 3# oil inlet pipe

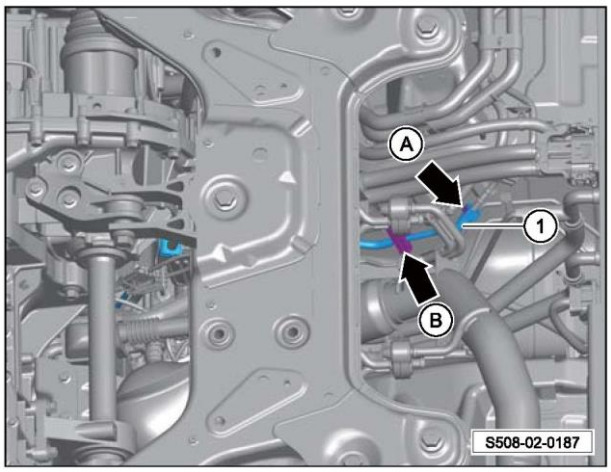
Disassembly procedures

1 Release the fuel system pressure. Refer to 2.3.9.1

Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

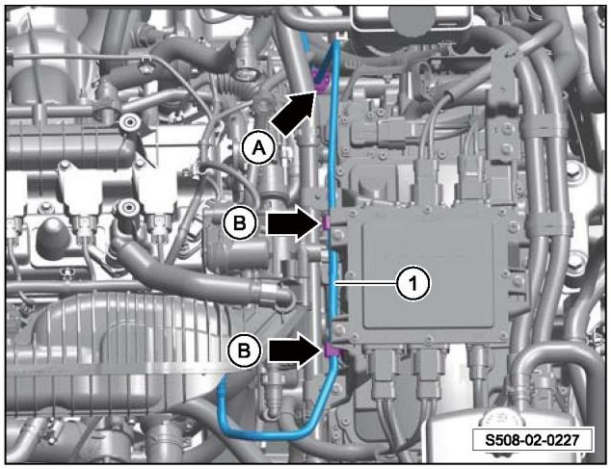


4 Removal of 3# oil inlet pipe

a. Lift the vehicle.

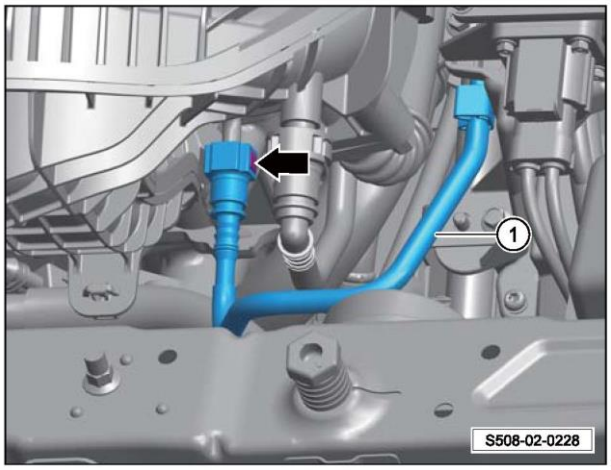
b. Press the quick connector (see arrow A) and disengage the fuel inlet pipe 3 ① from the fuel inlet pipe 2.

c. Disengage the fixing pipe clamp of 3# oil inlet pipe ① (see arrow B).



d. Disengage the fixing pipe clamp of 3# oil inlet pipe ① (see arrow A).

e. Disengage the fixing clip of 3# oil inlet pipe ① (see arrow B).



f. Press the quick connector (see the arrow) and disengage 3# oil inlet pipe ① from the fuel distributor component.

g. Remove 3# oil inlet pipe ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.3.9.5 Removal and installation of fuel tank assembly

Disassembly procedures

Tip:

When removing or installing the fuel system or its pipeline, do not use any electric tool which may generate electric spark.

1 Release the fuel system pressure. Refer to 2.3.9.1 Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

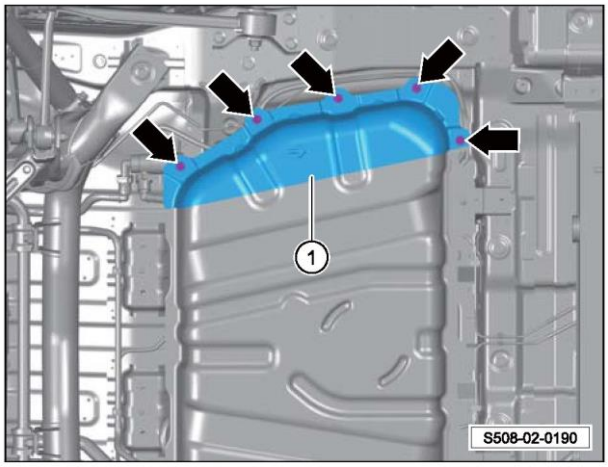
3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

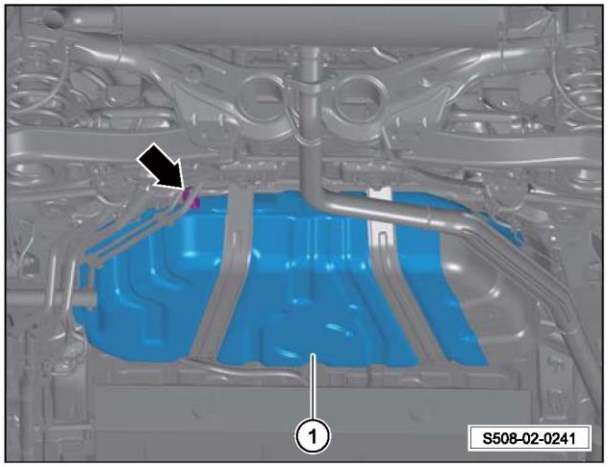
4 Draw fuel from the fuel tank at the filler.

5 Remove the fuel tank assembly

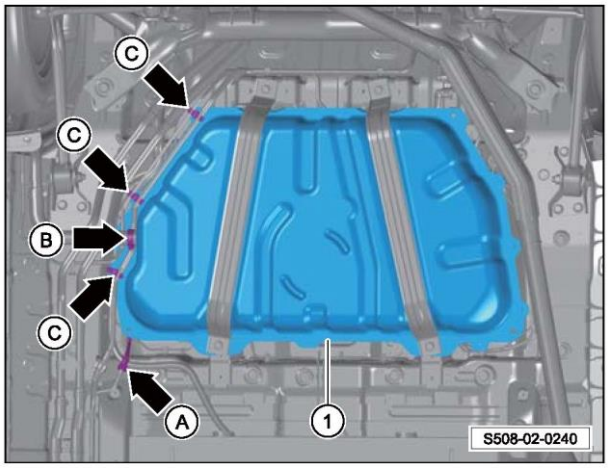
a. Lift the vehicle.

b. Unscrew the fixing bolt (see the arrow), and remove the fuel tank assembly heat shield ①.





c. Press the quick connector (see the arrow) and disengage the fuel vapor pipe 1 from the fuel tank assembly ①.



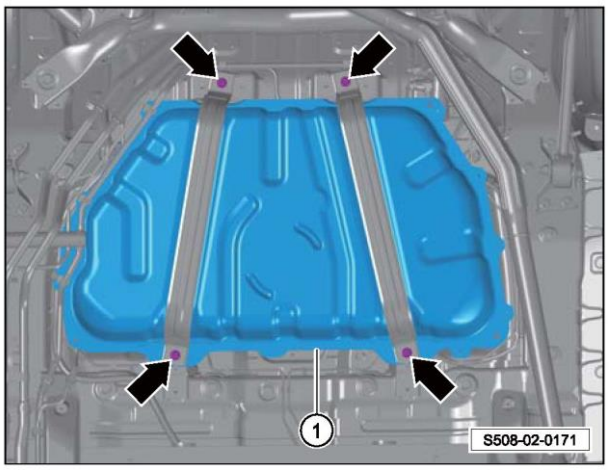
d. Press the quick connector (see arrow A) and disengage the fuel inlet pipe 1 from the fuel inlet pipe 2.

e. Loosen the fixing clamp (see arrow B) and disengage the fuel filling hose from the fuel tank assembly ①.

f. Disengage the fixing clamp of the 1# canister desorption pipe (see arrow C).

Tip:

After disengaging the fuel filling hose, seal the fuel tank body nozzle to prevent sundries from entering the fuel tank.

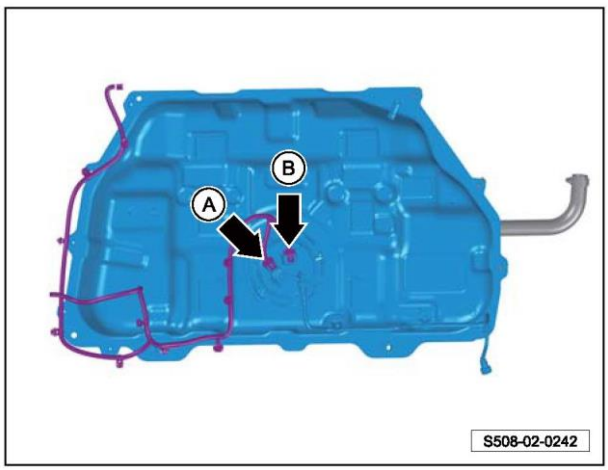


g. Use the lifting device to support the fuel tank assembly. Refer to 2.3.8.1 List of special tools.

h. Unscrew the fixing bolt (see the arrow), and remove the fuel tank assembly mounting strip.

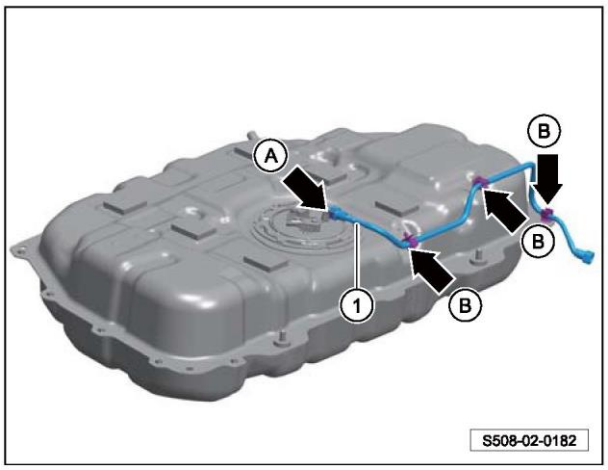
i. One technician adjusts the lifting device to slowly lower the fuel tank assembly ① to a certain height, while another technician observes whether the fuel tank assembly ① interferes with other components of the vehicle body.

- Tightening torque of bolt: 50±3 N·m



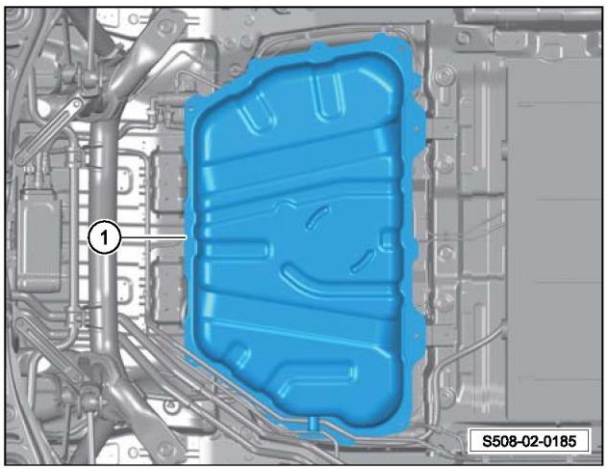
j. Disconnect the connector (see arrow A) of the fuel tank pressure sensor.

k. Disconnect the electronic fuel pump connector (see arrow B).



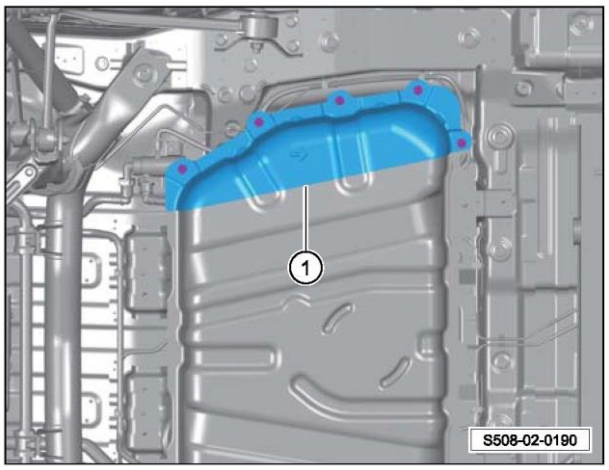
l. Press the quick connector (see arrow A) and disengage the fuel inlet pipe 1 ① from the electronic fuel pump.

m. Disengage the fixing pipe clamp of 1# oil inlet pipe ① and fuel tank assembly (see arrow B).



n. Remove the fuel tank assembly ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the pipes are secure after installing the fuel tank assembly.
- As shown in the figure, check whether the fuel tank assembly heat shield ① is installed normally and damaged.

2.3.9.6 Removal and installation of electronic fuel pump

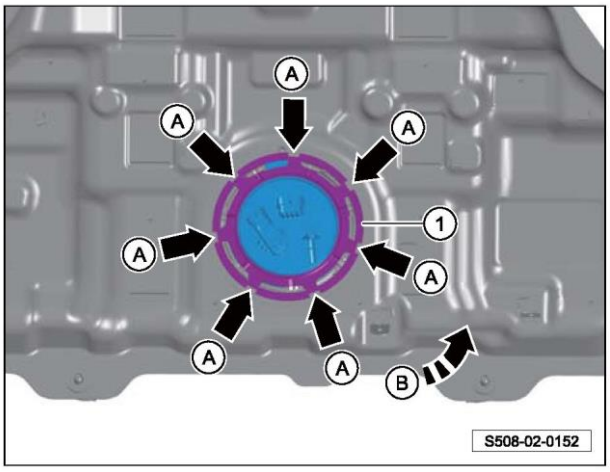
Disassembly procedures

1 Release the fuel system pressure. Refer to 2.3.9.1 Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

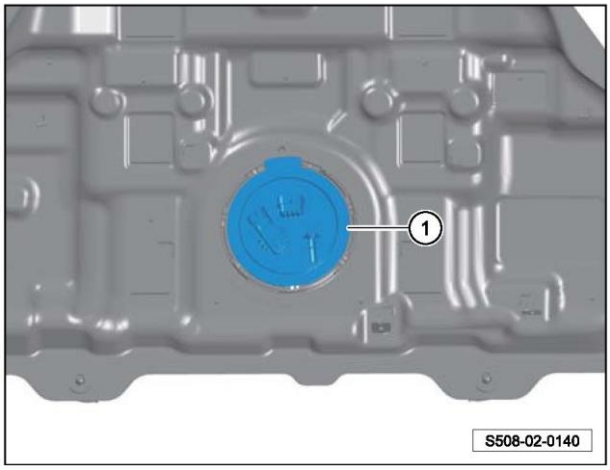
4 Remove the fuel tank assembly. Refer to 2.3.9.5 Removal and installation of fuel tank assembly



5 Removal of electronic fuel pump

a. Install the electronic fuel pump mounting cover with removal and installation tools. Refer to 2.3.8.1 List of special tools. Align the electronic fuel pump mounting cover card slot in the position of (see arrow A).

b. Rotate the electronic fuel pump mounting cover removal and installation tool in the direction of (arrow B), and remove the electronic fuel pump mounting cover ①.



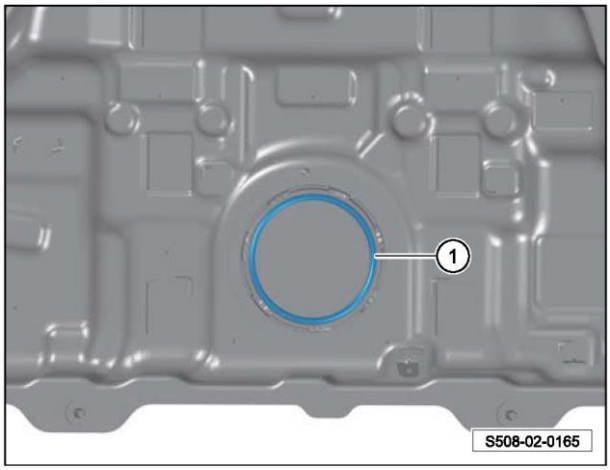
c. Take out the fuel pump assembly ①.

Notes

Always wear protective gloves when taking out the electronic fuel pump assembly.

Do not bend the float arm of the fuel level sensor when taking out the electronic fuel pump assembly.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Replace the sealing ring ① with a new one before installing the electronic fuel pump assembly.
- Check whether the pipes are secure after installing the electronic fuel pump assembly.

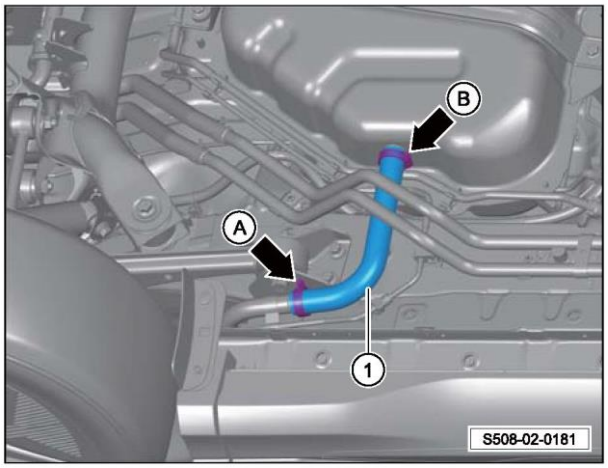
2.3.9.7 Removal and installation of fuel filling hose

Disassembly procedures

1 Release the fuel system pressure. Refer to 2.3.9.1 Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



4 Remove the fuel filling hose

a. Lift the vehicle.

b. Loosen the fixing clamp (see arrow A) and disengage the fuel filling hose ① from the fuel filling pipe assembly.

c. Loosen the fixing clamp (see arrow B) and disengage the fuel filling hose ① from the fuel tank assembly.

d. Remove the fuel filling pipe hose ①.

Tip:

After disengaging the fuel filler hose, plug the pipe mouth of the fuel tank with a piece of clean rag to prevent the ingress of foreign matters.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.3.9.8 Removal and installation of fuel filling pipe assembly

Disassembly procedures

Warning:

When removing or installing the fuel system or its pipeline, do not use any electric tool which may

generate electric spark.

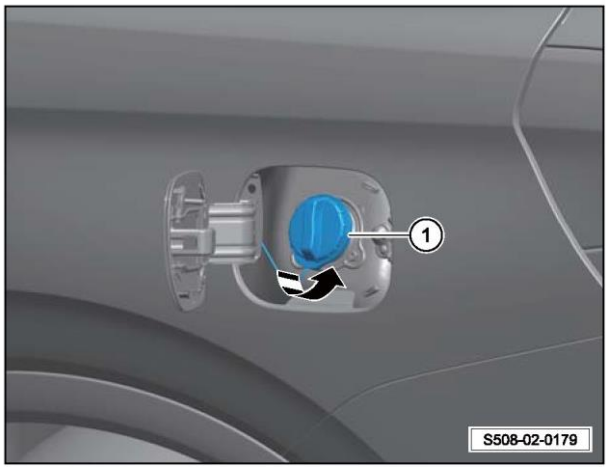
1 Release the fuel system pressure. Refer to 2.3.9.1 Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

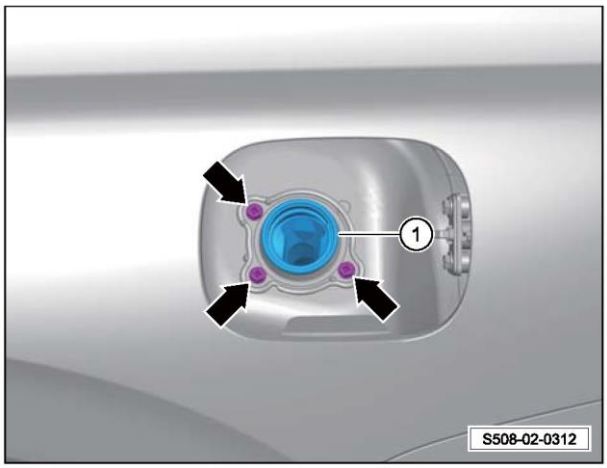
5 Remove the rear hub trim (left). Refer to 9.15.2.4 Removal and installation of rear hub trim



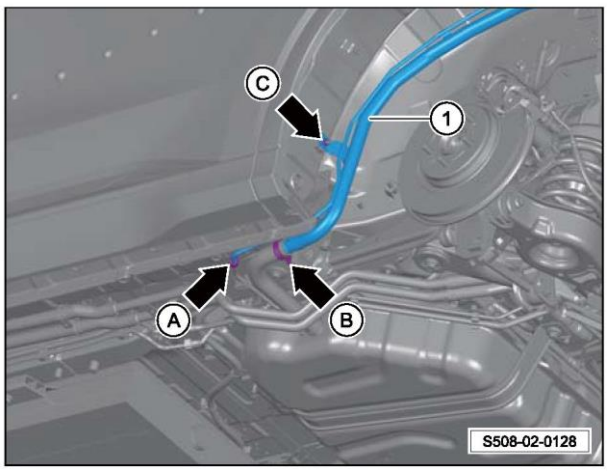
6 Remove the fuel filling pipe assembly

a. Open the fuel tank cap.

b. Unscrew the filler cap ① in the direction of the arrow.



c. Unscrew the fixing bolt (see the arrow) connecting fuel filling pipe assembly ① and the body.



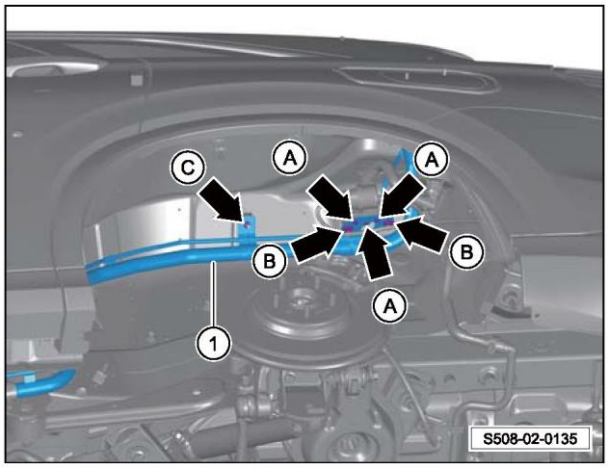
d. Press the quick connector (see arrow A) and disengage the fuel vapor pipe 1 from the fuel filling pipe assembly ①.

e. Loosen the fixing clamp (see arrow B), and disengage the fuel filling hose from the fuel filling pipe assembly ①.

f. Unscrew the fixing nut (see arrow C) connecting fuel filling pipe assembly ① and the body.

Tip:

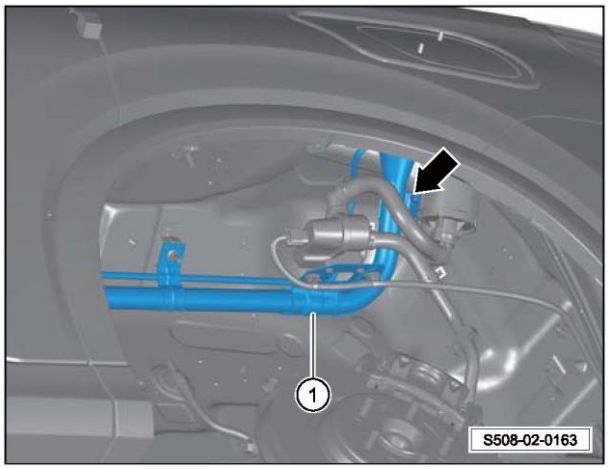
After disengaging the fuel filler hose, plug the pipe mouth of the fuel tank with a piece of clean rag to prevent the ingress of foreign matters.



g. Unscrew the fixing screw of the fuel tank leak diagnosis module assembly (see arrow A).

h. Disengage the fixing clip of the fuel tank leak diagnosis module assembly harness (see arrow B).

i. Unscrew the fixing nut (see arrow C) connecting fuel filling pipe assembly ① and the body.



j. Unscrew the fixing bolt of the air filter and fuel filling pipe assembly (see the arrow).

k. Remove the fuel filling pipe assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.3.9.9 Removal and installation of fuel distributor component

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

7 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

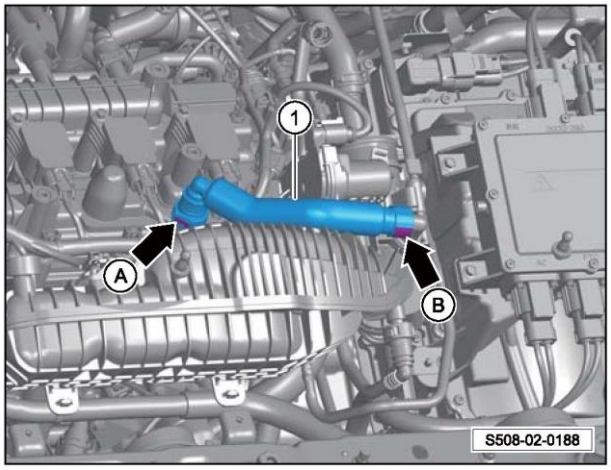
8 Remove the engine compartment fully-wrapped cover support plate component (right). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

9 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter

10 Remove the air filter intake pipe assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly

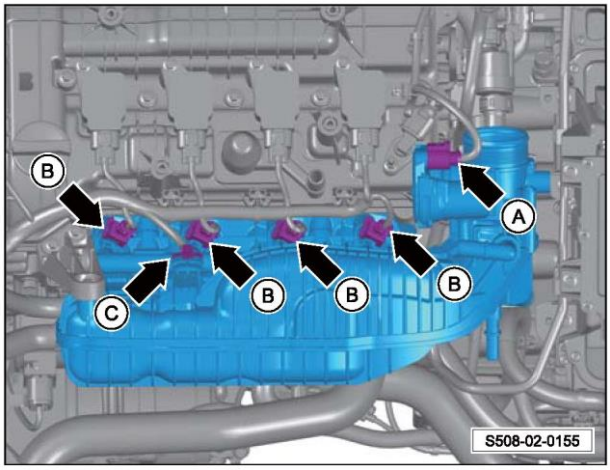
11 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly

12 Remove the HV electrical box bracket. Refer to 5.6.6.2 Removal and installation of HV box bracket



13 Remove the fuel distributor component

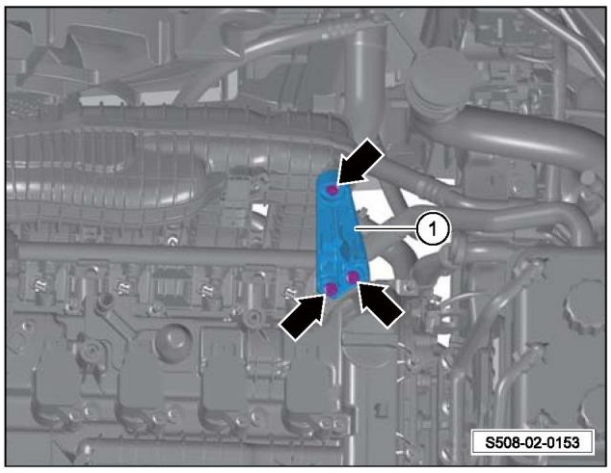
a. Press the quick connector (see arrows A and B), and remove the exhaust pipe ①.



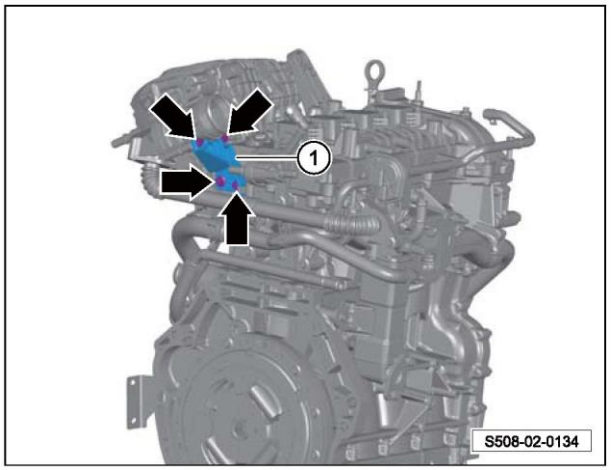
b. Disconnect the connector (see arrow A) of the electronic throttle body assembly.

c. Disconnect the connector (see arrow B) of the fuel injection nozzle.

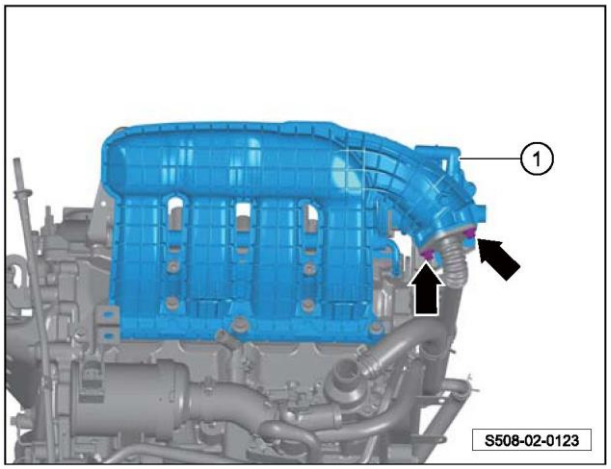
d. Disconnect the connector of the intake pressure and temperature sensor (see arrow C).



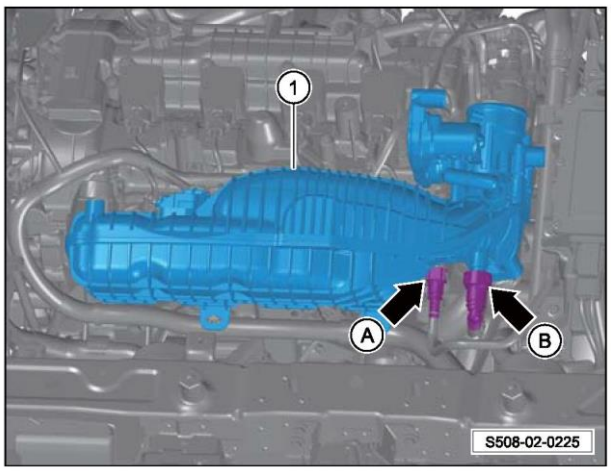
e. Unscrew the fixing bolt (see the arrow), and remove the intake manifold bracket ①.



f. Unscrew the fixing bolt (see the arrow), and remove the intake manifold bracket 2 ①.

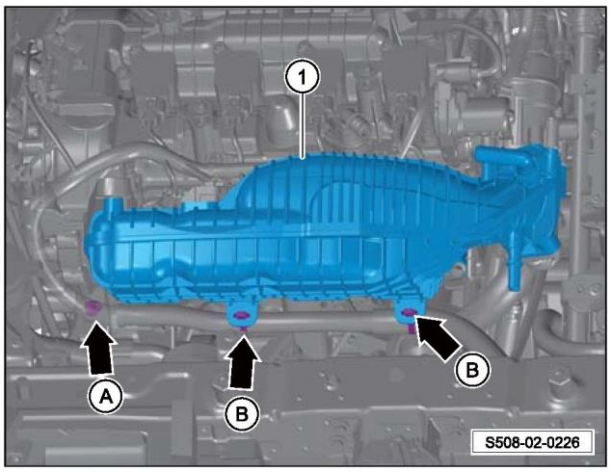


g. Unscrew the fixing bolt (see the arrow), disengage the intake manifold component ① from the EGR valve outlet pipe, and take out the sealing ring.



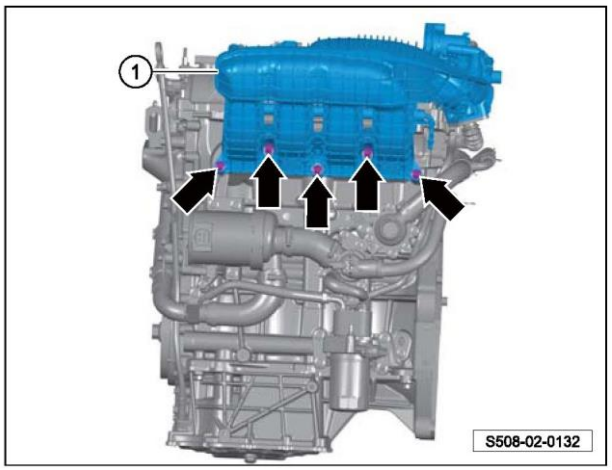
h. Press the quick connector (see arrow A) and disengage 3# oil inlet pipe from the fuel distributor component.

i. Press the quick connector (see arrow B) and disengage 4# canister desorption pipe from the intake manifold component ①.



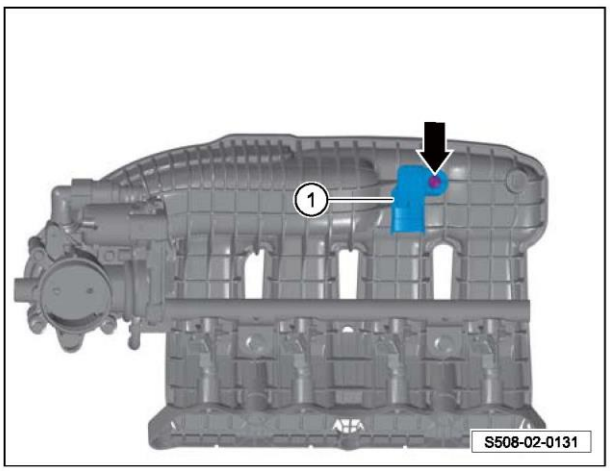
j. Unscrew the fixing bolt (see arrow A) and remove the engine harness mounting bracket.

k. Disengage the fixing clip of engine harness and intake manifold component ① (see arrow B).



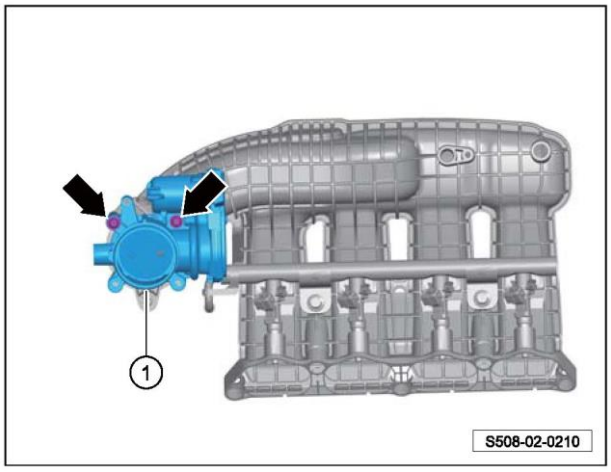
l. Unscrew the fixing bolt (see the arrow), and remove the intake manifold with accessory assembly ①.

- Tightening torque of bolt: **25 N·m**



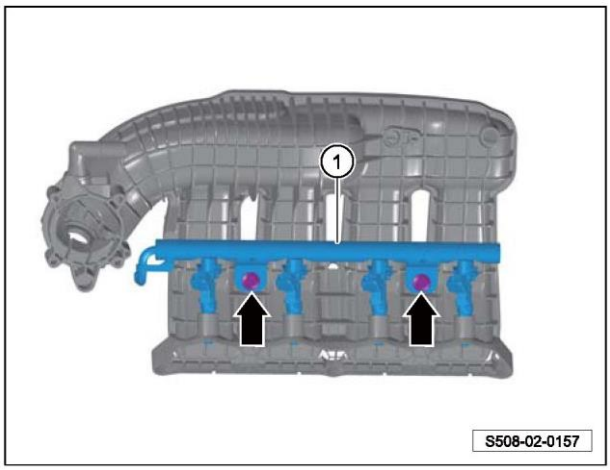
m. Unscrew the screw of the intake pressure and temperature sensor ① (see the arrow).

n. Remove the intake pressure and temperature sensor ①.



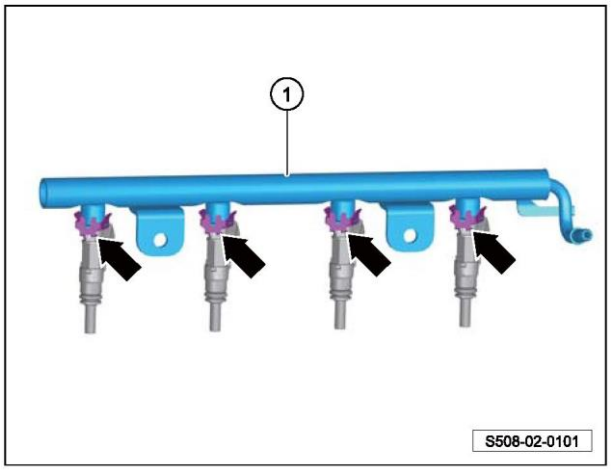
o. Unscrew the fixing bolt (see the arrow), and take out the electronic throttle body assembly ①.

- Tightening torque of bolt: **8±1 N·m**



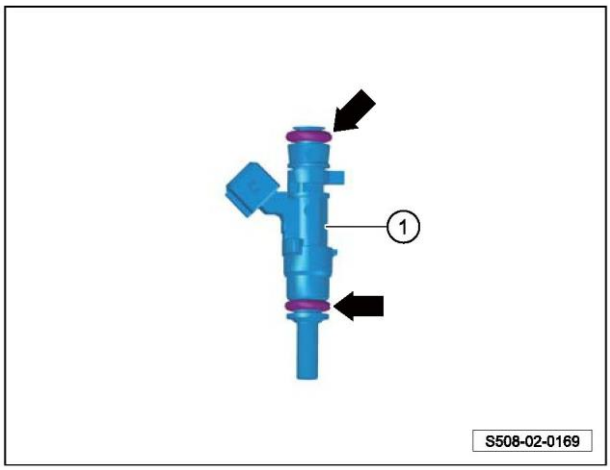
p. Unscrew the fixing bolts (see the arrows) and remove the fuel distributor component ①.

- Tightening torque of bolt: **25 N·m**



q. Disengage the fixing clip of the fuel injector (see the arrow).

r. Separate the fuel rail ① and the fuel injector.



s. Remove the sealing ring of the fuel injector ① (see the arrow).

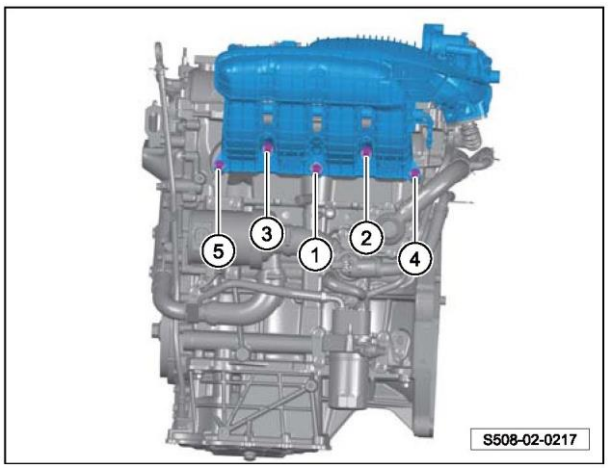
Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace the sealing ring and clip of the fuel injector.

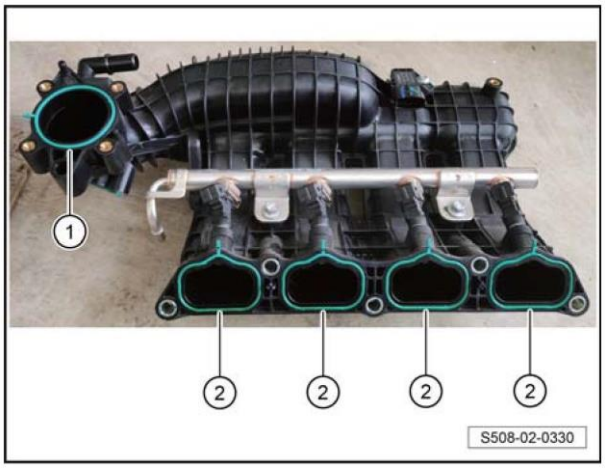
– Tighten the intake manifold component fixing bolts in sequence from ① to ⑤.

• Tightening torque of bolt: **25 N·m**



– Check whether there are carbon deposits in the intake manifold and air inlet, and clean them if necessary.

– Replace the electronic throttle body assembly O-ring ① and intake manifold sealing ring ②.



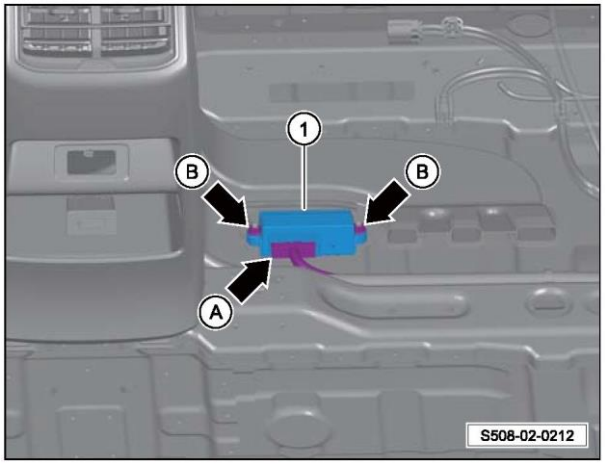
2.3.9.10 Removal and installation of oil pump controller

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front passenger seat and backrest assembly. Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly



4 Removal of oil pump controller

a. Disconnect the connector of the oil pump controller (see arrow A).

b. Unscrew the fixing nut (see arrow B), and remove the oil pump controller ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.4 Auxiliary emission control system

2.4.1 Description and operation

2.4.1.1 Overview

Overview of fuel evaporation system

The function of the fuel evaporative emission control system (EVAP) is to prevent gasoline vapor in the vehicle fuel tank from being discharged into the atmosphere and polluting the environment.

It is mainly composed of the canister assembly, canister filter, canister control valve, canister ventilation valve, liquid collector and pipeline.

Overview of crankcase ventilation system

The crankcase ventilation system is used to suck the gas entering the crankcase when the engine is running into the cylinder for combustion again.

It is mainly composed of crankcase ventilation pipe assembly and so on.

Working principle of canister control valve

The canister control valve consists of electromagnetic coil, armature and valve. A filter screen is provided at the inlet. The air flow through the canister control valve is related to the duty cycle of the electrical pulse that the ECU outputs to the canister control valve as well as the pressure difference between the inlet and outlet of the canister control valve. When there is no electrical pulse, the canister control valve will close.

Fuel evaporation leakage module

Check the leakage of evaporation from the vehicle fuel tank.

After parking and flameout, control the DMTL module by the engine controller to run the self-test.

Fuel vapor pipe assembly

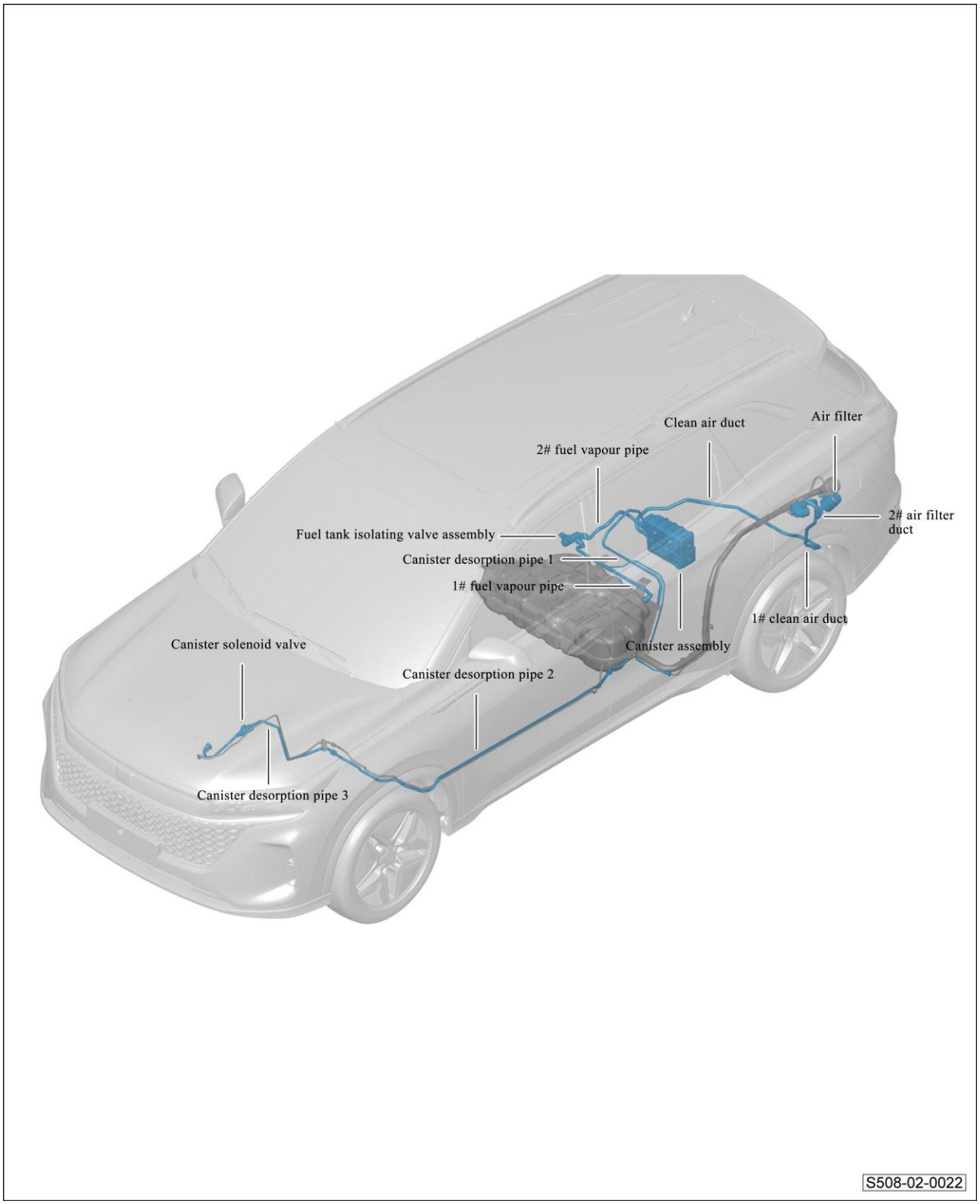
The fuel vapor pipe assembly is equipped with a double check valve ventilation pipe component, which controls the fuel vapor in the canister to flow to the intake manifold and air filter exhaust pipe assembly during desorption to avoid gas blow-by.

Canister filter

It is used to filter dust in the atmosphere.

2.4.2 Component position

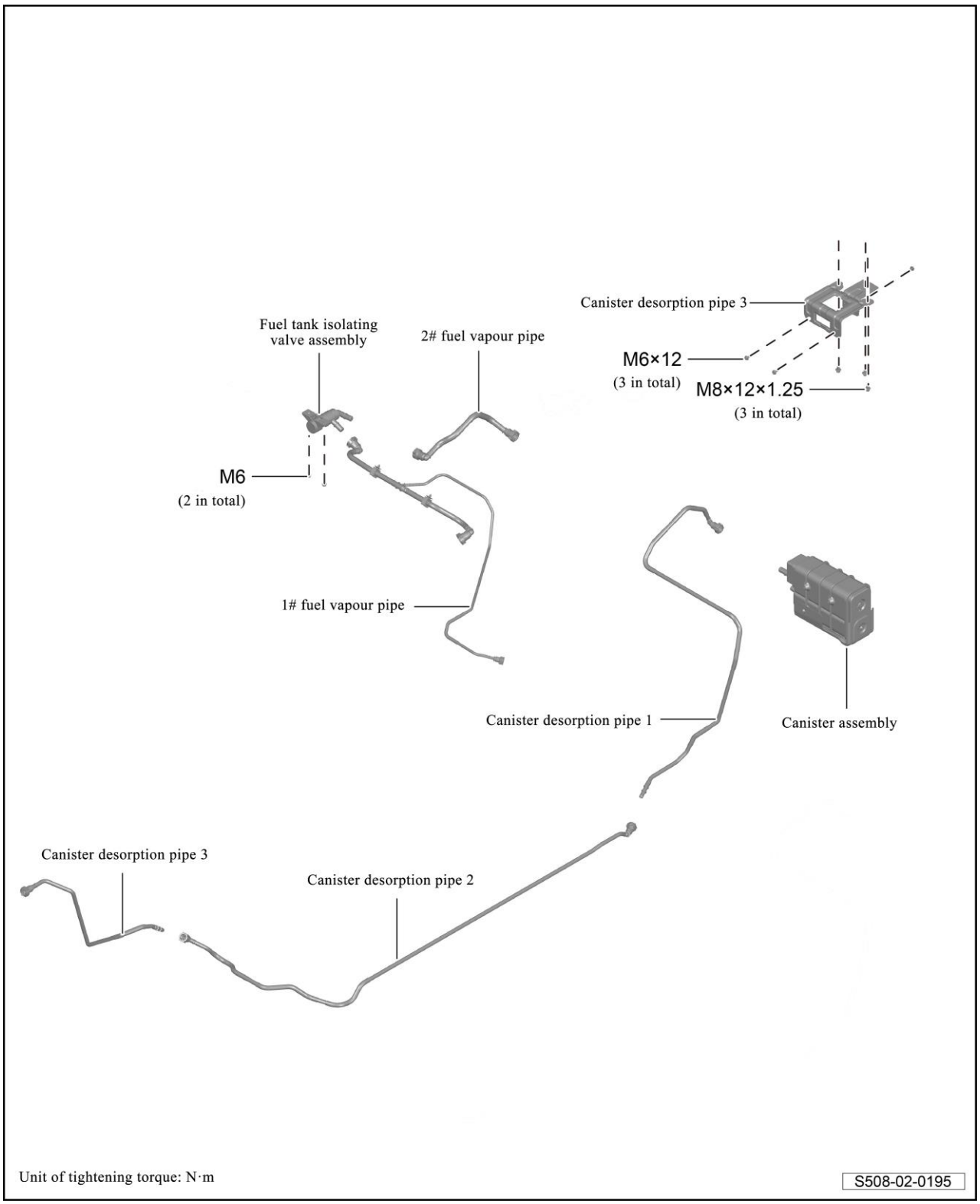
2.4.2.1 Component position



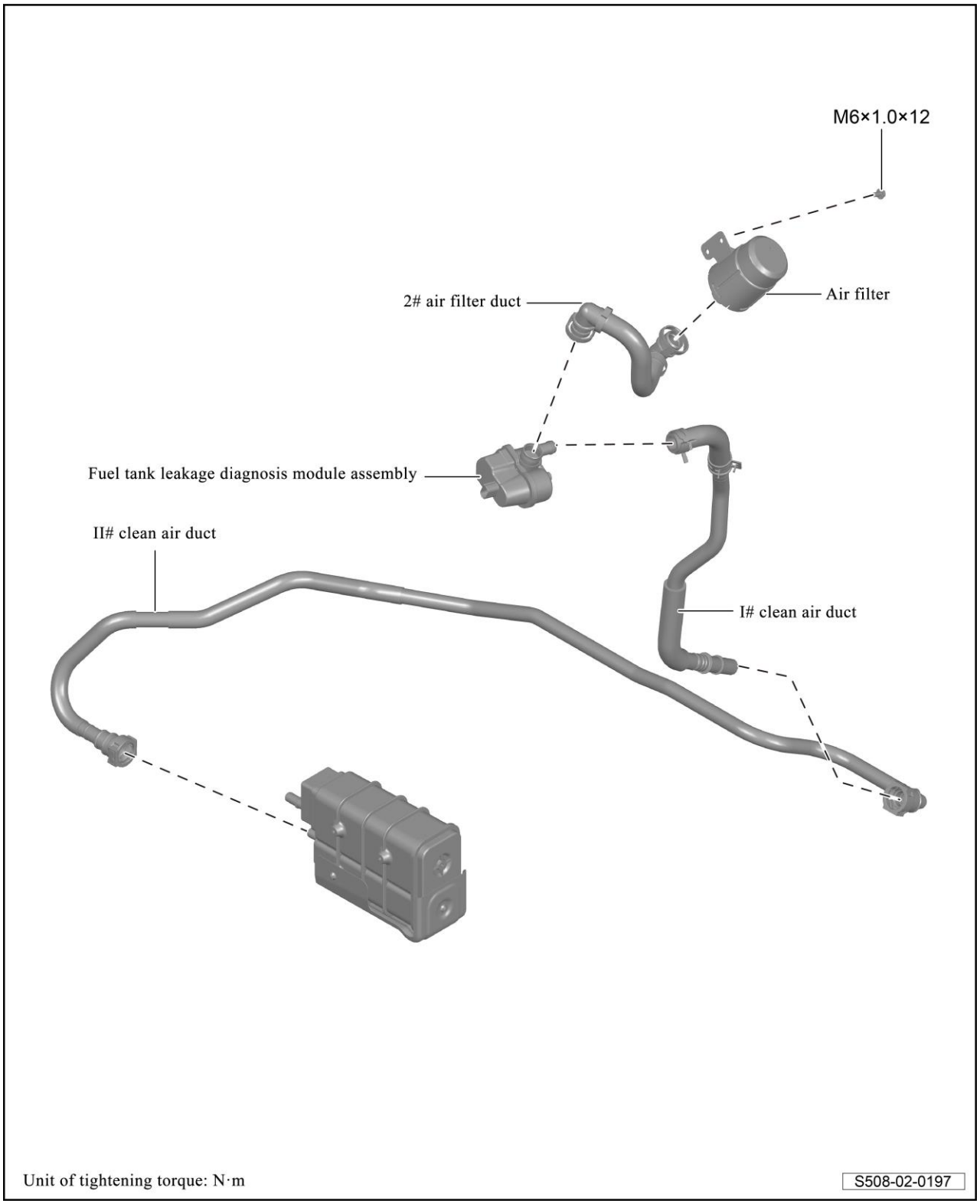
2.4.3 Exploded view

2.4.3.1 Exploded view

Exploded View 1 of Auxiliary Emission Control System

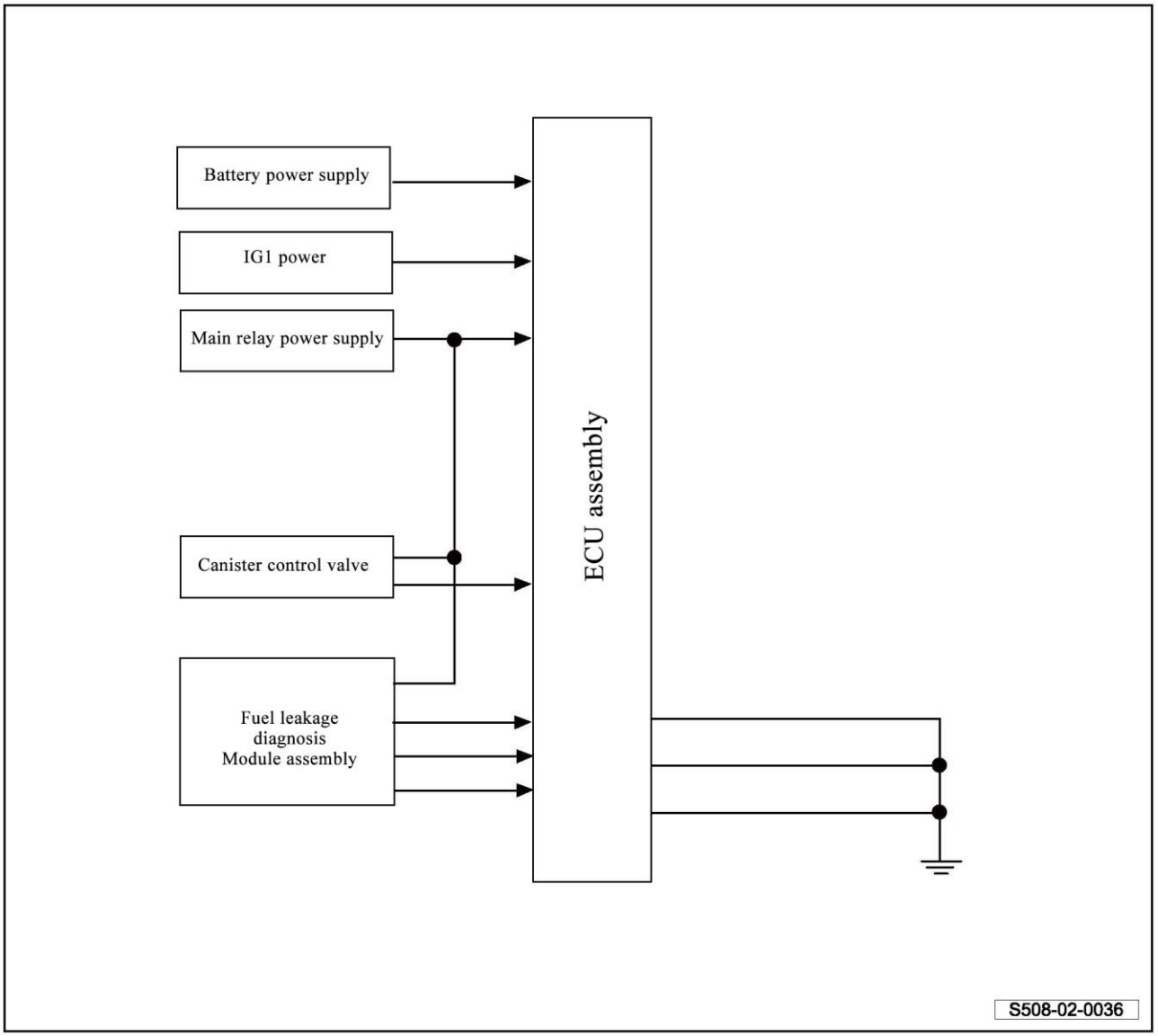


Exploded View 2 of Auxiliary Emission Control System



2.4.4 Electrical schematic diagram

2.4.4.1 Schematic diagram of working principle



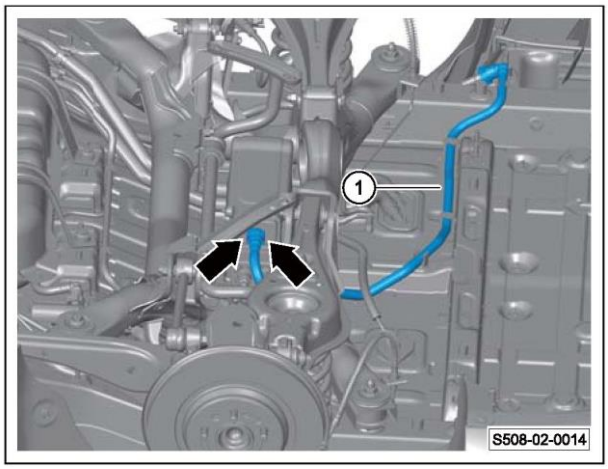
2.4.5 Removal and installation

2.4.5.1 Removal and installation of canister assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

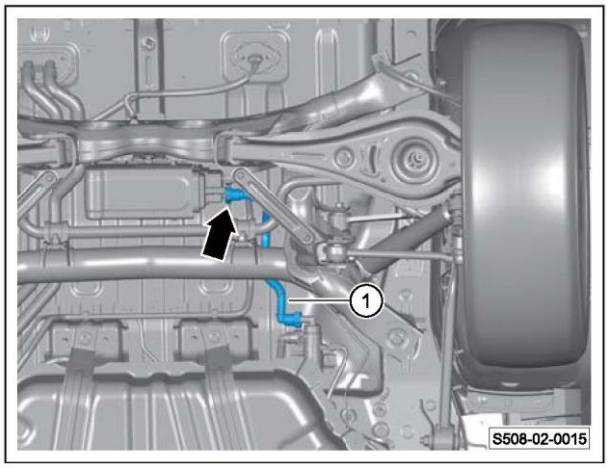
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



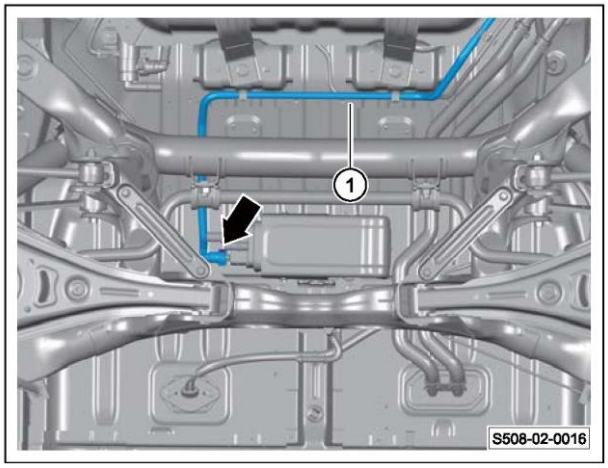
3 Remove the canister assembly

a. Lift the vehicle.

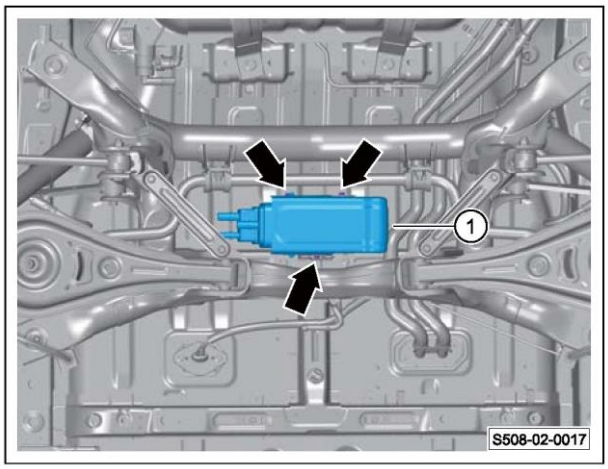
b. Press the quick connector (see the arrow) and disengage the clean air duct ① from the canister assembly.



c. Press the quick connector (see the arrow) and disengage the fuel vapor pipe 2 ① from the canister assembly.



d. Press the quick connector (see the arrow) and disengage the canister desorption pipe 1 ① from the canister assembly.



e. Unscrew the fixing bolts (see the arrows) and remove the canister assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

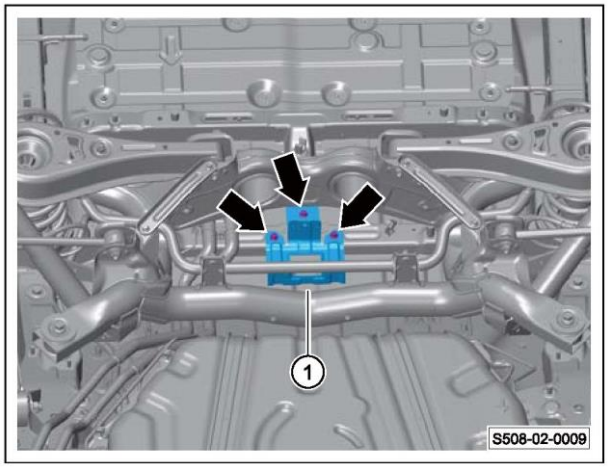
2.4.5.2 Removal and installation of canister mounting bracket

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the canister assembly. Refer to 2.4.5.1 Removal and installation of canister assembly



4 Removal of canister mounting bracket

a. Unscrew the fixing bolt (see the arrow), and remove the canister mounting bracket ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.4.5.3 Removal and installation of 1# clean air duct

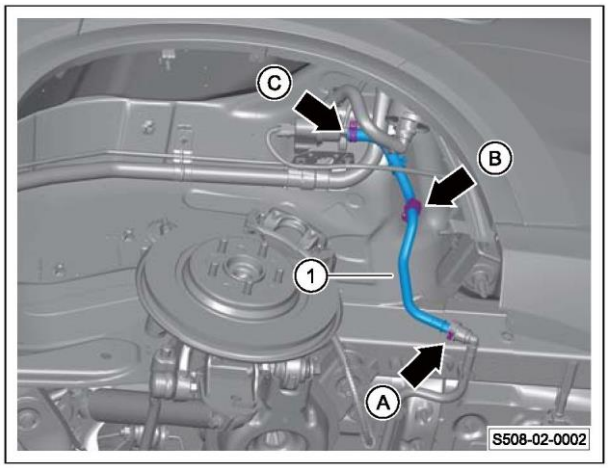
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

4 Remove the rear hub trim (left). Refer to 9.15.2.4 Removal and installation of rear hub trim



5 Removal of 1# clean air duct

a. Press the quick connector (see arrow A) and disengage 1# clean air duct ① from 2# clean air duct.

b. Disengage fixing clip of 1# clean air duct ① (see arrow B).

c. Loosen the fixing clamp (see arrow C), and remove 1# clean air duct ①.

Installation procedures

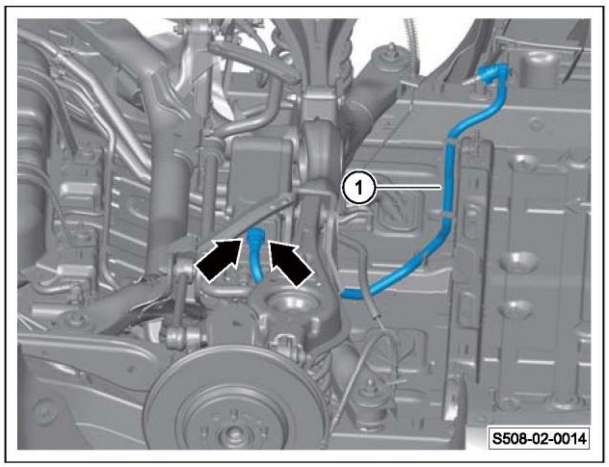
The installation procedure is to be performed basically in the reverse order:

2.4.5.4 Removal and installation of 2# clean air duct

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

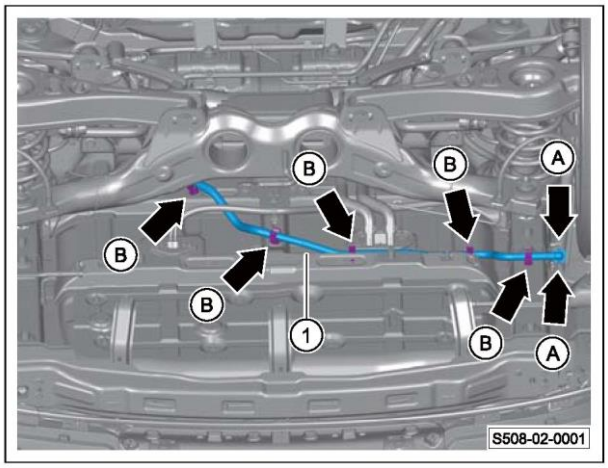
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Removal of clean air duct

a. Lift the vehicle.

b. Press the quick connector (see the arrow) and disengage the clean air duct 2 ① from the canister assembly.



c. Press the quick connector (see arrow A) and disengage 2# clean air duct ① from 1# clean air duct.

d. Disengage the fixing clip (see arrow B), and remove 2# clean air duct ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.4.5.5 Removal and installation of air filter

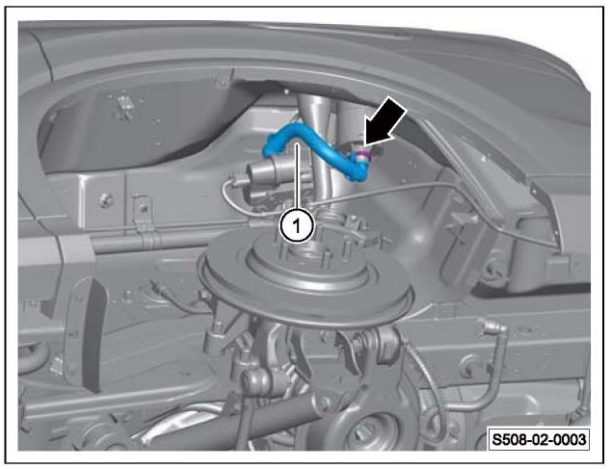
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

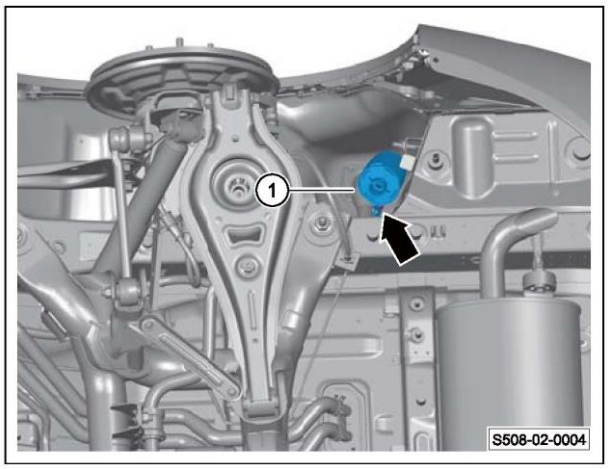
3 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

4 Remove the rear hub trim (left). Refer to 9.15.2.4 Removal and installation of rear hub trim



5 Removal of air filter

a. Press the quick connector (see the arrow), and disengage 2# air filter duct ① from the air filter.



b. Unscrew the fixing bolt (see the arrow), and remove the air filter ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.4.5.6 Removal and installation of 2# air filter duct

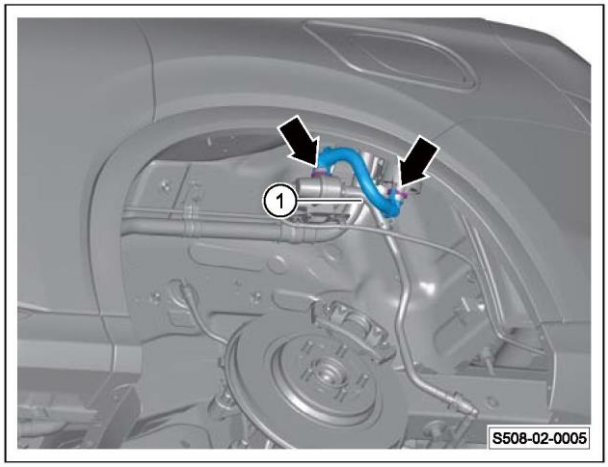
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

4 Remove the rear hub trim (left). Refer to 9.15.2.4 Removal and installation of rear hub trim



5 Removal of 2# air filter duct

a. Press the quick connector (see the arrow), and remove 2# air filter duct ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.4.5.7 Removal and installation of fuel tank leakage diagnosis module assembly

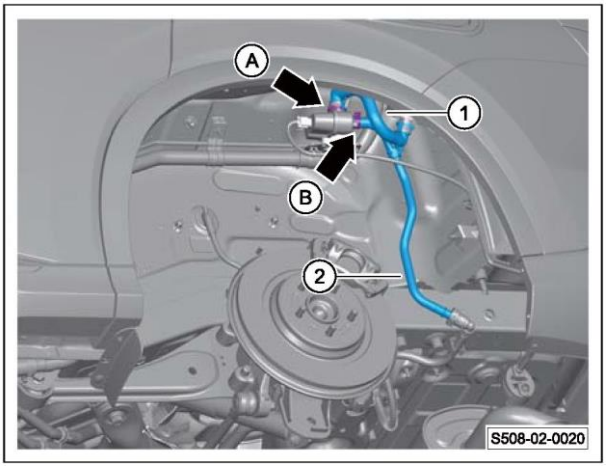
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

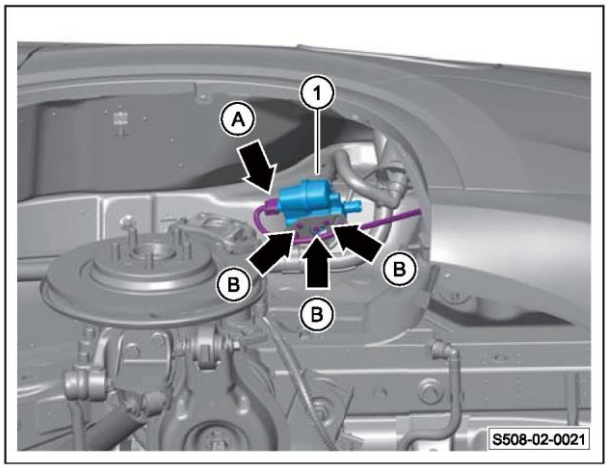
4 Remove the rear hub trim (left). Refer to 9.15.2.4 Removal and installation of rear hub trim



5 Removal of fuel tank leakage diagnosis module assembly

a. Press the quick connector (see arrow A), and disengage 2# air filter duct ① from the fuel tank leakage diagnosis module assembly.

b. Loosen the fixing clamp (see arrow B), and disengage the clean air duct ② from the fuel tank leakage diagnosis module assembly.



c. Disconnect the connector (see arrow A), unscrew the fixing screw (see arrow B), and remove the fuel tank leakage diagnosis module assembly ①.

Installation procedures

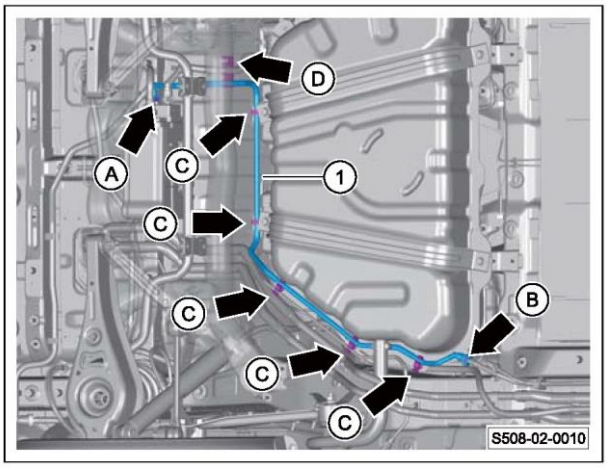
The installation procedure is to be performed basically in the reverse order:

2.4.5.8 Removal and installation of 1# canister desorption pipe

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Removal of 1# canister desorption pipe

a. Press the quick connector (see arrow A) and disengage the canister desorption pipe 1 ① from the canister assembly.

b. Press the quick connector (see arrow B) and disengage the canister desorption pipe 1 ① from the canister desorption pipe 2.

c. Disengage the fixing clip (see arrows C and D), and remove 1# canister desorption pipe ①.

Installation procedures

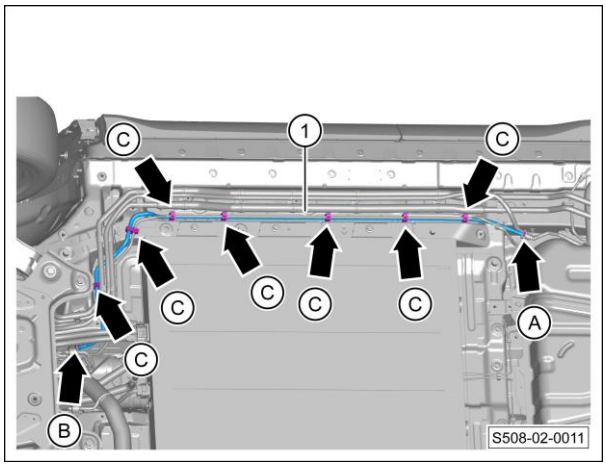
The installation procedure is to be performed basically in the reverse order:

2.4.5.9 Removal and installation of 2# canister desorption pipe

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Removal of 2# canister desorption pipe

a. Press the quick connector (see arrow A) and disengage the canister desorption pipe 2 ① from the canister desorption pipe 1.

b. Press the quick connector (see arrow B) and disengage the canister desorption pipe 2 ① from the canister desorption pipe 3.

c. Disengage the fixing clamp (see arrow C), and remove 2# canister desorption pipe ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.4.5.10 Removal and installation of 3# canister desorption pipe

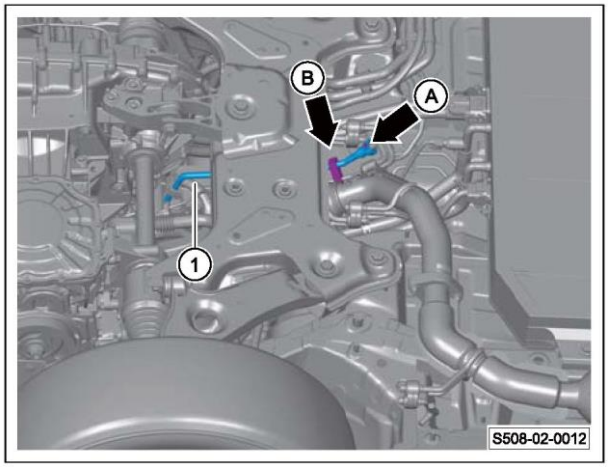
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly

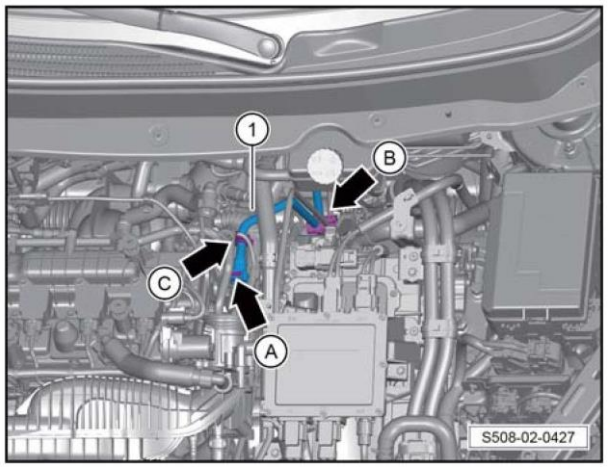
4 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



5 Removal of 3# canister desorption pipe

a. Press the quick connector (see arrow A) and disengage the canister desorption pipe 3 ① from the canister desorption pipe 2.

b. Disengage the fixing clamp of 3# canister desorption pipe (see arrow B).



c. Press the quick connector (see arrow A) and disengage the canister desorption pipe 3 ① from the canister solenoid valve.

d. Disengage the double fixing clamps of oil pipe (see arrow B), and remove 3# canister desorption pipe ①.

e. Disengage the fixing clamp of the engine harness and 3# canister desorption pipe (see arrow C), and remove 3# canister desorption pipe ①.

Installation procedures

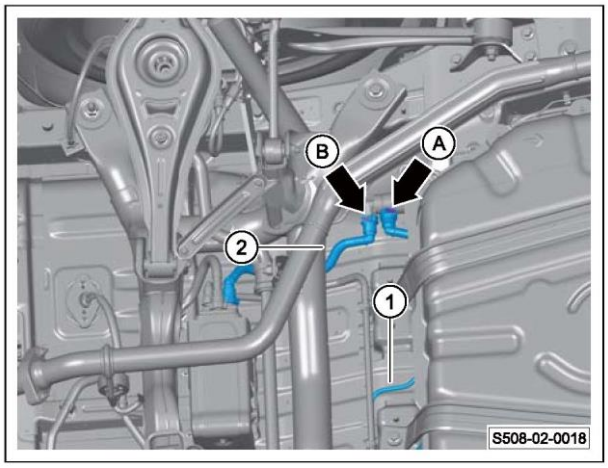
The installation procedure is to be performed basically in the reverse order:

2.4.5.11 Removal and installation of fuel tank isolation valve assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

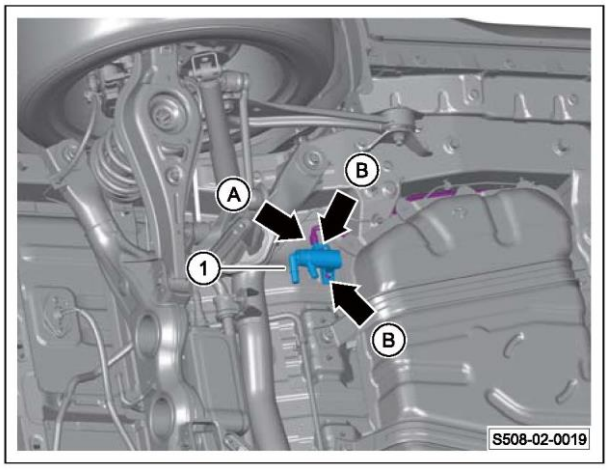
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the fuel tank isolation valve assembly

a. Press the quick connector (see arrow A) and disengage the fuel vapor pipe 1 ① from the fuel tank isolation valve assembly.

b. Press the quick connector (see arrow B), and disengage 2# fuel vapor pipe ① from the fuel tank isolation valve assembly.



c. Disconnect the connector (see arrow A), unscrew the fixing nut (see arrow B), and remove the fuel tank isolation valve assembly ①.

Installation procedures

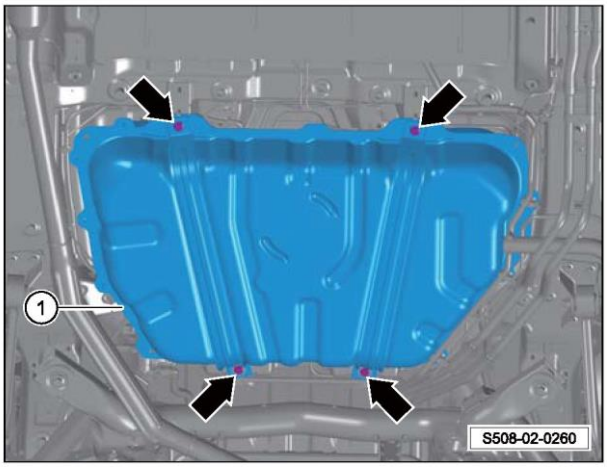
The installation procedure is to be performed basically in the reverse order:

2.4.5.12 Removal and installation of 1# fuel vapor pipe

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

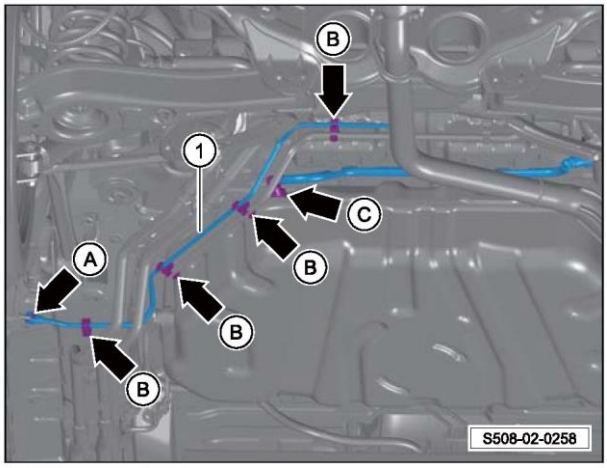


3 Removal of 1# fuel vapor pipe

a. Support the fuel tank assembly by using a lifting device.

b. Unscrew the fixing bolt (see the arrow), and remove the fuel tank mounting strip.

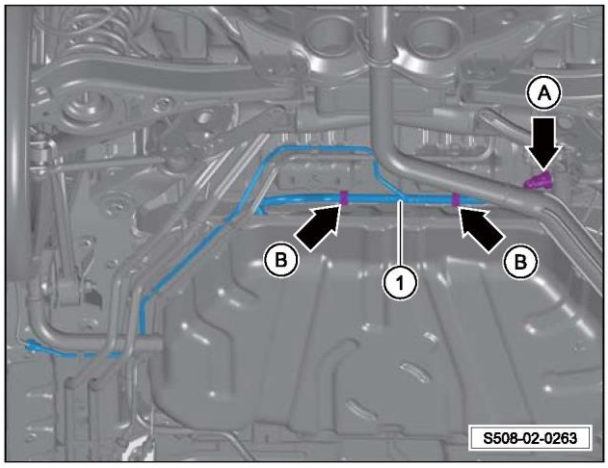
c. One technician adjusts the lifting device to slowly lower the fuel tank assembly ① to a certain height, while another technician pays attention to observe whether the fuel tank assembly ① interferes with other components of the vehicle body.



d. Press the quick connector (see arrow A) and disengage the fuel vapor pipe 1 ① from the fuel filling pipe assembly.

e. Disengage the fixing clamp (see arrow B) of the fuel vapor pipe 1 ①.

f. Press the quick connector (see arrow C) and disengage the fuel vapor pipe 1 ① from the fuel tank assembly.



g. Press the quick connector (see arrow A) and disengage the fuel vapor pipe 1 ① from the fuel tank isolation valve assembly.

h. Disengage the fixing pipe clamp (see arrow B), and remove 1# fuel vapor pipe ①.

Installation procedures

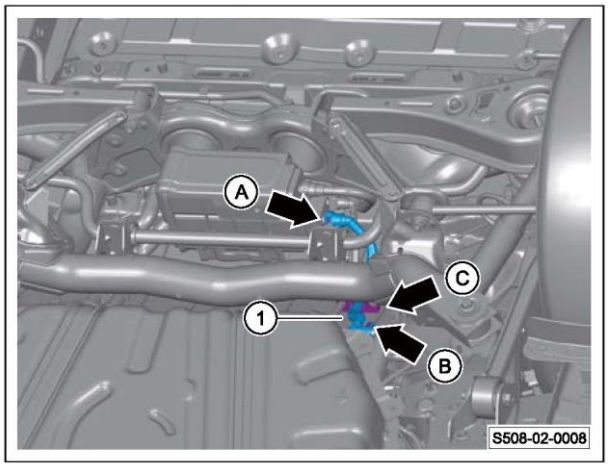
The installation procedure is to be performed basically in the reverse order:

2.4.5.13 Removal and installation of 2# fuel vapor pipe

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Removal of 2# fuel vapor pipe

a. Press the quick connector (see arrow A) and disengage the fuel vapor pipe 2 ① from the canister assembly.

b. Press the quick connector (see arrow B) and disengage the fuel vapor pipe 2 ① from the fuel tank isolation valve assembly.

c. Disengage the fixing pipe clamp (see arrow C), and remove 2# fuel vapor pipe ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.5 Exhaust system

2.5.1 Specification

2.5.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between three-way catalytic converter assembly and EGR valve component	Hexagon head flange bolt M8×16	25±2
Three-way catalytic converter assembly bracket	Hexagon head flange bolt M8×20	25±2
Three-way catalytic converter assembly and cylinder block	Hexagon flange nut	35±3
Connection of three-way catalytic converter assembly and rear-step three-way catalytic converter assembly	Hexagon nut with serrated flangeM10×1.25	50±4
Front silencer assembly and rear-step three-way catalytic converter assembly Assembly	Hexagon nut with serrated flangeM10×1.25	50±4
Front silencer assembly and rear silencer assembly	Hexagon nut with serrated flangeM10×1.25	50±4
EGR valve temperature sensor body	M12×1.5	23

2.5.2 Description and operation

2.5.2.1 Overview

Overview of exhaust system

The exhaust system is mainly composed of a three-way catalytic converter assembly, rear three-way catalytic converter assembly, front silencer assembly and rear silencer assembly.

The main function of the exhaust system is to discharge the exhaust gas generated by combustion in the cylinder block, treat harmful emissions as much as possible and reduce the noise. The exhaust gas is converted into carbon dioxide after catalytic conversion by the catalytic converter, and most of the harmful gases are converted into harmless gases. After that, noise will be reduced through the silencer before the gas is finally discharged into the atmosphere. After catalytic conversion and noise reduction of the exhaust system, the emission can meet the national standards.

The surface of the ceramic carrier in the catalyst assembly exposed to the exhaust gas is coated with a layer of catalyst. The catalyst contains three kinds of noble metals such as platinum, palladium and rhodium, and these catalysts act to promote chemical reactions.

Catalyst is a substance that accelerates a chemical reaction without changing itself. The exhaust gas of the engine contains carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOX). When exhaust gas flow through the ceramic carrier, chemical reaction will happen in the three-way catalytic converter assembly. Carbon monoxide and hydrocarbons are oxidized by oxygen (O2) in the exhaust gas and converted into carbon dioxide (CO2) and water vapor (H2O). Nitrogen oxide is converted to nitrogen (N2) by a reduction reaction with carbon monoxide. This three-way catalytic converter assembly is called the “three-effect” type, as it can simultaneously convert the three components (CO, HC and NOX) in the exhaust into harmless neutral gases.

2.5.3 Working principle

2.5.3.1 Working principle

Working principle of exhaust system

Fresh air and gasoline are mixed and burned in the cylinder, which generates high-temperature and high-pressure gas to push the piston. When the gas energy is released, it becomes exhaust gas and is discharged out of the engine.

The exhaust gas passes through the catalytic converter assembly to convert incompletely burned pollutants into harmless substances to protect the environment. The front silencer assembly is connected to the catalytic converter assembly to isolate and attenuate the pulsating pressure generated when the exhaust valve opens each time. The catalytic converter assembly is finally connected to the rear silencer assembly that is installed at the rear of the exhaust system. There are a series of baffles, chambers, orifice pipes and pipelines inside it. By using the phenomenon of mutual interference cancellation of acoustic wave reflection, the sound energy can be weakened to meet national standards before being discharged into the atmosphere.

Working principle of front oxygen sensor

The front oxygen sensor is installed on the three-way catalytic converter assembly. By detecting the oxygen content in the exhaust gas, it indirectly provides mixture concentration signals to the ECU, so that the ECU can correct the fuel injection pulse width and keep the mixture concentration at about 14.7% of the theoretical value.

The sensing element of the oxygen sensor is a ceramic tube with pores, the outside of which is surrounded by engine exhaust and the inside is open to the atmosphere. The sensing ceramic tube wall is a solid electrolyte with an electrically heated tube inside. When the temperature reaches 350°C, the sensing ceramic tube will have the characteristics of the solid electrolyte. The operation of the oxygen sensor is realized by converting the oxygen ion concentration difference inside and outside the sensing ceramic tube into a voltage signal for output. Different level of output voltage is caused by electron migration inside the ceramic tube. If the mixture concentration is high, the difference in oxygen ion concentration between the inside and outside of the ceramic tube and the potential difference will be high. A large number of oxygen ions will move from the inside to the outside, leading to high output voltage. If the mixture concentration is low, the difference in oxygen ion concentration between the inside and outside of the ceramic tube and the potential difference will be low. Only a few oxygen ions will move from the inside to the outside, leading to low output voltage. The signal voltage changes dramatically near the theoretical equivalent air-fuel ratio (λ=1).

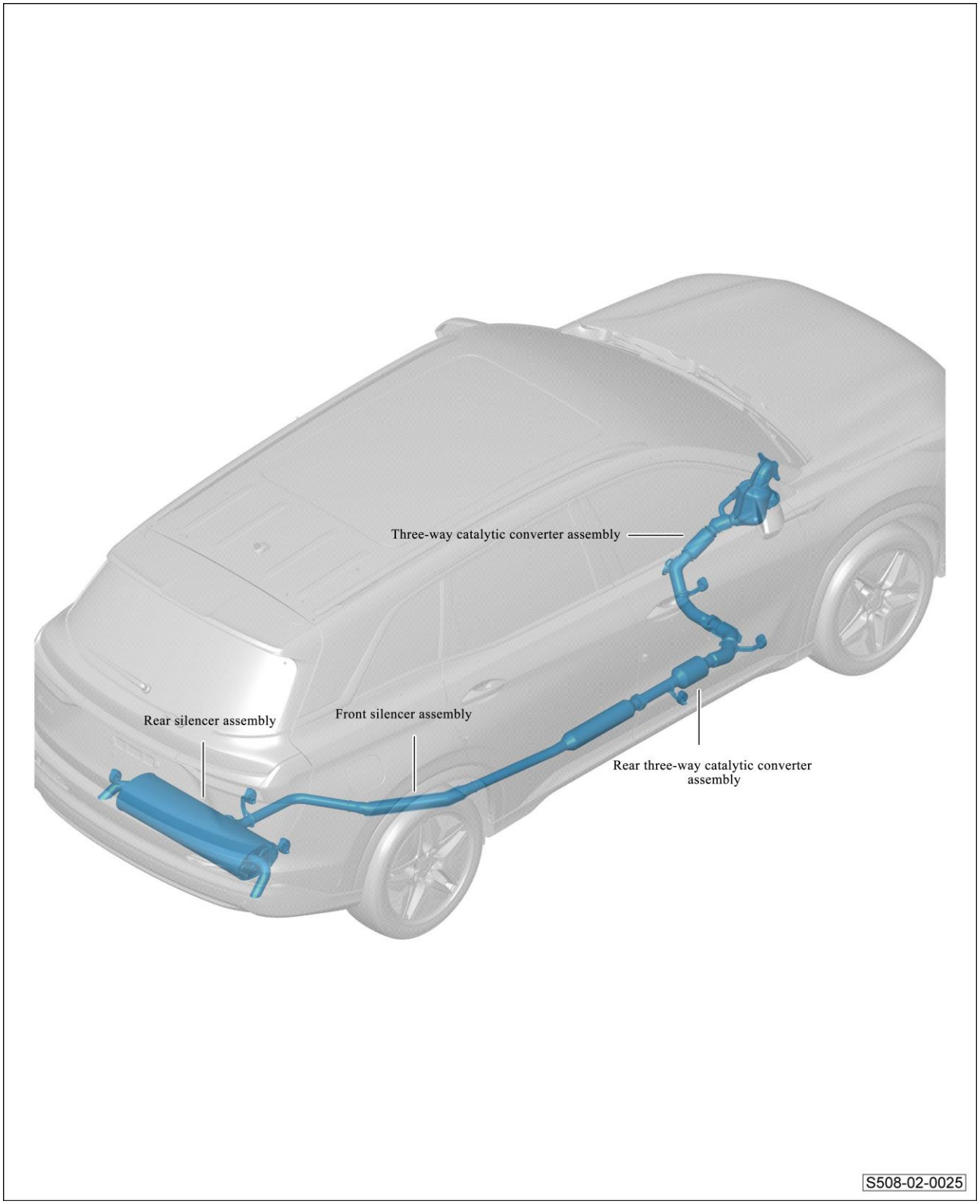
Working principle of rear oxygen sensor

The rear oxygen sensor is installed on the rear three-way catalytic converter assembly, and its working principle is the same as that of the front oxygen sensor. If the catalytic converter works normally and the fuel control system is in closed-loop control, the sensor voltage will be stably output at 0.45 V.

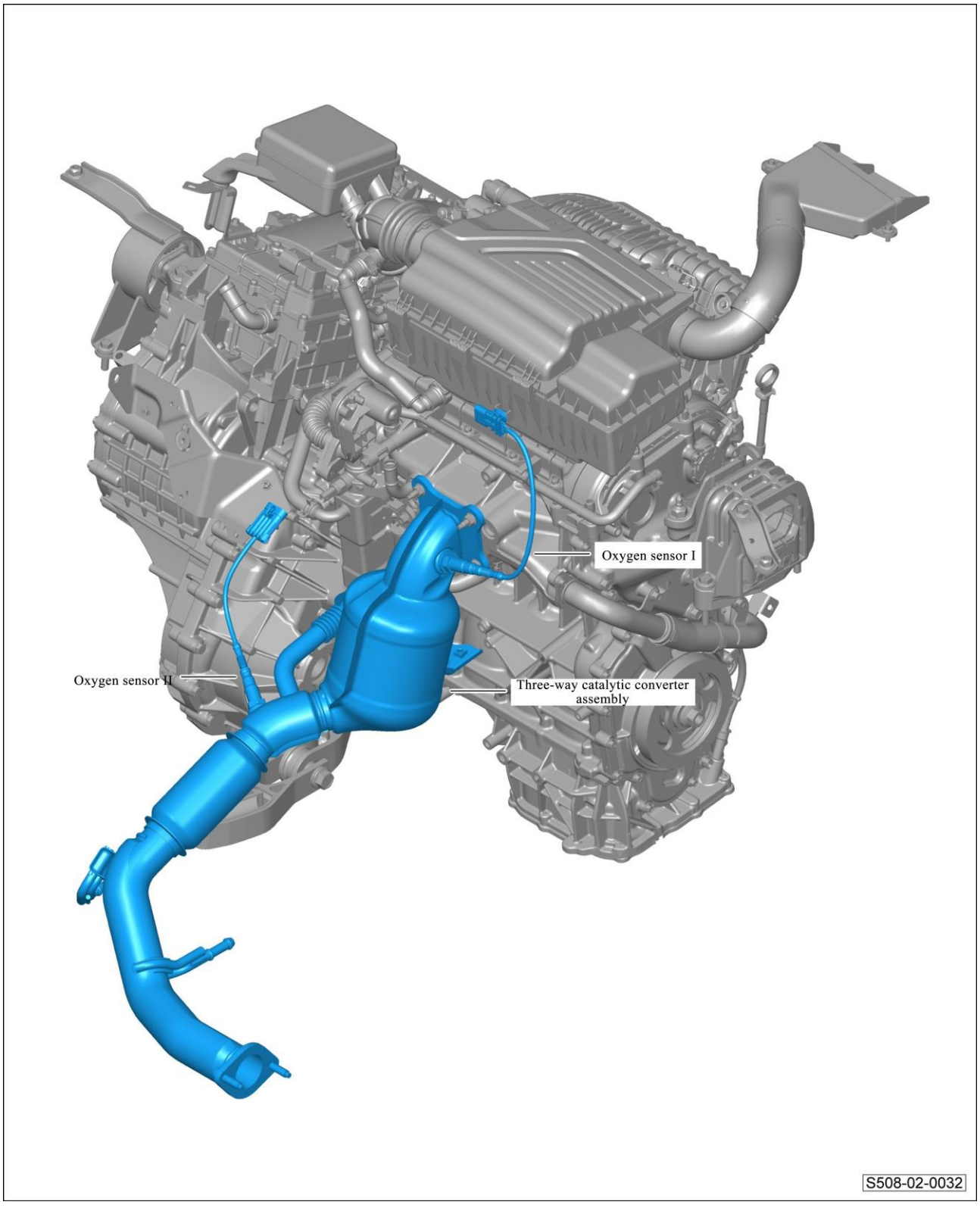
2.5.4 Component position

2.5.4.1 Component position

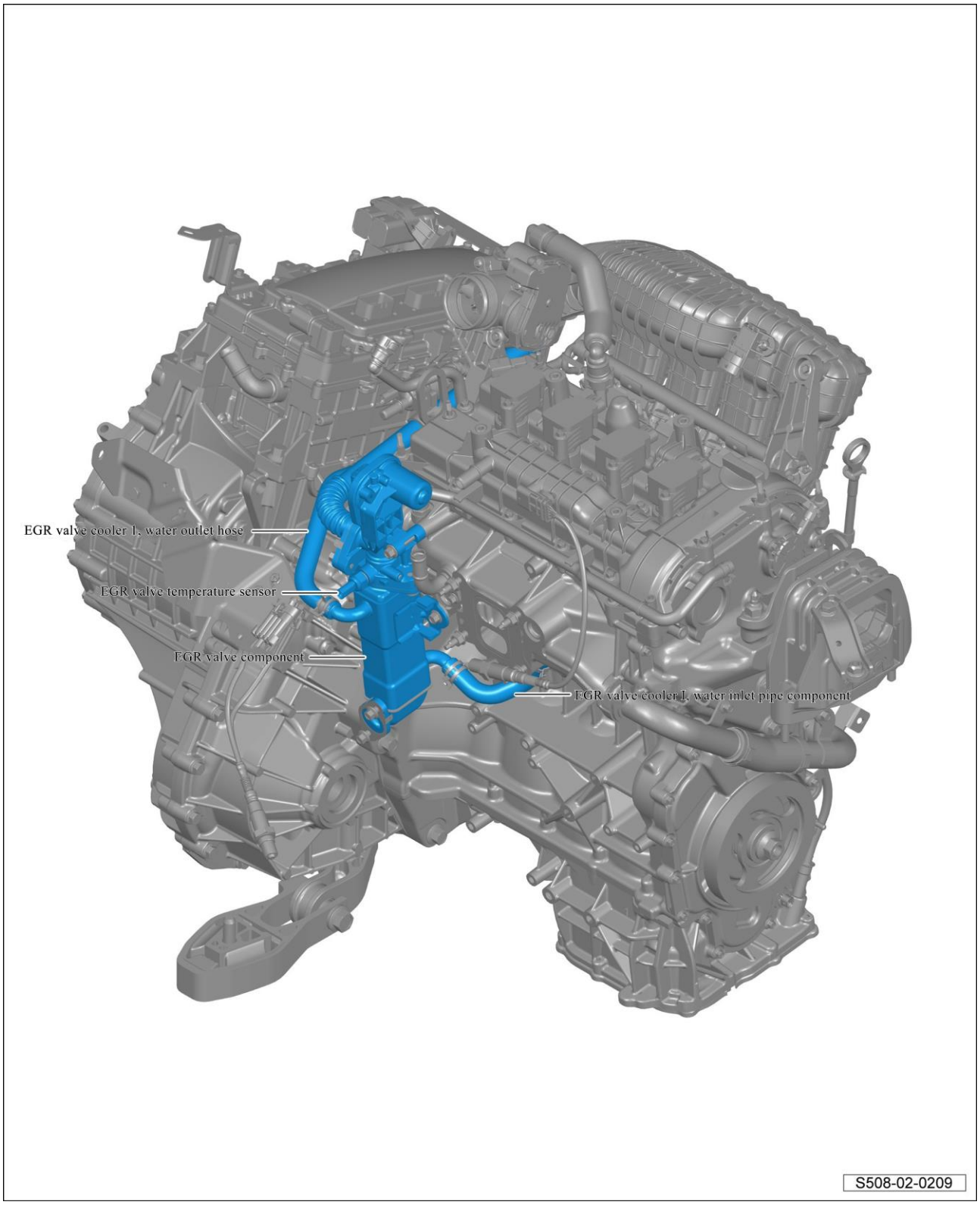
Component location diagram 1



Component location diagram 2



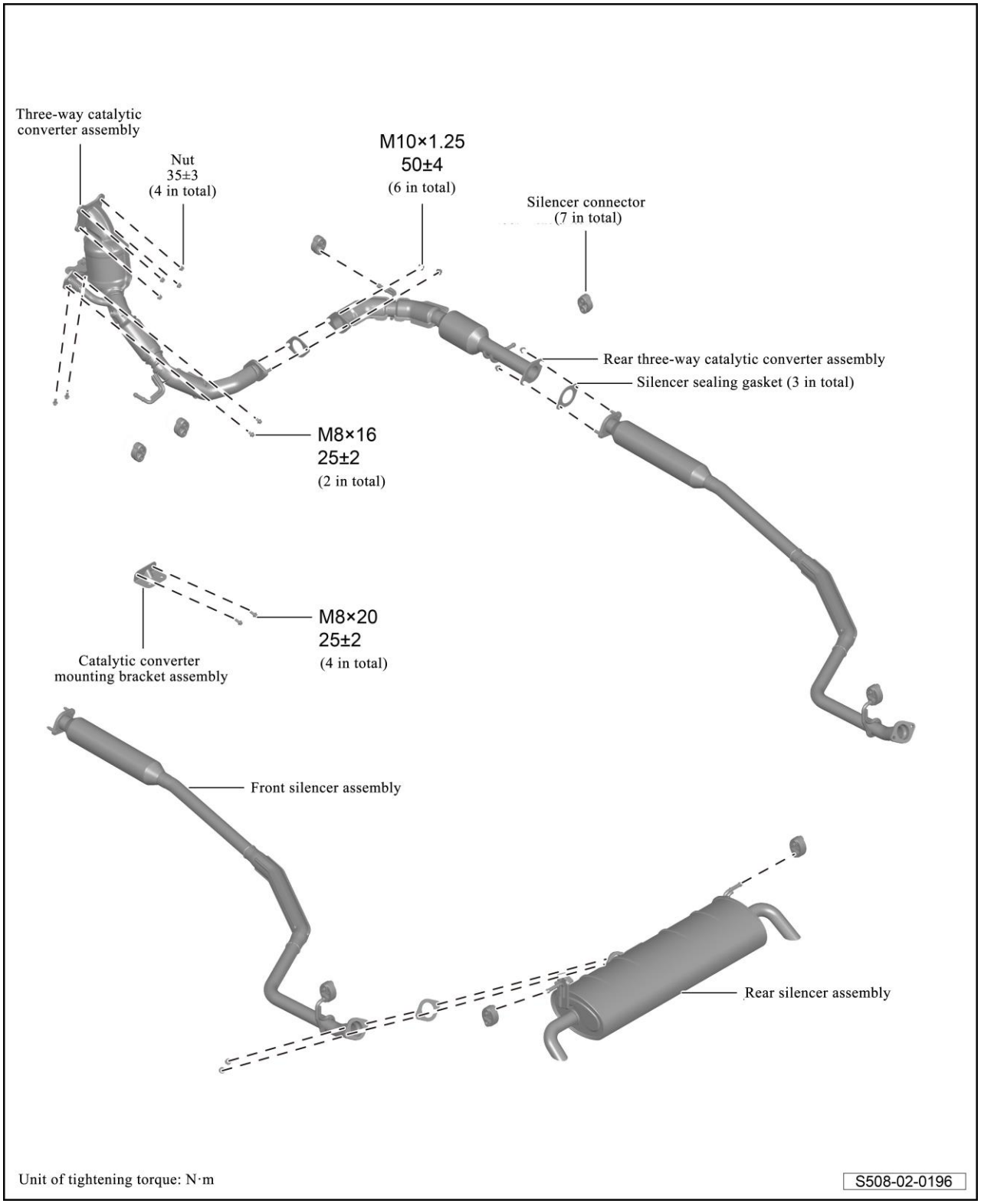
Component location diagram 3



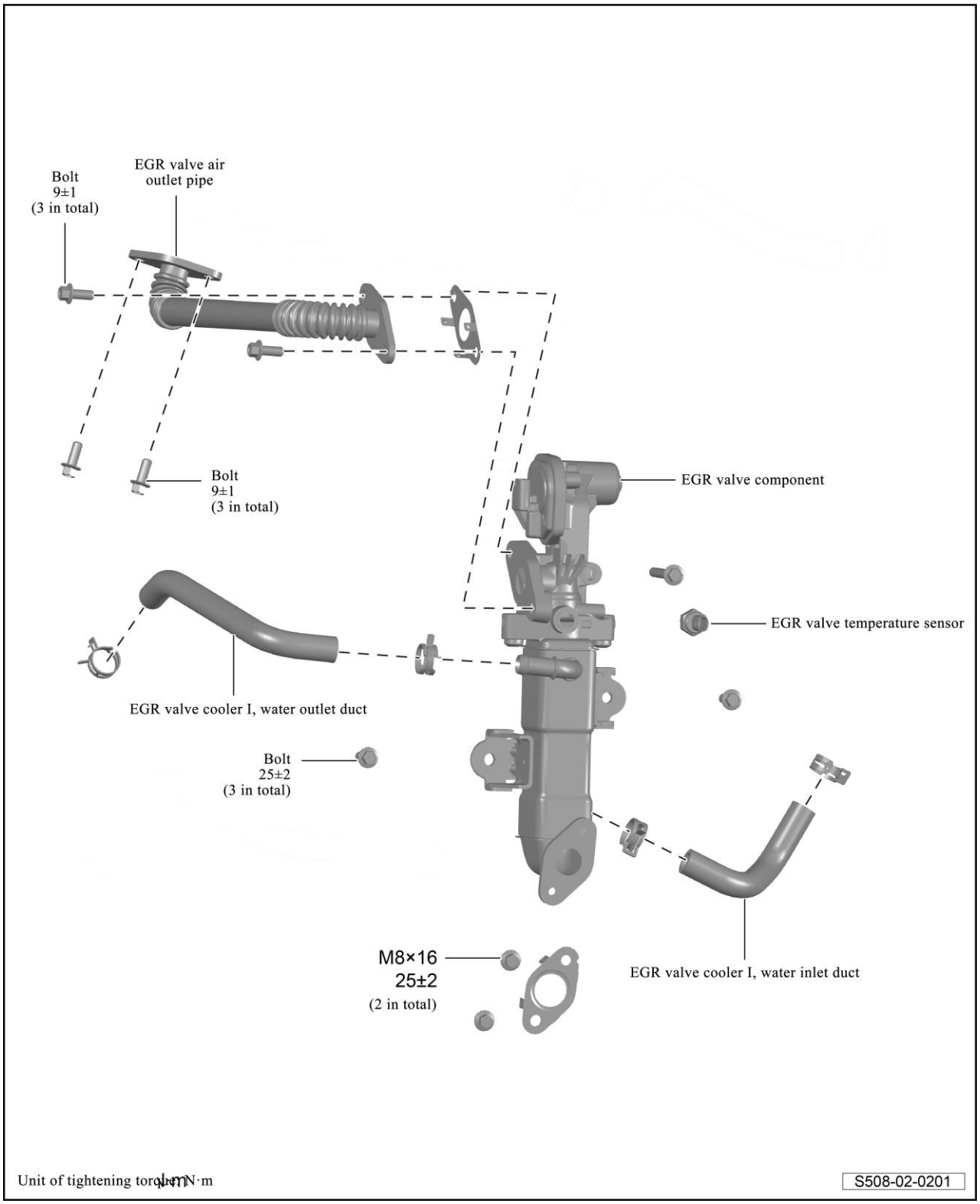
2.5.5 Exploded view

2.5.5.1 Exploded view

Exploded view 1 of exhaust system

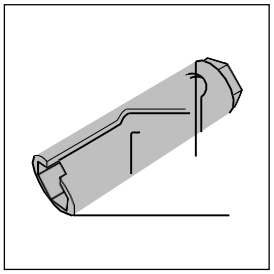


Exploded view 2 of exhaust system



2.5.6 Special tool

2.5.6.1 List of special tools

S/N	Symbol	Description	Function
1		Oxygen sensor removal and installation tool	For replacing and installing the front oxygen sensor and the rear oxygen sensor

2.5.7 Diagnosis information and steps

2.5.7.1 Diagnostic instructions

Be sure to be familiar with the system functions and operations before starting system diagnosis, which will help you determine the correct fault diagnosis steps in the event of a failure, and more importantly, help determine whether the situations described by the customer are normal.

2.5.7.2 Visual inspection

- Check whether there is any after-sales added device which may affect the exhaust system operation.
- Check the system components easily accessible or visible for obvious cracking or deformation.
- Check whether the color of exhaust in the exhaust pipe is normal.

2.5.7.3 Exhaust system blockage

In case of engine power loss, poor fuel economy or poor acceleration performance, check for "exhaust system blockage" fault as follows:

Diagnosis steps

Step 1	Check whether the appearance of exhaust pipe assembly is damaged.

A Lift the vehicle.

B Check the appearance of the exhaust pipe assembly for cracks or corrosion.

Yes → Replace the exhaust pipe assembly.

No

Step 2	Check whether the catalytic converter assembly is blocked.

A Remove the catalytic converter assembly.

B Check whether the catalytic converter assembly is blocked and whether the catalyst material falls off.

Yes → Replace the catalytic converter assembly.

No

Step 3	Check whether the front silencer assembly is blocked.

A Knock the front silencer assembly gently with a rubber hammer to check whether there is a "clattering" sound.

Yes → If the sound-absorbing material inside the front silencer assembly is rusted and falls off, blocking the middle and front silencer assemblies, replace the front silencer assembly.

No

Step 4	Check whether the rear silencer assembly is blocked.

	A Knock the rear silencer assembly gently with a rubber hammer to check whether there is a "clattering" sound.

Yes

If the sound-absorbing material inside the rear silencer assembly is rusted and falls off, blocking the silencer hole, replace the rear silencer assembly.

Next

Step 5	The diagnosis is over.

2.5.7.4 Exhaust system leakage

If the engine is making a “hissing” or bursting sound while running, check for “exhaust system leakage” as follows:

Diagnosis steps

Step 1	Check whether the exhaust system components are installed in place.

A Check whether the exhaust system components are misaligned or installed improperly.

B Check whether the exhaust pipe hanging cushion is loose and installed incorrectly.

Yes — Reinstall.

No

Step 2	Check the connection between the front silencer assembly and the rear silencer assembly for leakage.

A Check whether the gasket between the front silencer assembly and the rear silencer assembly is damaged.

B Check whether the connecting nut between the front silencer assembly and the rear silencer assembly is loose.

Yes — Replace the gasket and reinstall it.

No

Step 3	Check the connection between the rear three-way catalytic converter assembly and the front silencer assembly for leakage.

A Check whether the gasket between the rear three-way catalytic converter assembly and the front silencer assembly is damaged.

B Check whether the connecting nut between the rear three-way catalytic converter assembly and the front silencer assembly is loose.

Yes — Replace the gasket and reinstall it.

No

Step 4	Check the connection between the three-way catalytic converter assembly and the rear-step three-way catalytic converter assembly for leakage.

A Check whether the gasket between the three-way catalytic converter assembly and rear-step three-

		way catalytic converter assembly is damaged.
	B	Check whether the connecting nut between the three-way catalytic converter assembly and the rear-step three-way catalytic converter assembly is loose.

Yes → Replace the gasket and reinstall it.

No

Step 5	Check whether the connection between the three-way catalytic converter assembly and the engine has leakage.

A Check whether the connecting gasket between the three-way catalytic converter assembly and the engine is damaged.

B Check whether the connecting gasket between the three-way catalytic converter assembly and the EGR valve component is damaged.

C Check whether the connecting nut between the three-way catalytic converter assembly and the engine is loose.

Yes → Replace the gasket and reinstall it.

Next

Step 6	The diagnosis is over.

2.5.7.5 Exhaust system noise

If the engine is running with loud or abnormal exhaust noise, check for "exhaust system noise" fault as follows:

Diagnosis steps

Step 1	Check the exhaust system for leakage.

A Check whether the exhaust has cracking or hissing sound.

Yes → Repair the exhaust pipe connection part and replace the gasket.

No

Step 2	Check the cylinder head assembly

A Check whether the connecting pipeline of cylinder head assembly is cracked or damaged.

Yes → Replace the cylinder head assembly.

No

Step 3	Check the catalytic converter assembly.

A Check whether the catalytic converter assembly is cracked or damaged.

Yes → Replace the catalytic converter assembly.

No

Step 4	Check the front silencer assembly.

A Check the front silencer assembly for cracking or damage.

Yes → Replace the front silencer assembly and gasket.

No

Step 5	Check the rear silencer assembly.

A Check the rear silencer assembly for cracking or damage.

Yes → Replace the rear silencer assembly and gasket.

Next

Step 6	The diagnosis is over.

2.5.8 Removal and installation

2.5.8.1 Removal and installation of oxygen sensor I

Disassembly procedures

Tip:

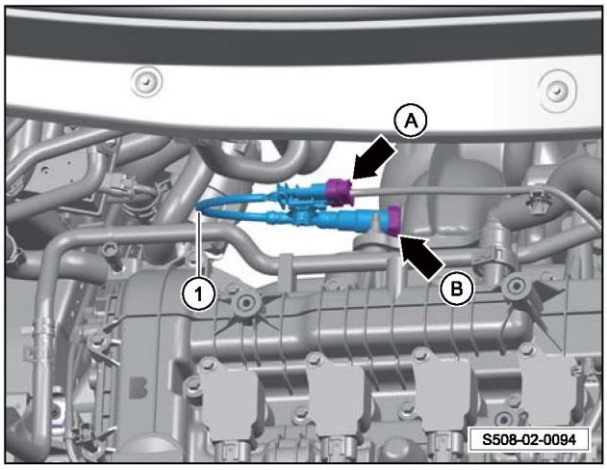
If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the air filter intake pipe assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly

4 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter



5 Removal of oxygen sensor I

a. Disconnect the connector (see arrow A) of oxygen sensor I.

b. Use oxygen sensor removal and installation tools in the position of (arrow B) to remove the oxygen sensor I ①. Refer to 2.5.6.1 List of special tools.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– To prevent damage to the front oxygen sensor, do not knock or hit it with a wrench or other hard objects.

– Do not use a front oxygen sensor that has been knocked.

2.5.8.2 Removal and installation of oxygen sensor II

Disassembly procedures

Tip:

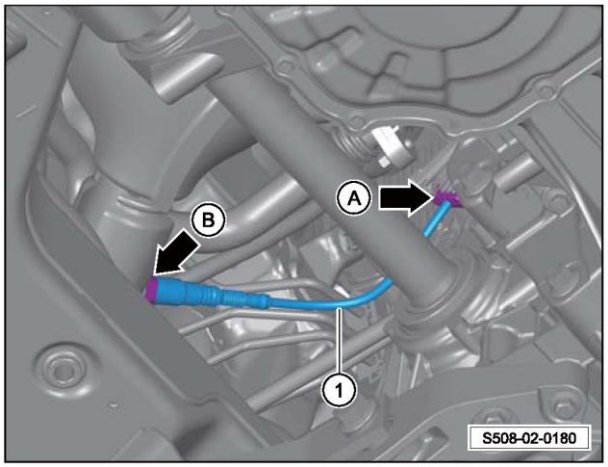
If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off

the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Removal of oxygen sensor II

a. Disconnect the connector (see arrow A) of oxygen sensor II ①.

b. Use oxygen sensor removal and installation tools in the position of (arrow B) to remove the oxygen sensor II ①. Refer to 2.5.6.1 List of special tools.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– To prevent damage to the rear oxygen sensor, do not knock or hit it with a wrench or other hard objects.

– Do not use a rear oxygen sensor that has been knocked.

2.5.8.3 Removal and installation of three-way catalytic converter assembly

Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

If the engine is hot, wait until it cools down.

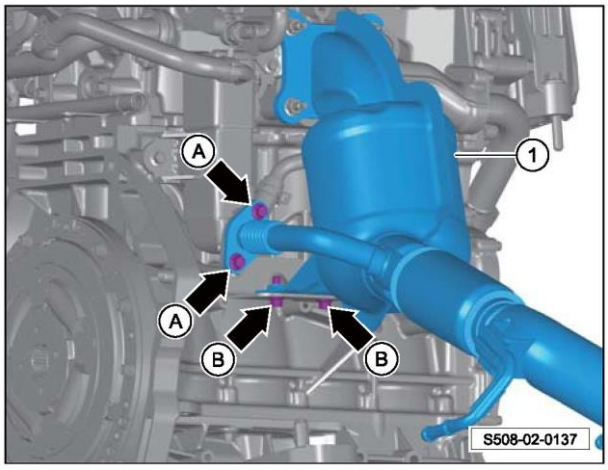
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the oxygen sensor I. Refer to 2.5.8.1 Removal and installation of oxygen sensor I

4 Remove the oxygen sensor II. Refer to 2.5.8.2 Removal and installation of oxygen sensor II

5 Remove the subframe welding assembly. Refer to 3.2.6.9 Removal and installation of front subframe welding assembly



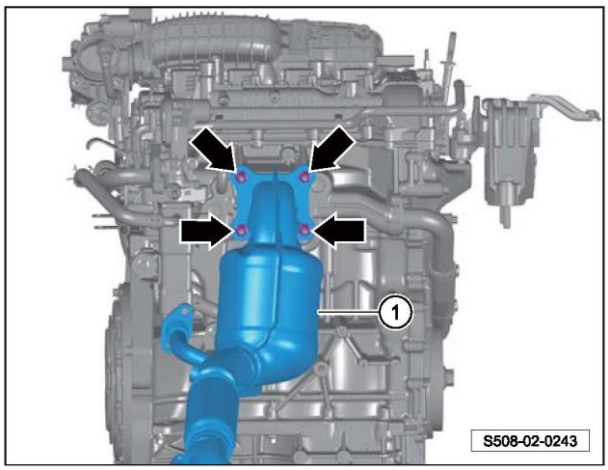
6 Remove the three-way catalytic converter assembly

a. Lift the vehicle.

b. Unscrew the fixing bolt (see arrow A), disengage the three-way catalytic converter assembly ① from the EGR valve component, and take out the sealing gasket.

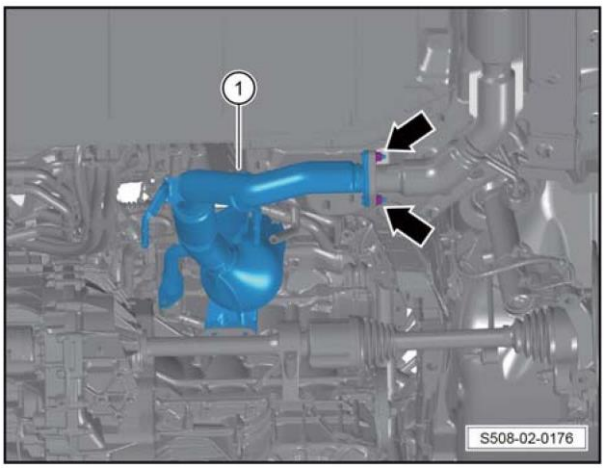
c. Unscrew the fixing bolt of the three-way catalytic converter assembly bracket (see arrow B).

- Tightening torque of bolt (see arrow **A**): **25±2 N·m**
- Tightening torque of bolt (see arrow **B**): **25±2 N·m**



d. Unscrew the fixing nut of the three-way catalytic converter assembly ① and the cylinder block (see the arrow), and take out the sealing gasket.

- Tightening torque of nut: **35±3 N·m**



e. Unscrew the fixing nuts (see the arrows), disengage the three-way catalytic converter assembly ① from the rear three-way catalytic converter assembly, and take out the silencer sealing gasket. f. Remove the three-way catalytic converter assembly ①.

- Tightening torque of nut: 50±4 N·m

Tip:

After removing the three-way catalytic converter assembly, seal the pipe orifice of the three-way catalytic converter assembly to prevent sundries from entering the catalytic converter assembly.

Gently handle the catalytic converter without collision during handling. Otherwise, the internal carrier assembly may be damaged.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Replace the sealing gasket of the connection between three-way catalytic converter assembly and EGR valve component.
- Replace the sealing gasket of the connection between three-way catalytic converter assembly and cylinder block.
- Check whether the joint is well sealed. If there is exhaust gas leakage, tighten the nut at the joint to the specified torque, and replace damaged parts if necessary.

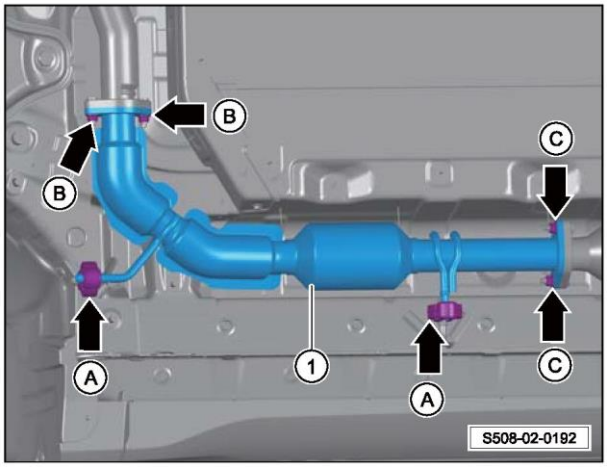
2.5.8.4 Removal and installation of rear three-way catalytic converter assembly

Disassembly procedures

Tip:

If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.



2 Remove the rear three-way catalytic converter assembly

a. Lift the vehicle.

b. Disengage the fixing connector of the rear-step three-way catalytic converter assembly ① in the position of (arrow A).

c. Unscrew the fixing nuts (see arrow B), disengage the rear three-way catalytic converter assembly ① from the three-way catalytic converter assembly, and remove the silencer sealing gasket.

d. Unscrew the fixing nuts (see arrow C), disengage the front silencer assembly from the rear three-way catalytic converter assembly ①, and take out the silencer sealing gasket.

e. Remove the rear three-way catalytic converter assembly ①.

- Tightening torque of nut (see arrow **B**): **50±4 N·m**
- Tightening torque of nut (see arrow **C**): **50±4 N·m**

Tip:

After the rear three-way catalytic converter assembly is removed, seal the pipe orifice of the rear three-way catalytic converter assembly to prevent sundries from entering.

Gently handle the catalytic converter without collision during handling. Otherwise, the internal carrier assembly may be damaged.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace the silencer sealing gasket.

– Check whether the joint is well sealed. If there is exhaust gas leakage, tighten the nut

at the joint to the specified torque, and replace damaged parts if necessary.

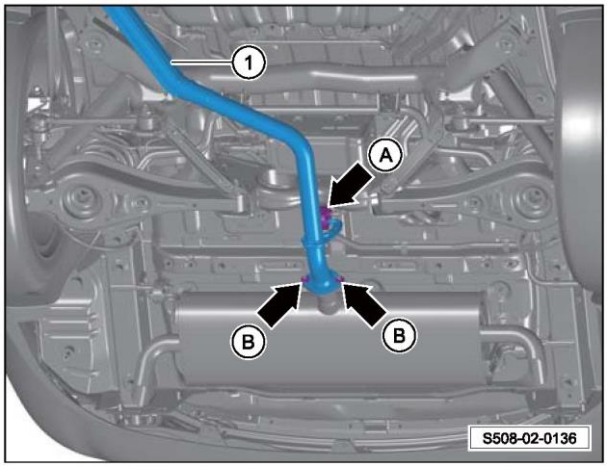
2.5.8.5 Removal and installation of front silencer assembly

Disassembly procedures

Tip:

If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.



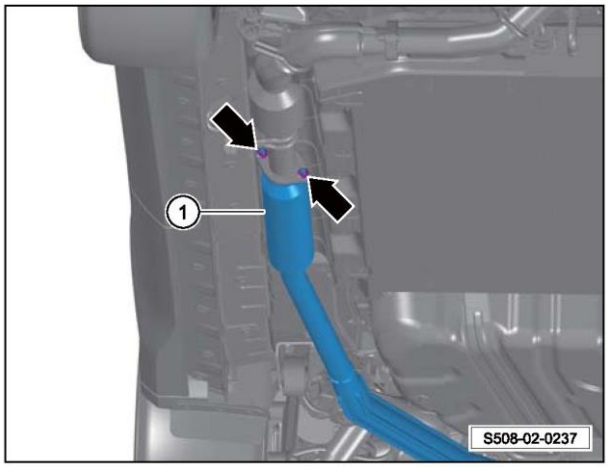
2 Remove the front silencer assembly

a. Lift the vehicle.

b. Disengage the front silencer assembly ① from the silencer connector (see arrow A).

c. Unscrew the fixing nuts (see arrow B), disengage the front silencer assembly ① from the rear silencer assembly, and take out the silencer sealing gasket.

- Tightening torque of nut (see arrow **B**): **50±4 N·m**



d. Unscrew the fixing nuts (see the arrow), disengage the front silencer assembly ① from the rear three-way catalytic converter assembly, and take out the silencer sealing gasket.

e. Remove the front silencer assembly ①.

- Tightening torque of nut: 50±4 N·m

Tip:

The front silencer assembly shall be removed and installed with the assistance of another technician.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Replace the silencer sealing gasket.
- Before removing front silencer assembly hanging cushion, applying lubricant at the connection of hanging cushion and rigid bracket.
- Check the tightness of the pipe connecting part after installation of the front silencer assembly. If there is leakage of waste gas, check the tightening torque of nuts at the connecting place. Replace damaged components if necessary.

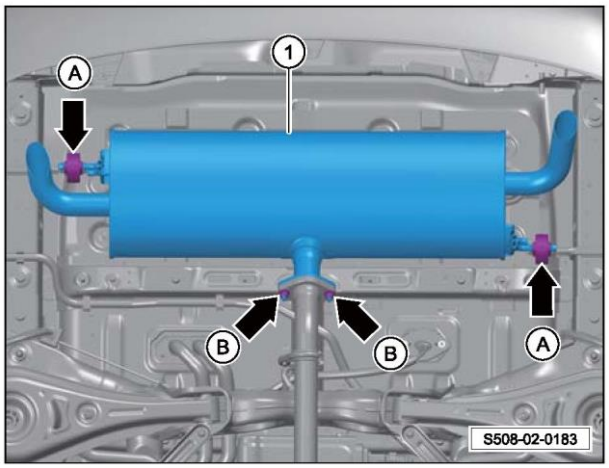
2.5.8.6 Removal and installation of rear silencer assembly

Disassembly procedures

Tip:

If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.



2 Remove the rear silencer assembly

a. Lift the vehicle.

b. Disengage the fixing connector of the rear-end silencer assembly ① in the position of (arrow A).

c. Unscrew the fixing nuts (see arrow B), disengage the front silencer assembly from the rear silencer assembly ①, and take out the silencer sealing gasket.

d. One technician adjusts the lifting device to slowly lower the rear silencer assembly ①, while another technician observes the interference of the rear silencer assembly ① with other components of the body.

e. Remove the rear silencer assembly ①.

- Tightening torque of nut (see arrow **B**): **50±4 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace the silencer sealing gasket.

– Before removing rear silencer assembly hanging cushion, applying lubricant at the connection of hanging cushion and rigid bracket.

– Check the tightness of the pipe connecting part after installation of the rear silencer assembly. If there is leakage of waste gas, check the tightening torque of nuts at the connecting place. Replace damaged components if necessary.

2.5.8.7 Removal and installation of EGR valve outlet pipe

Disassembly procedures

Tip:

If the engine is hot, wait until it cools down.

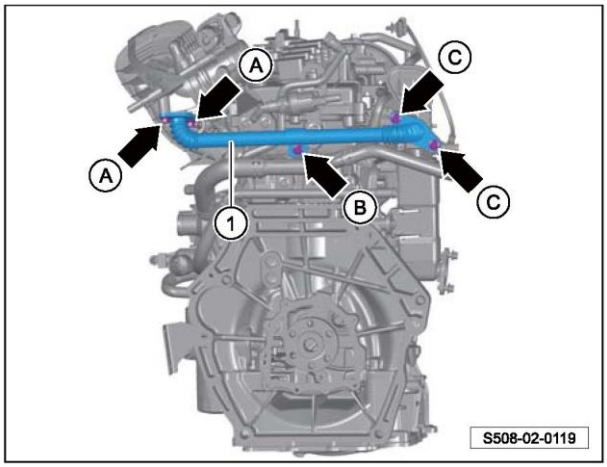
In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly

4 Remove the HV electrical box bracket. Refer to 5.6.6.2 Removal and installation of HV box bracket



5 Removal of EGR valve outlet pipe

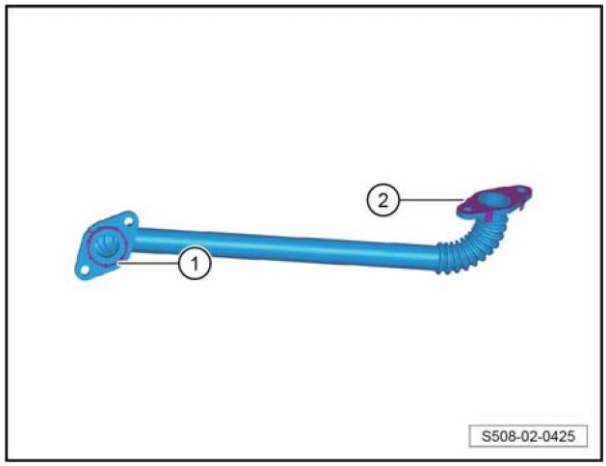
a. Unscrew the fixing bolt of the EGR valve outlet pipe ① and the intake manifold assembly (see arrow A), and take out the sealing ring.

b. Unscrew the fixing bolt of the EGR valve outlet pipe bracket (see arrow B).

c. Unscrew the fixing bolt of the EGR valve outlet pipe ① and the EGR valve component (see arrow C), and take out the sealing gasket.

d. Remove the EGR valve outlet pipe ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace with a new sealing ring ① at the connection between the EGR valve outlet pipe and the intake manifold component.

– Replace with a new sealing gasket ② at the connection between the EGR valve outlet pipe and the EGR valve component.

– Check whether the joint is well sealed. If there is exhaust gas leakage, tighten the nut at the joint to the specified torque, and replace damaged parts if necessary.

2.5.8.8 Removal and installation of EGR valve component

Disassembly procedures

Tip:

If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

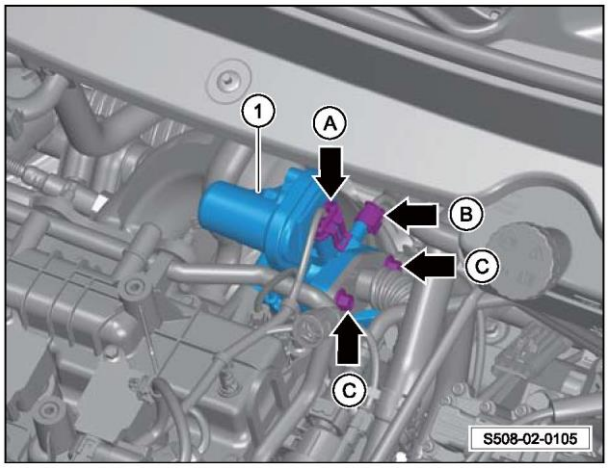
3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter

5 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet

pipe assembly

6 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

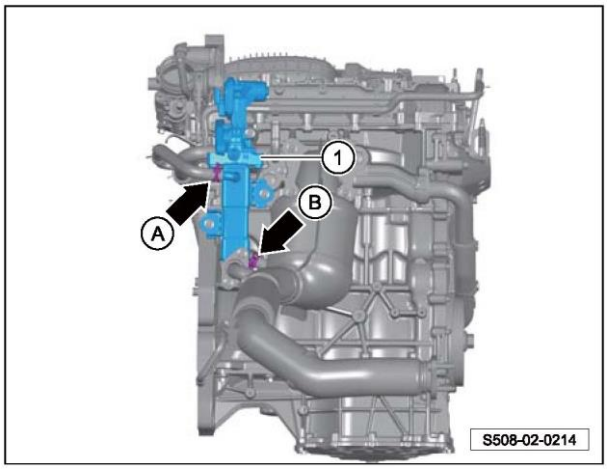


7 Remove the EGR valve component

a. Disconnect the connector of the EGR control valve (see arrow A).

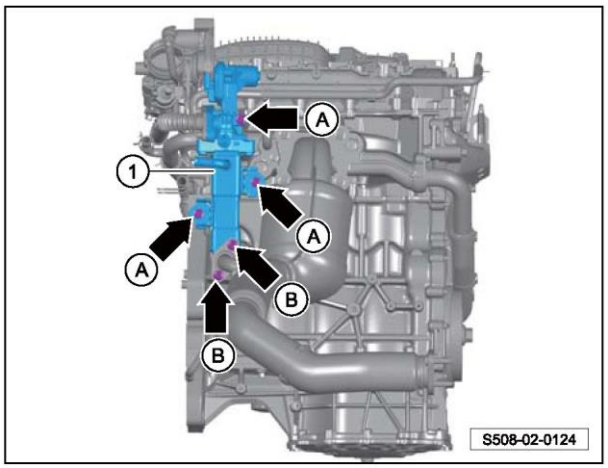
b. Disconnect the connector of the EGR temperature sensor (see arrow B).

c. Unscrew the fixing bolt of the EGR valve outlet pipe and EGR component ① (see arrow C), and take out the washer.



d. Loosen the fixing clamp (see arrow A), and disengage the EGR cooler outlet pipe from the EGR valve component ①.

e. Loosen the fixing clamp (see arrow B), and disengage the EGR cooler inlet pipe from the EGR valve component ①.



f. Unscrew the fixing bolt of the EGR valve component ① (see arrow A).

g. Unscrew the fixing bolt of the three-way catalytic converter assembly and the EGR valve component ① (see arrow B), and take out the washer.

h. Remove the EGR valve component ①.

- Tightening torque of bolt (see arrow **B**): **25±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.5.8.9 Removal and installation of 1# outlet hose of EGR valve cooler

Disassembly procedures

Tip:

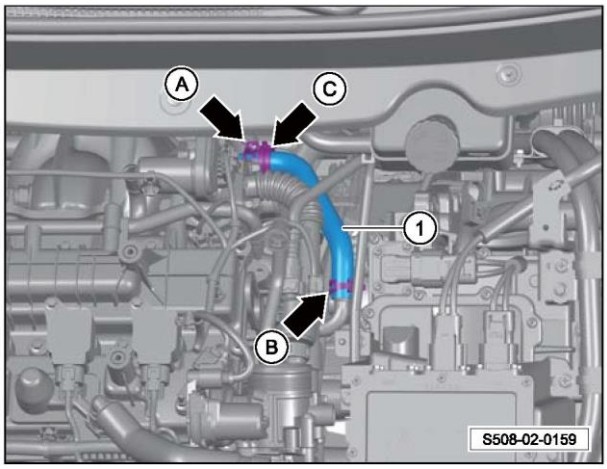
If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly



5 Removal of 1# outlet hose of EGR valve cooler

a. Loosen the fixing clamp (see arrow A), and disengage 1# outlet hose of EGR valve cooler ① from the EGR valve component.

b. Loosen the fixing clamp (see arrow B), and disengage 1# outlet host of EGR valve cooler ① from engine water pipe.

c. Disengage the fixing clamp of the engine harness and 1# outlet hose of EGR valve cooler ① (see arrow C).

d. Remove 1# outlet hose of EGR valve cooler ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.5.8.10 Removal and installation of 1# inlet pipe component of EGR valve cooler

Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

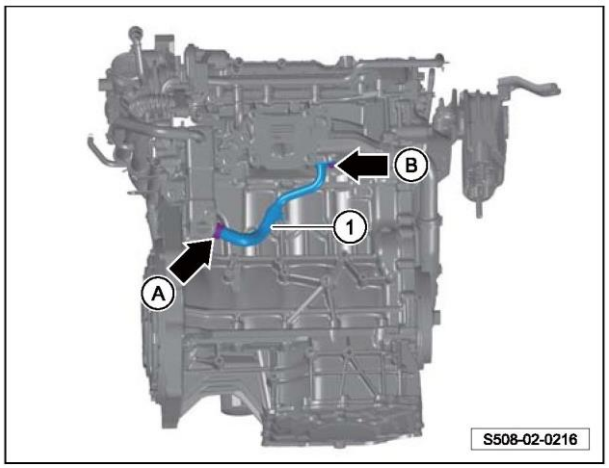
Tip:

If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



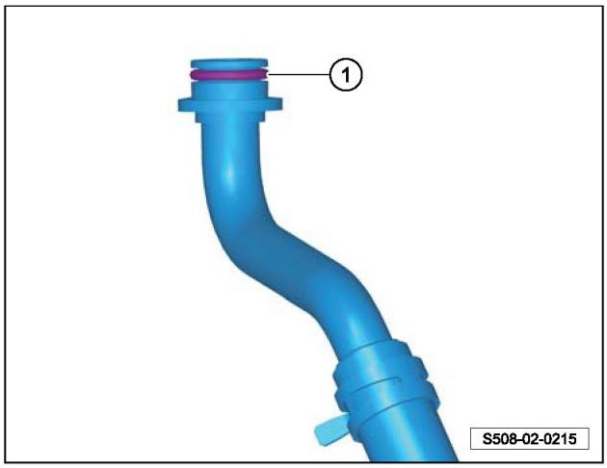
4 Removal of 1# inlet pipe component of EGR valve cooler

a. Loosen the fixing clamp (see arrow A), and disengage 1# inlet pipe component of EGR valve cooler ① from the EGR valve component.

b. Unscrew the fixing bolt (see arrow B), and disengage 1# inlet pipe component of EGR valve cooler from the engine cylinder block.

c. Remove 1# inlet pipe component of EGR valve cooler ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– As is shown in the figure, sealing ring ① is disposable, do replace with a new sealing ring during installation.

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.5.8.11 Removal and installation of EGR valve temperature sensor

Disassembly procedures

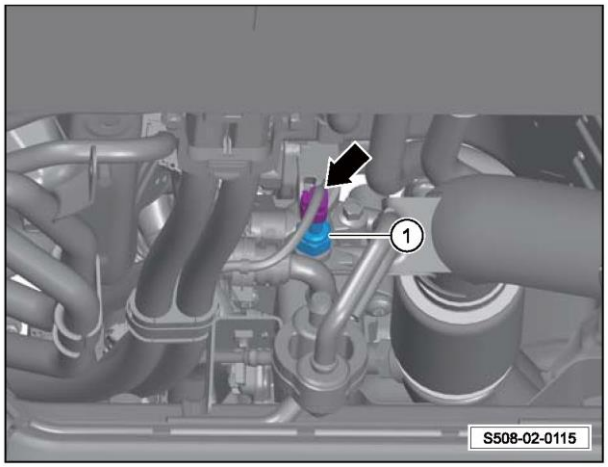
Tip:

If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



4 Removal of EGR valve temperature sensor

a. Disconnect the connector of the EGR valve temperature sensor ① (see the arrow).

b. Unscrew the bolt of the EGR valve temperature sensor body, and remove the EGR valve temperature sensor ①.

• Tightening torque of fixing bolt of EGR valve temperature sensor body: **23N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.6 Intake system

2.6.1 Specification

2.6.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Air outlet hose and upper shell of air filter	Clamp	3±1
Upper and lower housings of air filter	Cross recessed pan head self-tapping screw	3±1
Installation of air filter	Hexagon head flange bolt M6×25×1.0	10±1
Air filter intake pipe assembly	Hexagon head flange bolt M6×16	10±1
Air filter outlet pipe assembly and electronic throttle assembly	Clamp	3±1
Air filter exhaust pipe assembly	Hexagon head flange bolt M6×25×1.0	10±1
Intake manifold with accessory assembly	Bolt	25
Intake pressure and temperature sensor	Hex lobular socket pan head self-tapping screw	5
Electronic throttle body assembly	Hex lobular socket pan head self-tapping screw	8±1
Fuel duct assembly component and intake manifold component	Bolt	25

2.6.2 Description and operation

2.6.2.1 Description and operation

Overview of intake system

The main function of the intake system is to provide sufficient clean air to ensure the quality of the combustible mixture. Air enters the air filter assembly, and impurities in the air are filtered through the air filter element. The filtered air enters the intake manifold through the electronic throttle body, and finally enters the cylinder when the intake valve is opened.

The main components of the intake system include:

- Air filter intake pipe assembly
- Air filter
- Air filter exhaust pipe assembly
- Intake temperature and pressure sensor

2.6.3 System working principle

2.6.3.1 System working principle

Working principle of electronic throttle body

The electronic throttle body is a key component of the engine intake system. It mainly adjusts the inlet passage area according to the driver's intention, and that's how air intake flow is controlled to satisfy different intake demands under different engine working conditions. It also feeds the throttle valve plate position signal back to the control unit for precise control.

The electronic throttle body is composed of drive module, transmission module, execution module and feedback module. All the parts are integrated in a throttle housing. The throttle feedback module is of two redundant structures. In case of a fault, the throttle valve plate stops at the limp home position (NLP) determined mechanically, which is above the mechanical bottom dead center.

The electronic throttle body can only be controlled by the corresponding electronic control unit or electronic test circuit. It must be ensured that the throttle valve plate will not dynamically run to the mechanical dead center.

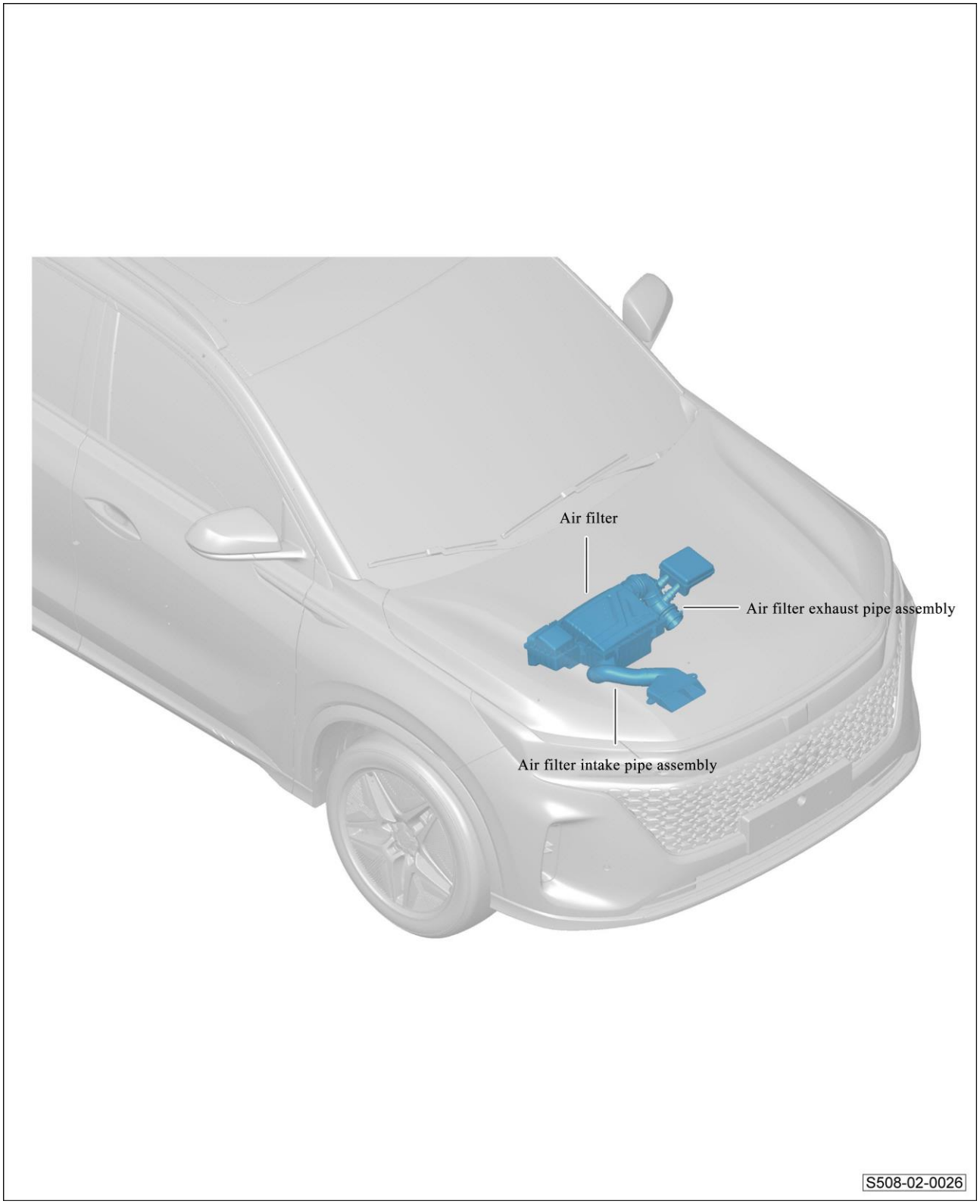
The throttle position sensor converts the throttle opening degree (i.e. engine load) into an electrical signal into the ECU. The ECU judges the engine working conditions (such as idle speed, heavy load, etc.) according to the signal voltage and controls the fuel injection according to different working conditions.

Based on the accelerator pedal signal, gear signal, and engine RPM signal in combination with various engine working condition signals, the ECU calculates the air intake amount needed and thus controls the throttle opening degree and opening time.

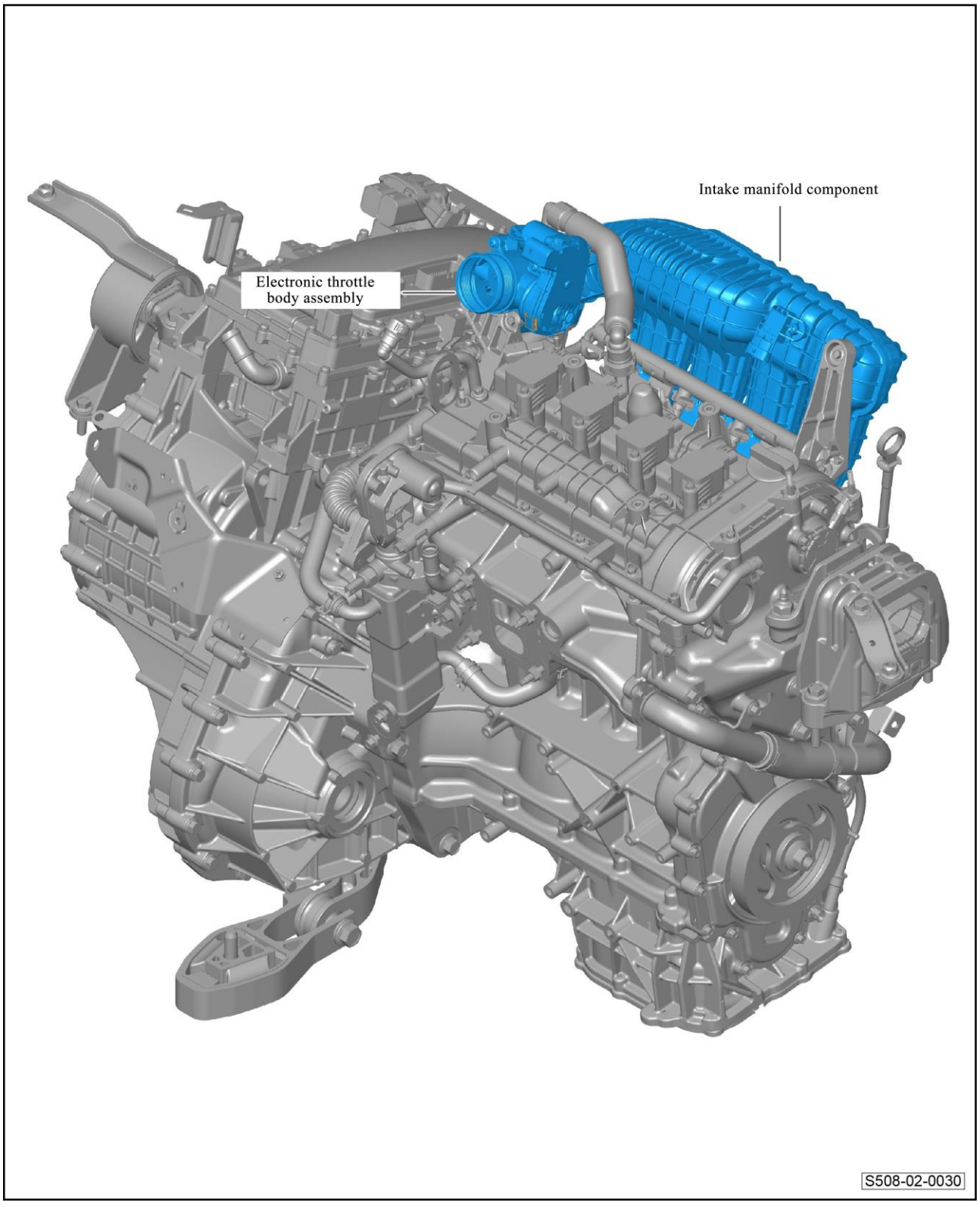
2.6.4 Component position

2.6.4.1 Component position

Component location diagram 1



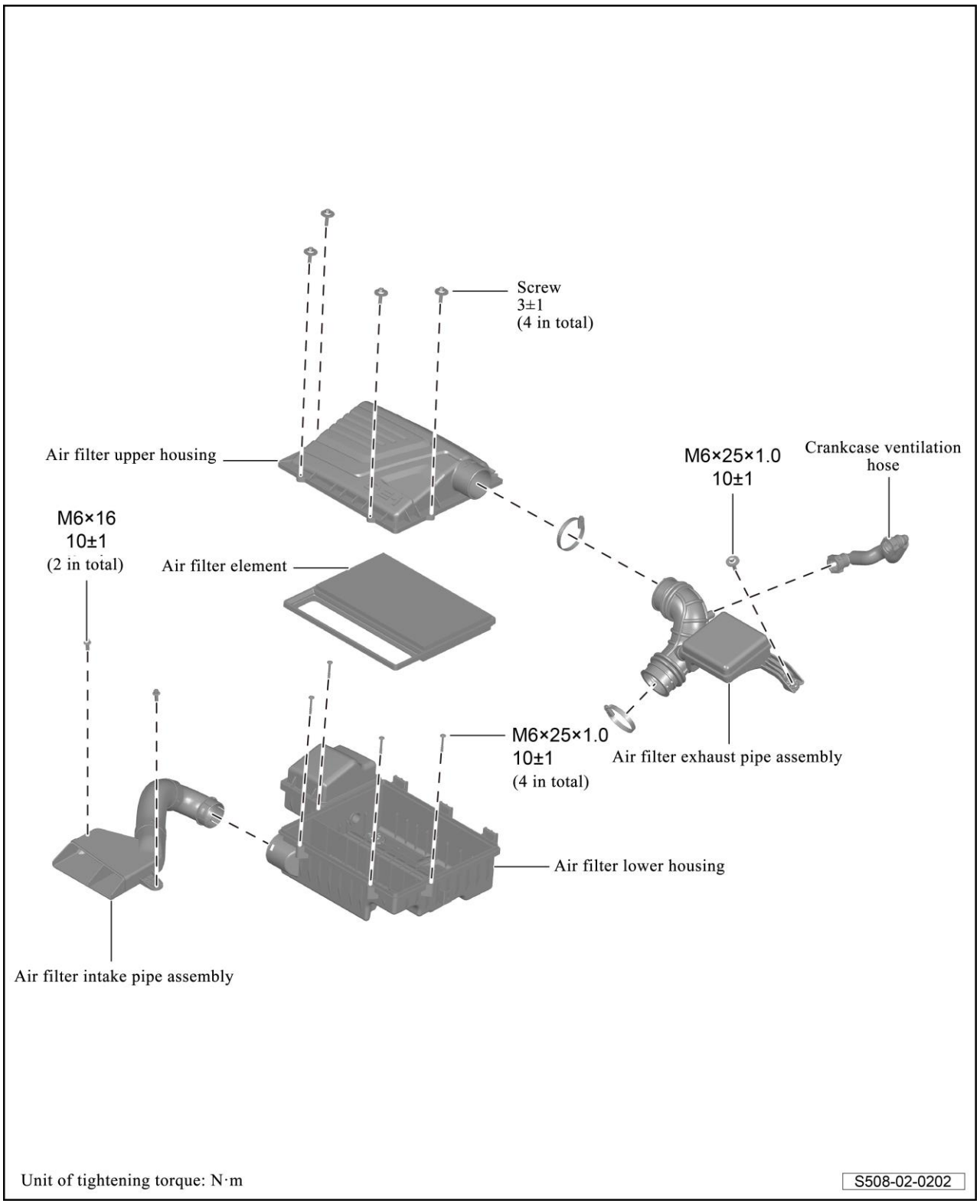
Component location diagram 2



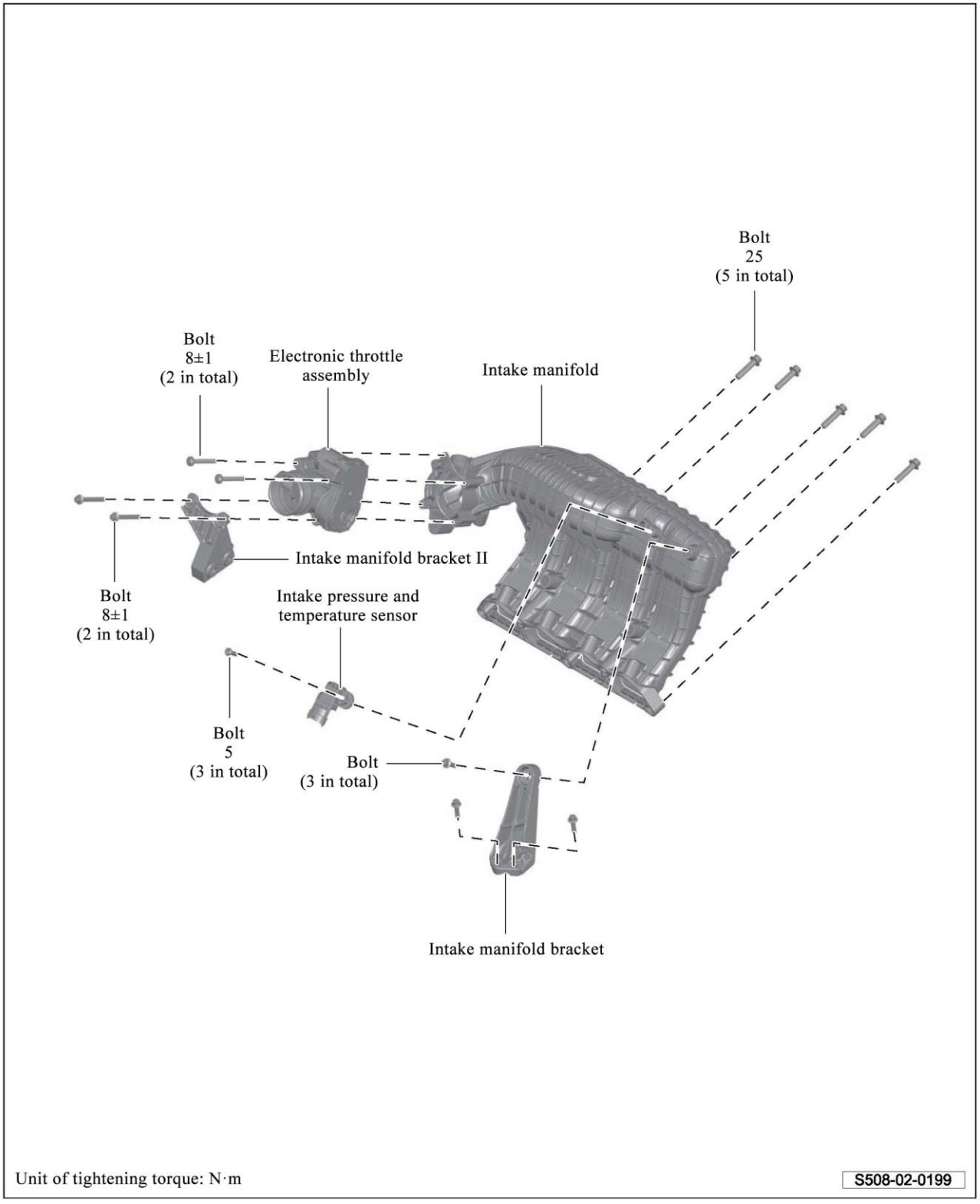
2.6.5 Exploded view

2.6.5.1 Exploded view

Exploded view 1 of intake system



Exploded view 2 of intake system



2.6.6 Diagnosis information and steps

2.6.6.1 Diagnostic instructions

Be sure to be familiar with the system functions and operations before starting system diagnostics, which will help you determine the cause of fault, and more importantly, help determine whether the symptoms described by the customer are normal.

2.6.6.2 Visual inspection

- Check whether there is any after-sales added device which may affect the intake system operation.
- Check the system components easily accessible or visible for obvious blockage or leakage.

2.6.6.3 Intake system blockage

In case of engine power loss, poor fuel economy or poor acceleration performance, check for "intake system blockage" fault as follows:

Diagnosis steps

Step 1	Check the air filter element.

A Check whether the air filter element is blocked.

Yes → Replacing the air filter element.

No

Step 2	Check the electronic throttle body.

A Check whether the electronic throttle body has too much carbon deposits.

Yes → Wash the electronic throttle body.

No

Step 3	Check the intake manifold or cylinder head air inlet.

A Check whether the intake manifold or cylinder head air inlet has too much carbon deposits.

Yes → Clear the carbon deposits at the intake manifold or cylinder head air inlet.

Next

Step 4	The diagnosis is over.

2.6.6.4 Intake system leakage

If the engine is making a "hissing" sound while running, check for "intake system leakage" fault as follows:

Diagnosis steps

Step 1	Check the connection part of intake system.

A Check whether the components of the intake system are loose.

Yes

Tighten the intake system components to the specified torque.

No

Step 2	Check the crankcase ventilation pipe assembly.

A Check whether the crankcase ventilation pipe assembly is aged and damaged.

Yes → Replace the aged and damaged crankcase ventilation pipe assembly.

No

Step 3	Check intake pressure and temperature sensor.

A Check whether the intake pressure and temperature sensor is damaged.

Yes → Replace the intake temperature and pressure sensor, and replace the sealing ring if necessary.

No

Step 4	Check whether the electronic throttle body leaks.

A Check whether the electronic throttle body leaks.

Yes → Tighten the electronic throttle body to the specified torque and replace the sealing ring if necessary.

No

Step 5	Check intake manifold.

A Check whether the intake manifold leaks or is damaged.

Yes → Replace the damaged intake manifold and sealing ring.

Next

Step 6	The diagnosis is over.

2.6.7 Removal and installation

2.6.7.1 Removal and installation of air filter

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

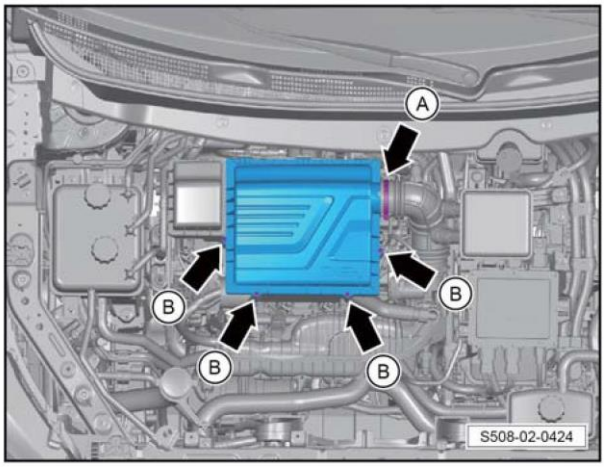
3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

6 Remove the air filter intake pipe assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly

7 Remove the engine compartment fully-wrapped cover support plate component (right). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

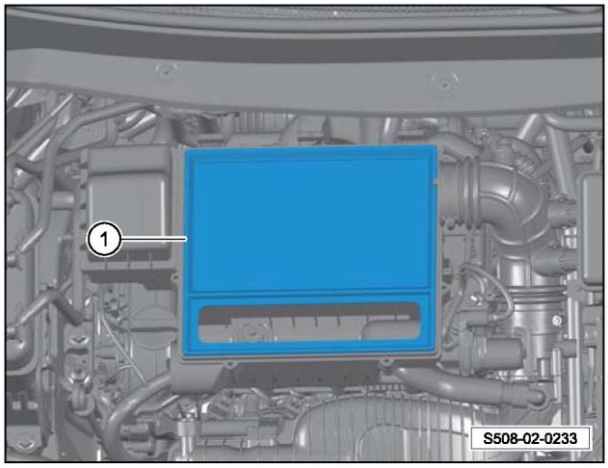


8 Remove the air filter

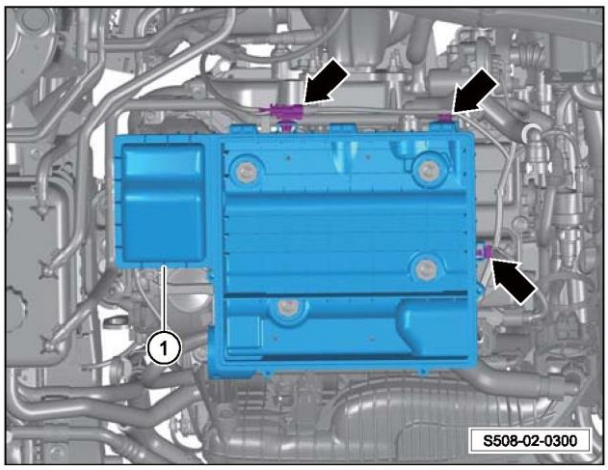
a. Loosen the fixing clamp (see arrow A), and disengage the outlet hose from the upper shell of the air filter.

b. Unscrew the fixing screws (see arrow B) and remove the air filter upper housing.

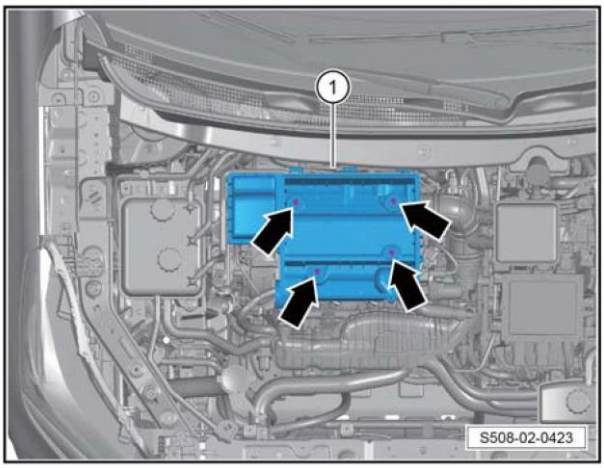
- Tightening torque of clamp (see arrow **A**): **3±1 N·m**
- Tightening torque of screw (see the arrow **B**): **3±1 N·m**



c. Remove the air filter element ①.



d. Disengage the fixing clip of the engine harness and the lower shell of the air filter (see the arrow).



e. Unscrew the fixing bolts (see the arrows) and remove the air filter lower housing ①.

- Tightening torque of bolt: 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.6.7.2 Removal and installation of air filter element

Disassembly procedures

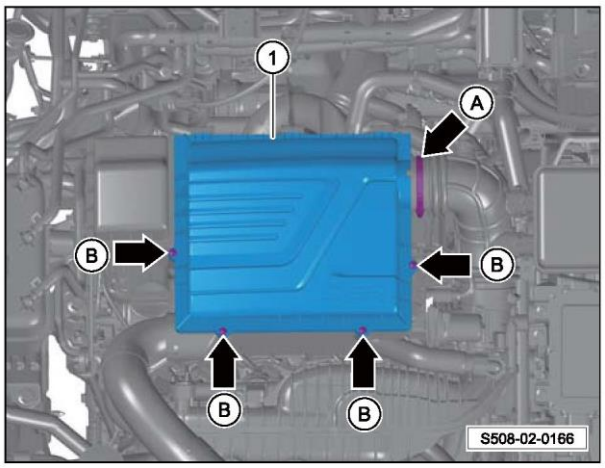
1 Turn off all the electrical appliances and turn off the Start switch.

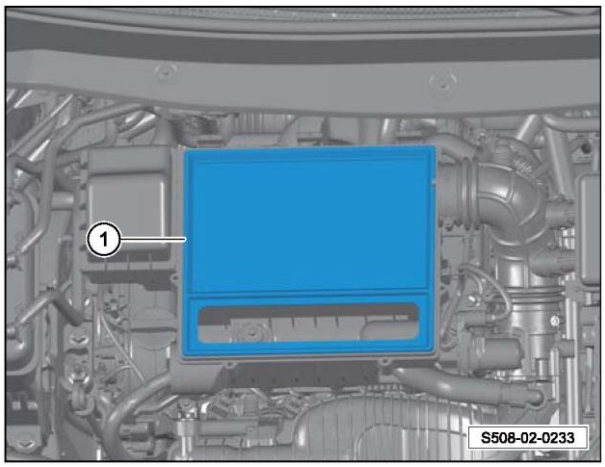
2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)





6 Remove the air filter element.

a. Loosen the fixing clamp (see arrow A) and disengage the air filterer outlet pipe assembly from the upper housing of air filter assembly.

b. Unscrew the fixing screw (see the arrow B).

c. Remove the air filter upper shell ①.

- Tightening torque of clamp (see arrow **A**): **2.2±1 N·m**
- Tightening torque of screw (see the arrow **B**): **3±1 N·m**

d. Take out the air filter element ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– For air filter element replacement, please use the genuine air filter element.

– Please clear the foreign matters in the air filter housing.

2.6.7.3 Removal and installation of air filter intake pipe assembly

Disassembly procedures

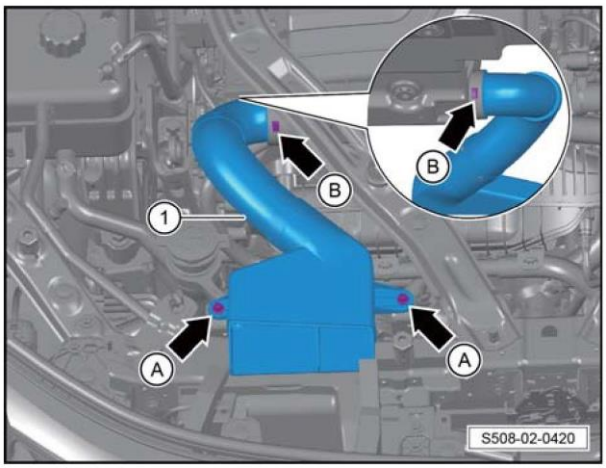
1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



6 Remove the air filter intake pipe assembly

a. Unscrew the fixing bolt of the air filter intake pipe assembly ① (see arrow A).

b. Disengage the fixing clip (see arrow B) and remove the air filter intake pipe assembly ①.

- Tightening torque of bolt (see arrow A): 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.6.7.4 Removal and installation of air filter exhaust pipe assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

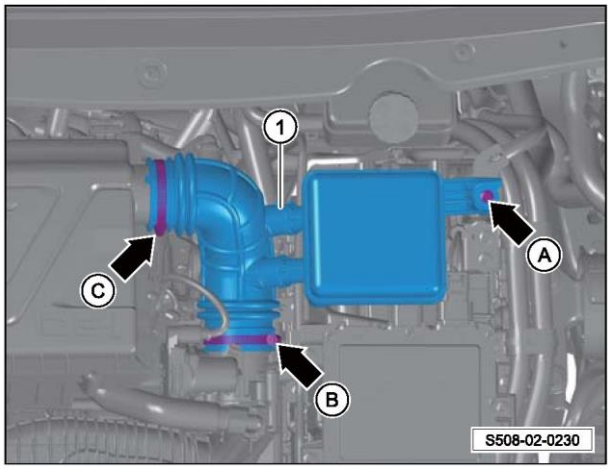
2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

6 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component



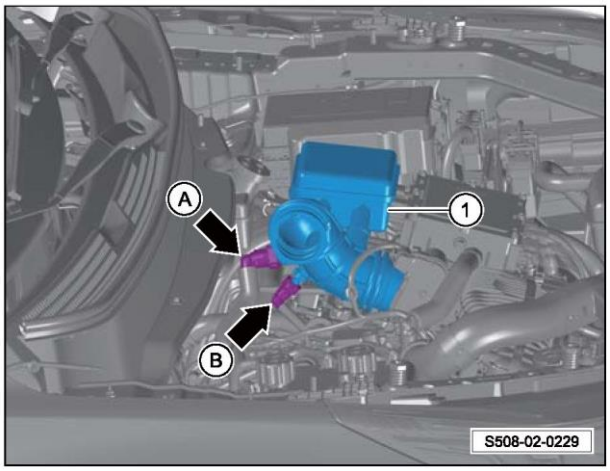
7 Remove the air filter outlet pipe assembly

a. Unscrew the fixing bolt of the air filter outlet pipe assembly ① (see arrow A).

b. Loosen the fixing clamp (see arrow B) and disengage the air filter outlet pipe assembly ① from the electronic throttle body assembly.

c. Loosen the fixing clamp (see arrow C) and disengage the air filter outlet pipe assembly ① from the air filter.

- Tightening torque of bolt (see arrow A): 10±1 N·m
- Tightening torque of clamp (see arrow **B**): **3±1 N·m**
- Tightening torque of clamp (see arrow **C**): **3±1 N·m**



d. Press the quick connector (see arrow A), and disengage the crankshaft box ventilation hose from the air filter outlet pipe assembly ①.

e. Press the quick connector (see arrow B) and disengage the high-pressure desorption pipe assembly from the air filter outlet pipe assembly ①.

f. Remove the air filter outlet pipe assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.6.7.5 Removal and installation of intake manifold component

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

7 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

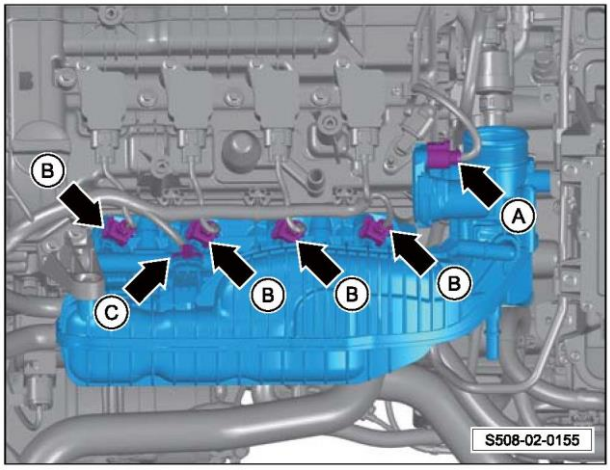
8 Remove the engine compartment fully-wrapped cover support plate component (right). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

9 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter

10 Remove the air filter intake pipe assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly

11 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly

12 Remove the HV electrical box bracket. Refer to 5.6.6.2 Removal and installation of HV box bracket

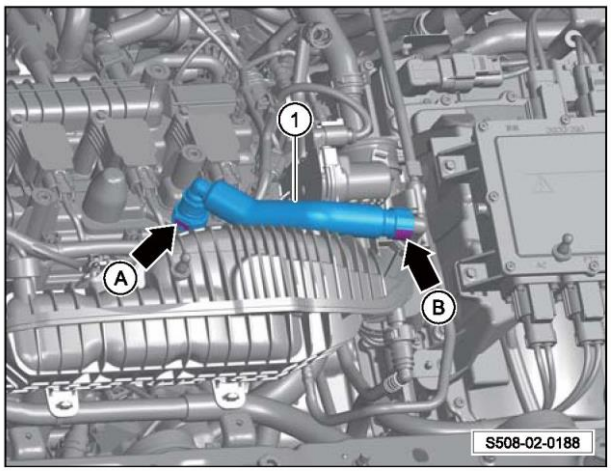


13 Remove the intake manifold component

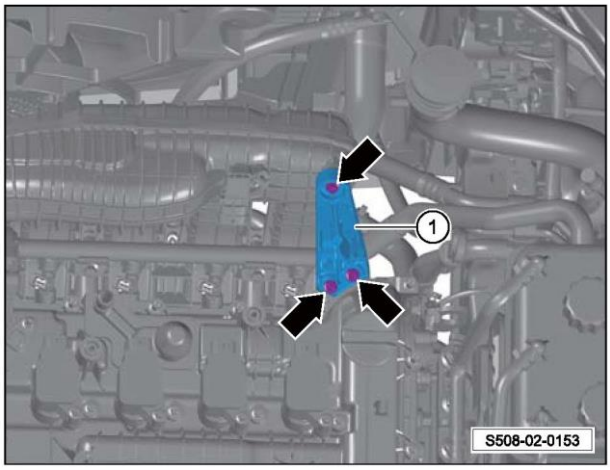
a. Disconnect the connector (see arrow A) of the electronic throttle body assembly.

b. Disconnect the connector (see arrow B) of the fuel injection nozzle.

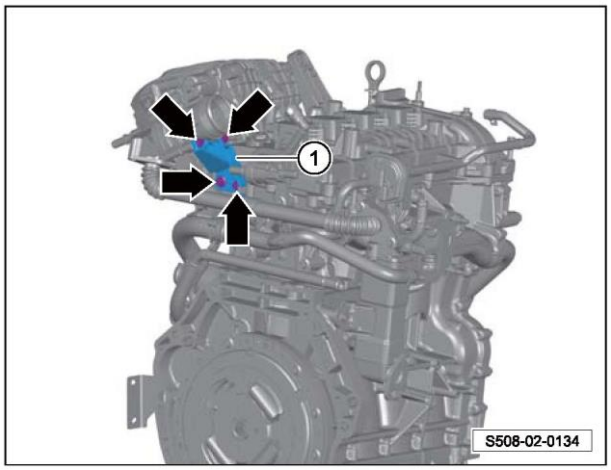
c. Disconnect the connector of the intake pressure and temperature sensor (see arrow C).



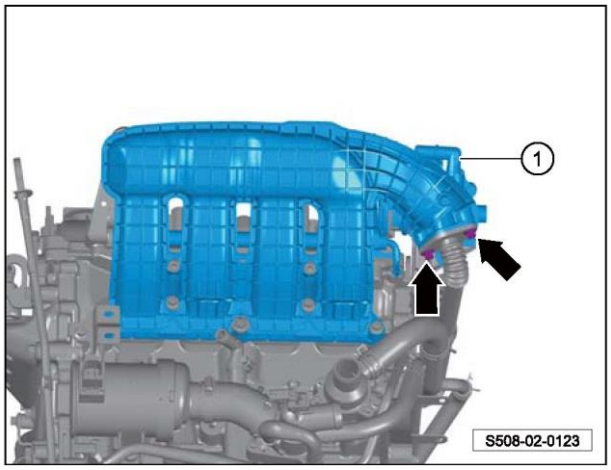
d. Press the quick connector (see arrows A and B), and remove the exhaust pipe ①.



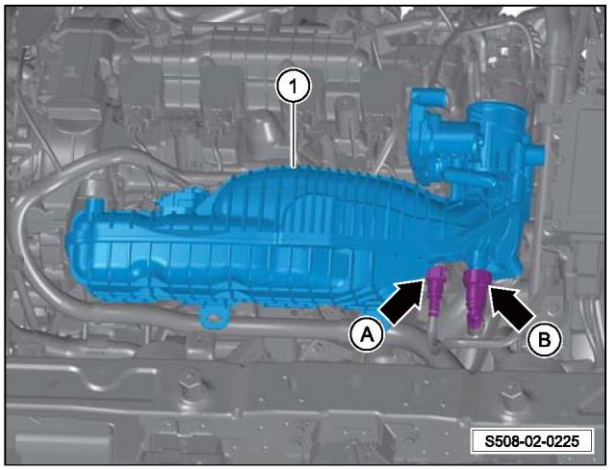
e. Unscrew the fixing bolt (see the arrow), and remove the intake manifold bracket ①.



f. Unscrew the fixing bolt (see the arrow), and remove the intake manifold bracket 2 ①.

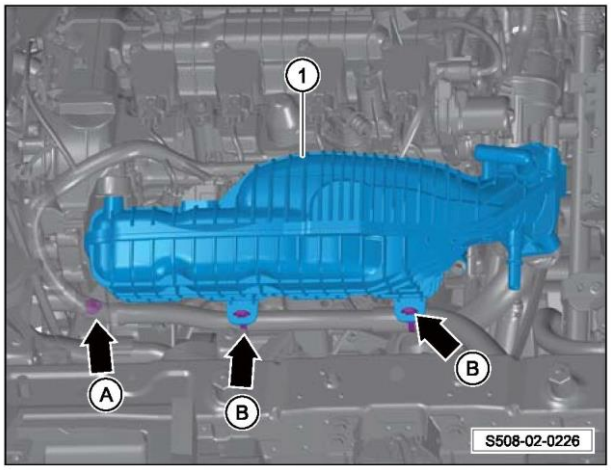


g. Unscrew the fixing bolt (see the arrow), disengage the intake manifold component ① from the EGR valve outlet pipe, and take out the sealing ring.



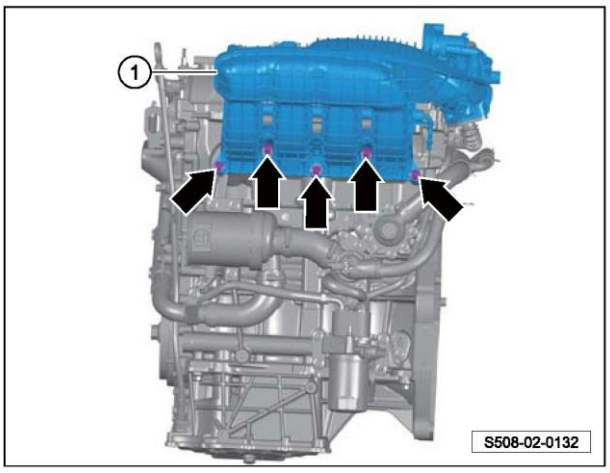
h. Press the quick connector (see arrow A), and disengage 3# oil inlet pipe from the fuel rail component.

i. Press the quick connector (see arrow B), and disengage the canister desorption pipe from the intake manifold component ①.



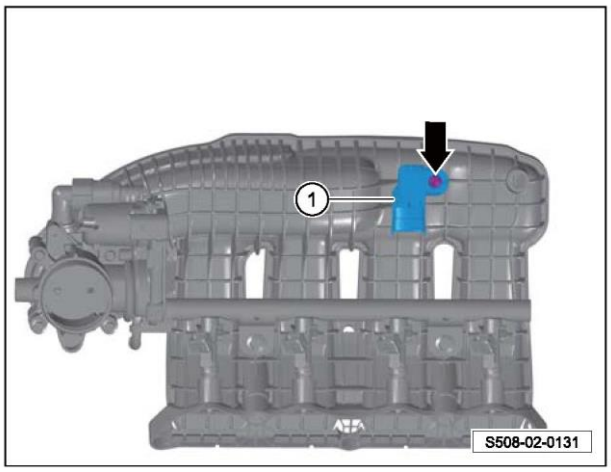
j. Unscrew the fixing bolt (see arrow A) and remove the engine harness mounting bracket.

k. Disengage the fixing clip of engine harness and intake manifold component ① (see arrow B).



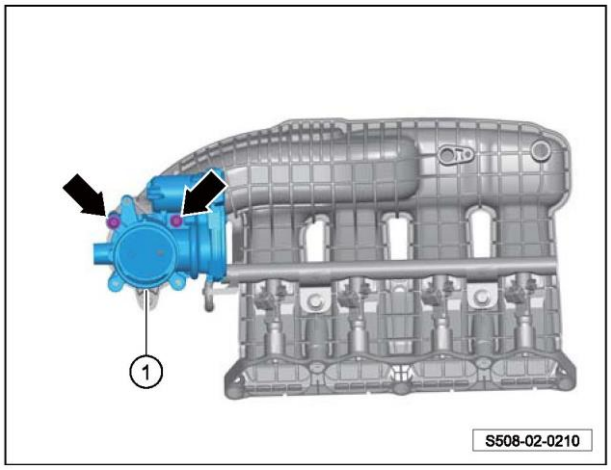
l. Unscrew the fixing bolt (see the arrow), and remove the intake manifold with accessory assembly ①.

- Tightening torque of bolt: **25 N·m**



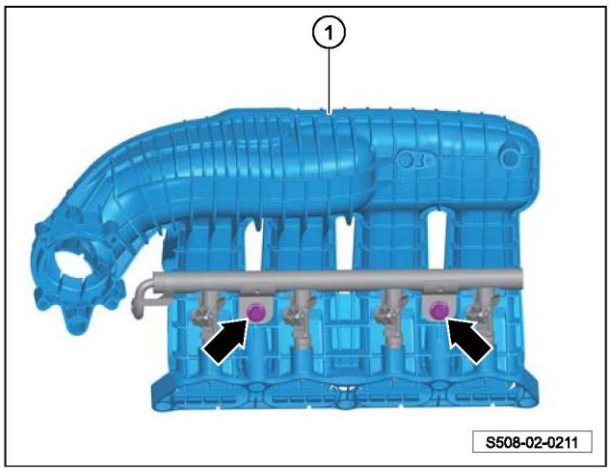
m. Unscrew the fixing screw of the intake pressure and temperature sensor ① (see the arrow).

n. Remove the intake pressure and temperature sensor ①.



o. Unscrew the fixing bolt (see the arrow), and take out the electronic throttle body assembly ①.

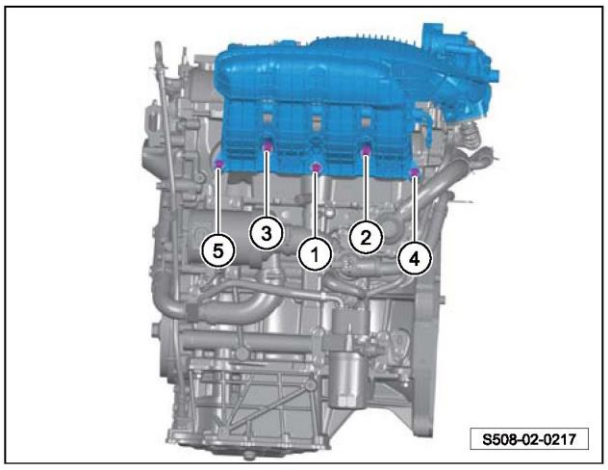
- Tightening torque of bolt: 8±1 N·m



p. Unscrew the fixing bolt (see the arrow), and separate the fuel distributor component from the intake manifold component ①.

- Tightening torque of bolt: 25 N·m

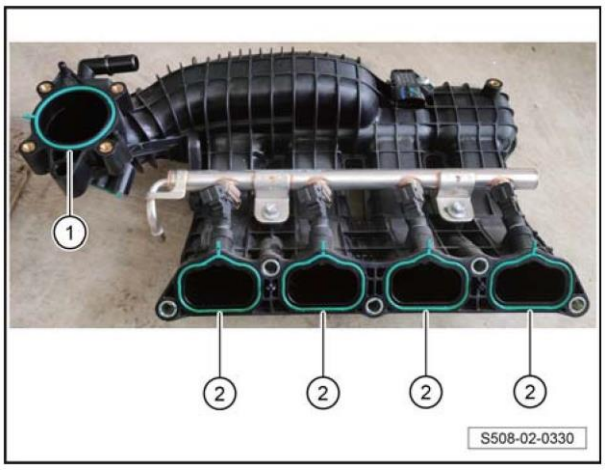
Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Tighten the intake manifold component fixing bolts in sequence from ① to ⑤.

• Tightening torque of bolt: **25 N·m**



– Check whether there are carbon deposits in the intake manifold and air inlet, and clean them if necessary.

– Replace the electronic throttle body assembly O-ring ① and intake manifold sealing ring ②.

2.6.7.6 Removal and installation of electronic throttle body assembly

Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

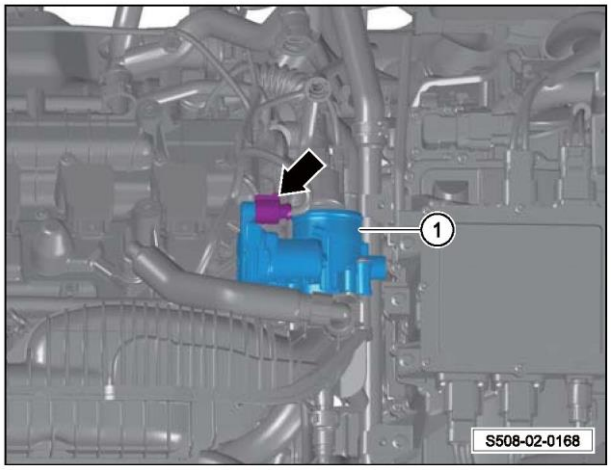
4 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

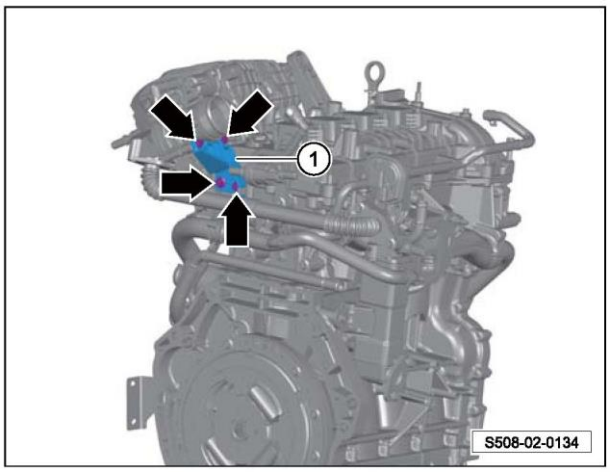
7 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly

8 Remove the HV electrical box bracket. Refer to 5.6.6.2 Removal and installation of HV box bracket

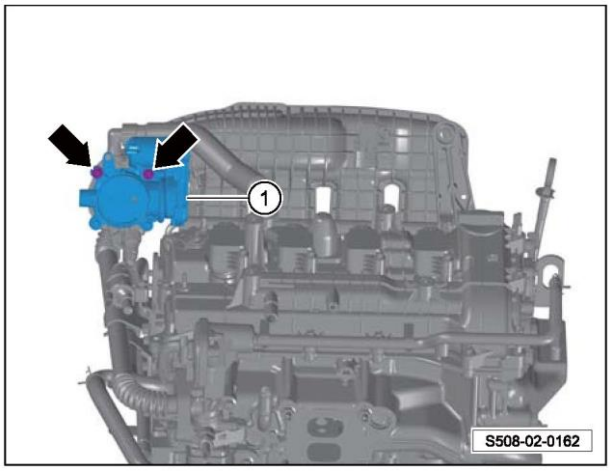


9 Remove the electronic throttle body assembly

a. Disconnect the connector of the electronic throttle body assembly ① (see the arrow).

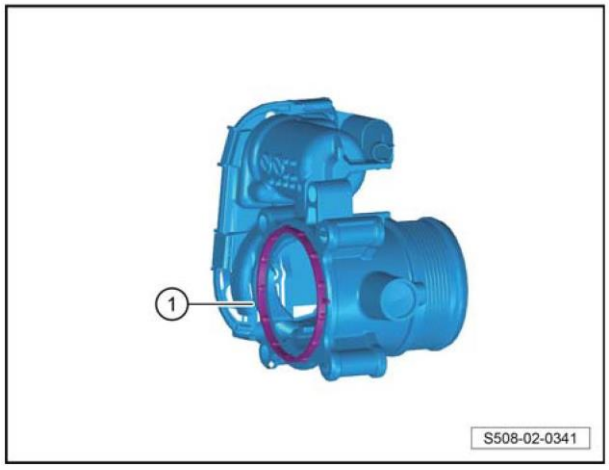


b. Unscrew the fixing bolt (see the arrow), and remove the intake manifold bracket 2 ①.



C. Unscrew the fixing bolt (see the arrow), and take out the electronic throttle body assembly ①.

- Tightening torque of bolt: **8±1 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace the O-ring ① when installing the electronic throttle body assembly.

2.6.7.7 Removal and installation of intake pressure and temperature sensor

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

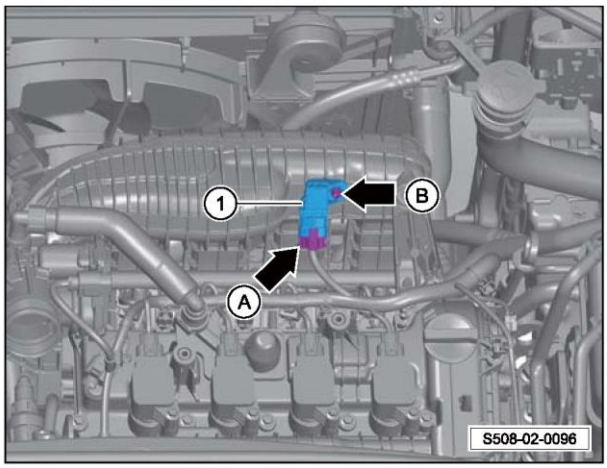
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



7 Remove the intake pressure and temperature sensor.

a. Disconnect the connector (see arrow A) of the intake pressure and temperature sensor ①.

b. Unscrew the fixing screw (see arrow B) and remove the intake pressure and temperature sensor ①.

- Tightening torque of screw (see arrow **B**): **5 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.7 Ignition system

2.7.1 Specification

2.7.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Ignition coil	Bolt	10
Spark plug	M12×1.25	22
Knock sensor	Hexagon head flange bolt M8	20
Crankshaft position sensor	Hexagon head flange bolt M6	10
Camshaft phase sensor	Double-ended stud with shoulders M6	10
Central electromagnet	Bolt	10±1

2.7.2 Description and operation

2.7.2.1 Description and operation

Ignition system

The function of the ignition system is to convert the LV power supplied by the vehicle power supply into HV power and provide the power to the spark plug of each cylinder timely and accurately based on the specified ignition timing sequence to generate electric spark in the gap and then ignite the combustible mixture in the cylinder so as to push the piston and make the engine run normally.

The independent ignition method is adopted for the vehicle, that is, each cylinder is equipped with an ignition coil so that the ignition of the cylinders is independent of each other. In addition, the ignition of each cylinder can be controlled more accurately, so that the mixture combustion in cylinder is more sufficient, and the stability of the ignition system is improved.

The main components of the ignition system include:

- Knock sensor
- Intake temperature and pressure sensor
- Speed sensor
- Ignition coil
- Coolant temperature sensor
- Spark plug
- Battery
- ECU
- Start switch

Ignition coil

Ignition coil consists of primary winding, secondary winding, iron core and housing, etc.

Under the control of ECU, when the ground circuit of a primary winding of the ignition coil is connected, this primary winding is charged and the secondary winding induces a high-voltage current to discharge the spark plug connected to the ignition coil. When the ECU cuts off the circuit of primary winding, the ignition is suspended.

Spark plug

The spark plug leads the high-voltage pulse current generated by the ignition coil into the combustion chamber, where the gas mixture is ignited by the electric spark generated by the electrode to burn.

Knock sensor

The knock sensor, a vibration acceleration sensor, is installed at the part most sensitive to knock induction of engine cylinder block and under the intake manifold. ECU detects the knock intensity via the knock sensor, to rectify the ignition advance angle, thus effectively controlling the knock and optimizing engine dynamic, fuel efficiency and emission. In case of engine knock, ECU will receive corresponding signals and carry out calculation after filtering non-knock signals; it judges the engine position in the working cycle based on the signals from camshaft and crankshaft position sensor. In this way, ECU figures out which cylinder suffers knock and puts off the ignition advance angle of such cylinder until the knock disappears. After that, ECU will bring forward the ignition advance

angle again until the ignition angle is at the optimal position under the current working condition.

Crankshaft position sensor

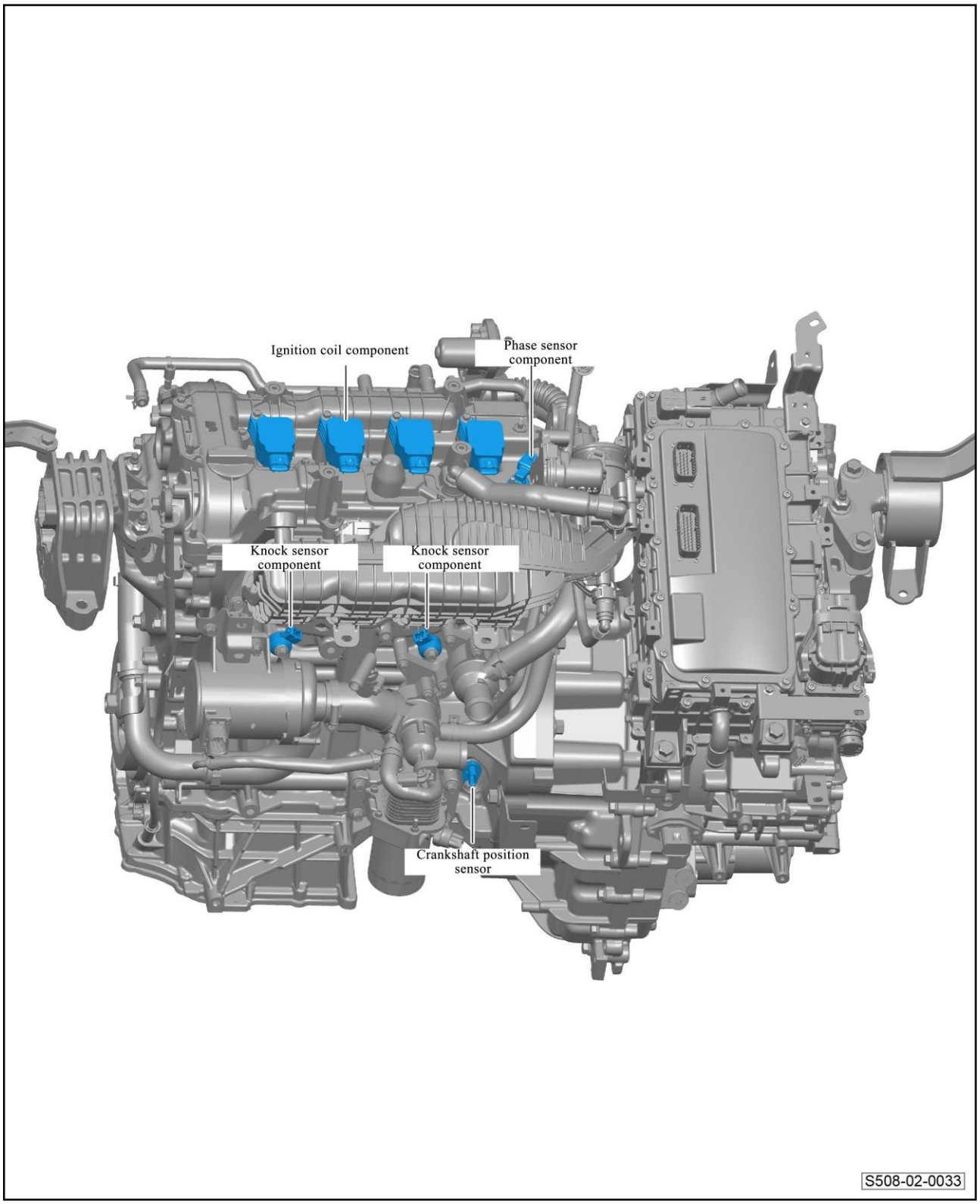
It is installed on the engine cylinder block to detect the crankshaft speed and position. Based on the principle of Hall effect, it generates voltage pulse signals corresponding to crankshaft angle. It changes the intensity of magnetic field passing through a Hall element via triggering blade or gear tooth, thus making the Hall element produce Hall voltage signals of pulse, which are the output signals from the crankshaft position sensor after amplifying and shaping. Therefore, the output signals can stand for the RPM and position of crankshaft.

Phase sensor

The phase sensor, a Hall effect sensor, is installed next to the intake camshaft and works together with the signal gear on the camshaft; the signal gear corresponds to the specific engine position. ECU detects digital voltage signals via this sensor and determines the engine cylinder in operation based on such signals, thus realizing one-to-one control. In this way, ECU can figure out the actual sequence of fuel injection. If the signals from camshaft position sensor are lost during the engine operation, the fuel injection system will switch to the fuel injection mode with a sequence calculated based on the last fuel injection pulse, while the engine will keep running. If the engine is shut down and then re-started, the fuel injection sequence will be changed from sequential injection to group injection. The engine can be restarted even if there is fault.

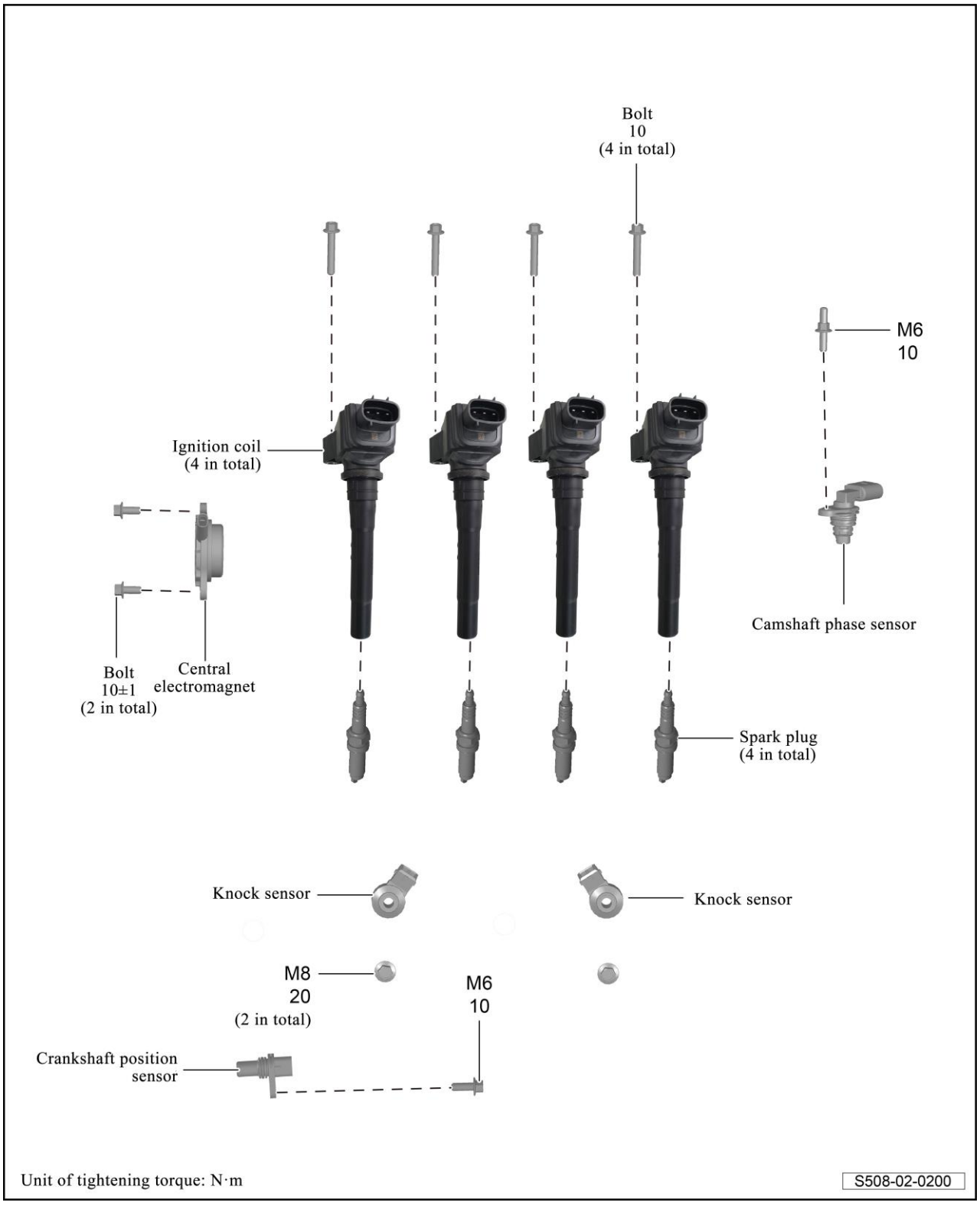
2.7.3 Component position

2.7.3.1 Component position



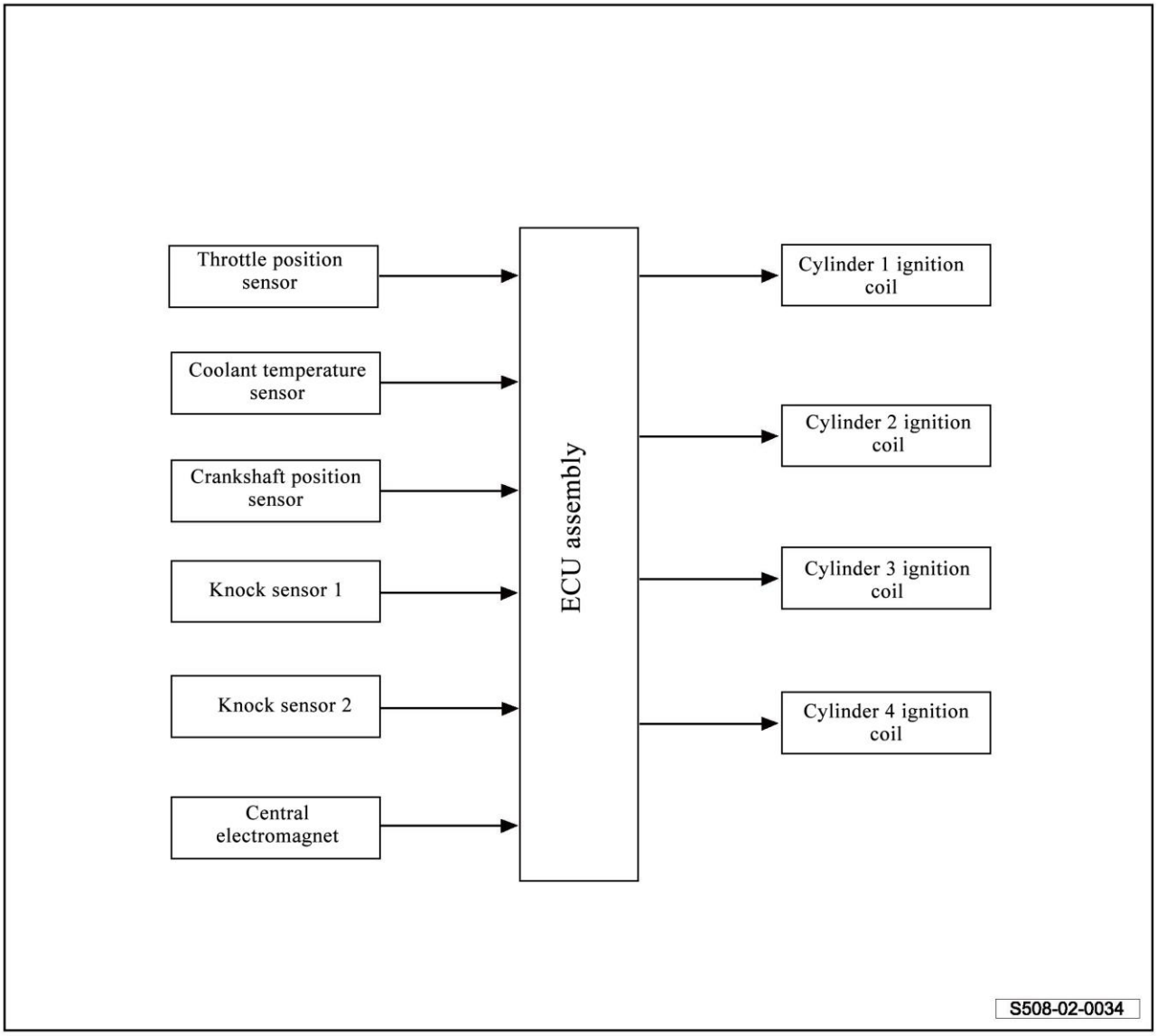
2.7.4 Exploded view

2.7.4.1 Exploded view



2.7.5 Electrical schematic diagram

2.7.5.1 Electrical schematic diagram



2.7.6 Diagnosis information and steps

2.7.6.1 Diagnostic instructions

Be sure to be familiar with the system functions and operations before starting system diagnostics, which will help you determine the cause of fault, and more importantly, help determine whether the symptoms described by the customer are normal.

2.7.6.2 Visual inspection

- Check whether there is any added device that may affect the performance of ignition system.
- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.

2.7.6.3 No power output of main relay

1. Diagnosis steps

Step 1	Check the main relay.

A Check whether the main relay works normally.

No → Replace the main relay.

Yes

Step 2	Check the control output circuit of main relay.

A Check whether the main relay control output circuit is normal.

No → Check and repair the main relay control output circuit.

Yes

Step 3	Check the power output circuit of main relay.

A Check whether the main relay power output circuit is normal.

Yes → Check and repair the main relay power output circuit.

Yes

Step 4	Replace the ECU.

A Replace the ECU.

B Is the fault eliminated after replacing the ECU?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

2.7.6.4 Unstable idle speed of engine

Diagnosis steps

Step 1	Check the ignition coil.

A Check whether the ignition coil leaks or does not work.

B Check whether the ignition coil model is correct.

Yes → Replace the original ignition coil.

No

Step 2	Check the spark plug.

A Check whether the spark plug gap is too large.

B Check whether the spark plug model is incorrect.

Yes → Replace with a genuine spark plug.

No

Step 3	Check the intake system

A Check the intake system for air leakage.

B Check whether the air filter element is blocked.

Yes → Check and repair the leaky area. Replacing the air filter element.

No

Step 4	Check the fuel system.

A Check if the pressure of the fuel system is normal.

No → Repair the fuel system.

Yes

Step 5	Check the exhaust system.

A Check whether the catalytic converter is blocked.

Yes → Replace the catalyst.

No

Step 6	Check the ECU.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the engine DTC.
C Check whether there are DTCs related to engine idling.

Yes → Repair relevant faults.

No

Step 7	Recheck the fault status after performing correct checks and repairs.

A Check whether the engine idle speed is normal.

Yes → Troubleshoot from other symptoms

Next

Step 8	The diagnosis is over.

2.7.6.5 Acceleration failed due to insufficient engine power

Diagnosis steps

Step 1	Check the spark plug.

A Check whether the spark plug gap is too large.
B Check whether the spark plug model is wrong.

Yes → Replace with a genuine spark plug.

No

Step 2	Check the fuel system.

A Check whether the fuel system pressure is too low.
B Check whether the fuel system pressure regulator is faulty.
C Check whether the fuel pump filter element is blocked.

Yes → Replace the fuel pump assembly.

No

Step 3	Check the phase regulator.

A Replace with a phase regulator in good condition and perform the function test to check whether the fault is eliminated

Yes → Check and repair the phase regulator or replace it.

No

Step 4	Check timing mechanism.

A Check whether the timing chain is worn or misaligned.

B Check whether the timing chain is stretched.

Yes → Replace the timing chain and guide rail.

No

Step 5	Inspect the cylinder pressure.

A Check whether the cylinder pressure is OK.

No → Repair the mechanical part of engine.

Yes

Step 6	Recheck the fault status after performing correct checks and repairs.

A Check whether the fault is cleared?

No → Troubleshoot from other symptoms

Next

Step 7	The diagnosis is over.

2.7.7 Removal and installation

2.7.7.1 Removal and installation of ignition coil

Disassembly procedures

Tip:

To prevent dirt from entering the combustion chamber after the spark plug is screwed out, remove the dirt around the ignition coil before removing it.

1 Turn off all the electrical appliances and turn off the Start switch.

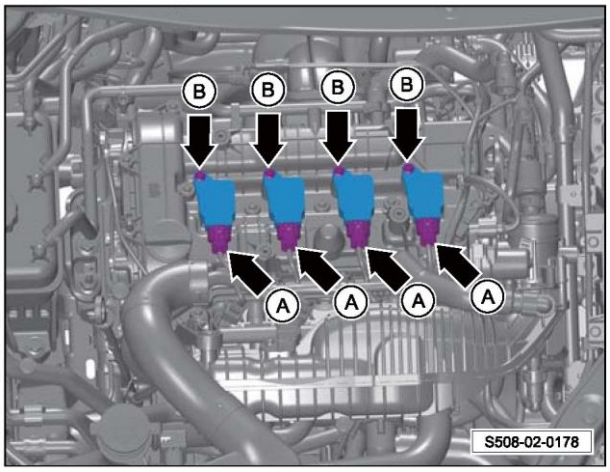
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter



7 Remove the ignition coil

a. Disconnect the ignition coil connector (see arrow A).

b. Unscrew the fixing bolts (see arrow B) and remove the ignition coil.

- Tightening torque of bolt: **10 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Press the ignition coil to the bottom when installing it. The top of ignition coil shall be in complete contact with the cylinder head cover. It's forbidden to install while it's not pressed tightly and completely.

– Make sure that there is no crack on the surface of ignition coil components, install them into corresponding cylinder head cover seat holes, and tighten their bolts to the specified torque.

2.7.7.2 Removal and installation of spark plug

Disassembly procedures

Tip:

To prevent foreign matters from entering the cylinder, use a wad of cloth to plug up the spark plug hole after removing the spark plug.

1 Turn off all the electrical appliances and turn off the Start switch.

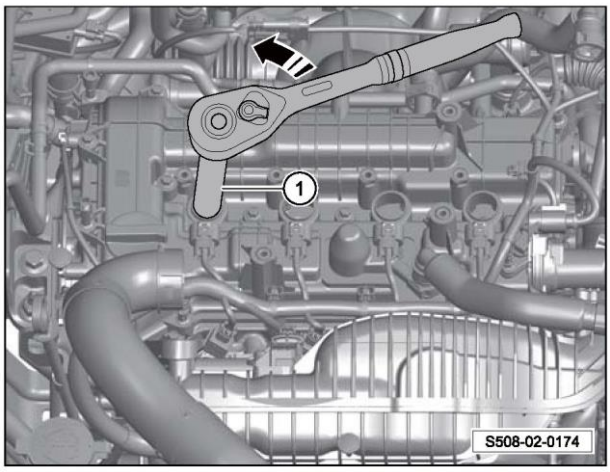
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the ignition coil. Refer to 2.7.7.1 Removal and installation of ignition coil

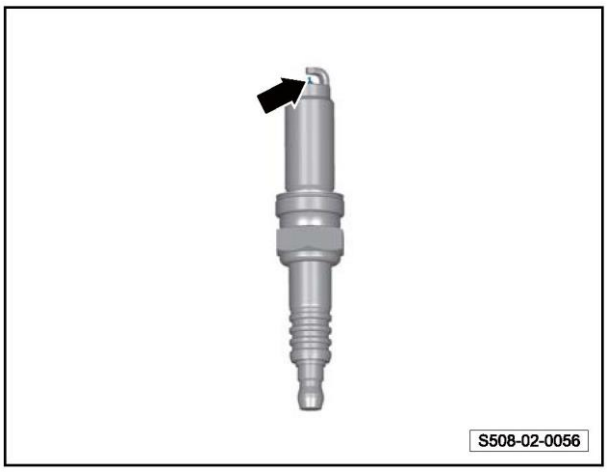


7 Remove the spark plug

a. Use the spark plug removal tool ① to screw out the spark plug in direction of the arrow.

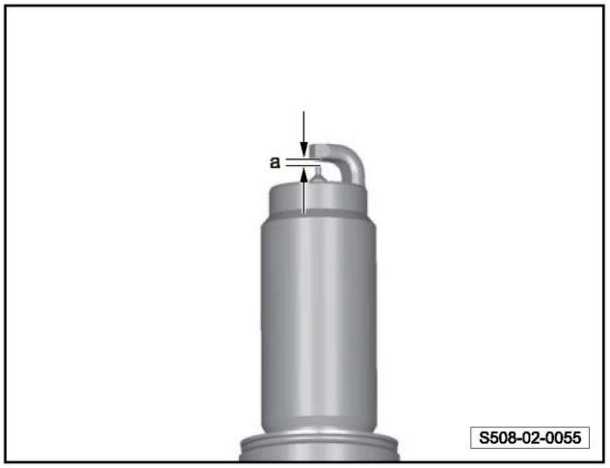
- Tightening torque of spark plug: **22N·m**

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check the place indicated by arrow on the spark plug for residual greasy dirt and carbon deposit. Clear them if necessary.



– Check the electrode clearance (a) of spark plug.

• Standard clearance **a**: **1.05~1.15 mm**

2.7.7.3 Removal and installation of knock sensor

Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

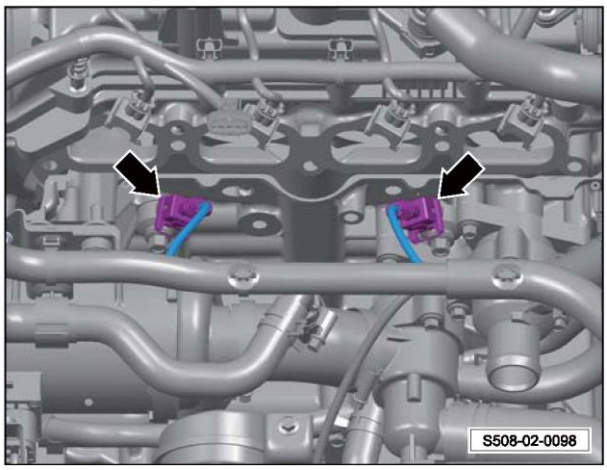
4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel

assembly (middle)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

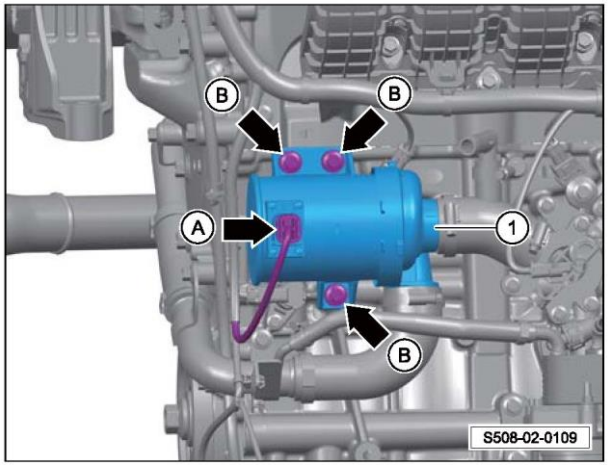
6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

7 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



8 Remove the knock sensor

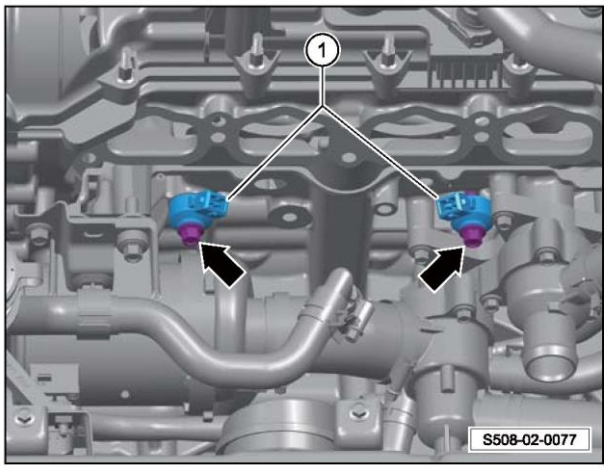
a. Disengage the connector (see the arrow) of the knock sensor.



b. Disconnect the connector of the engine electronic pump ① (see arrow A).

c. Unscrew the fixing bolt (see the arrow), and remove the engine electronic pump ①.

- Tightening torque of bolt: **25 N·m**



d. Unscrew the fixing bolt (see the arrow) and remove the knock sensor ①.

- Tightening torque of bolt: **20 N·m**

Tip:

Before removing the knock sensor, pay attention to its installation position ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.7.7.4 Removal and installation of crankshaft position sensor

Disassembly procedures

Tip:

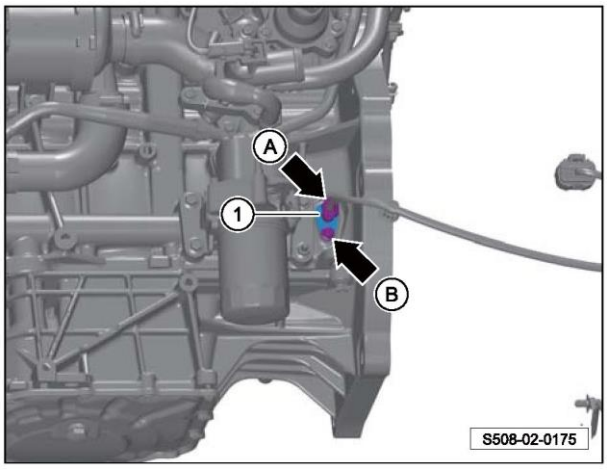
In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

4 Lift the vehicle.

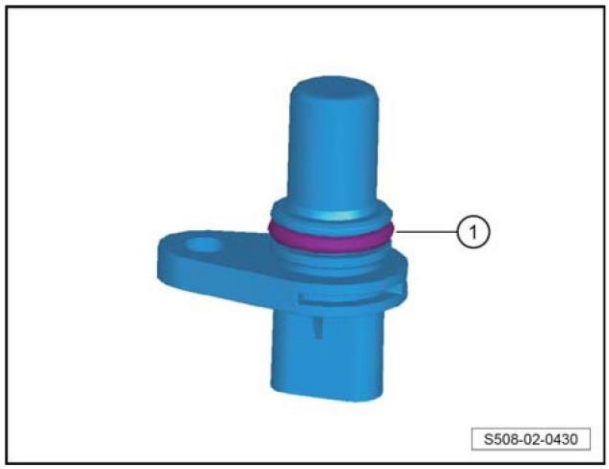


5 Remove the crankshaft position sensor

a. Disconnect the connector of the crankshaft position sensor ① (see arrow A).

b. Unscrew the fixing bolt (see arrow B) and remove the crankshaft position sensor ①.

- Tightening torque of bolt (see arrow **B**): **10 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Clear away greasy dirt and foreign matter on the surface of crankshaft position sensor and on the detection end.
- Replace the sealing ring ① with a new one.

2.7.7.5 Removal and installation of camshaft phase sensor

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

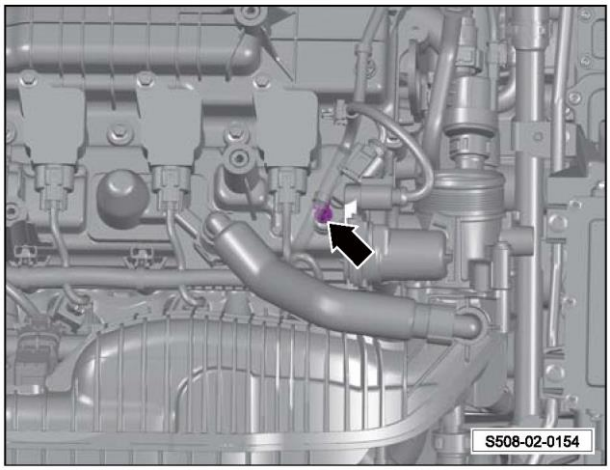
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

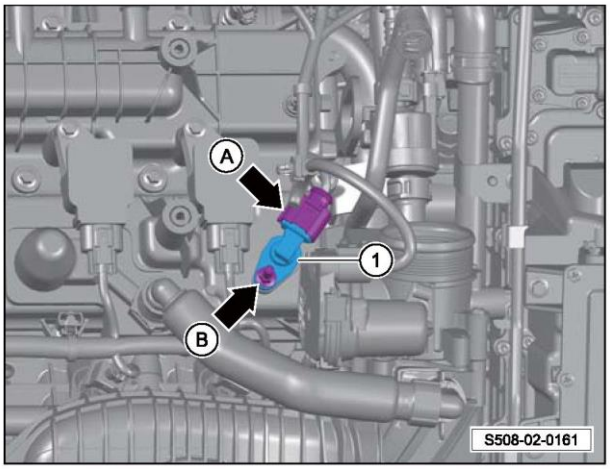
5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter



7 Remove the camshaft phase sensor

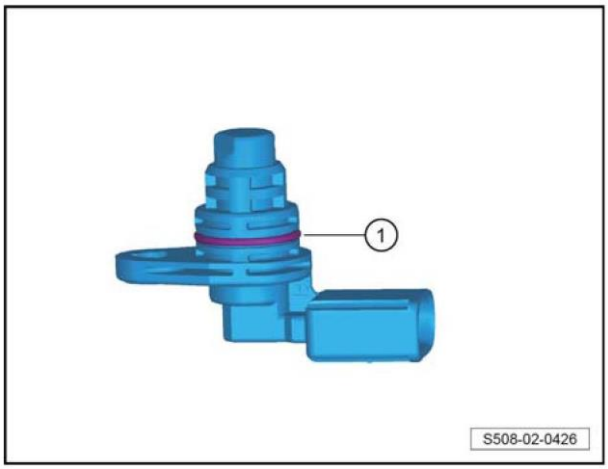
a. Disengage the fixing clips (see the arrows) of the engine harness.



b. Disconnect the connector of the camshaft phase sensor ① (see arrow A).

c. Unscrew the fixing bolt (see arrow B), and remove the crankshaft phase sensor ①.

- Tightening torque of bolt (see arrow **B**): **10 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace with a new sealing ring ① during installation.

2.8 Control system

2.8.1 Specification

2.8.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
PCJ control valve	Bolt	10
ECU assembly	Hexagon head flange bolt M6×16	10±1
Connection of the electronic accelerator pedal assembly to the body	Hexagon flange nut M6	10±1

2.8.2 Description and operation

2.8.2.1 Description and operation

Engine control system

The engine control system has the following functions: electronic fuel injection control, electronic spark advance, idle speed control, intake boost control, exhaust emission control, cruise control, fail-safe and backup, self-diagnosis, data communication and immobilization.

The core of the electronically controlled fuel injection system is the ECU, which calculates the fuel injection amount (fuel injection pulse width) required for cylinder combustion according to the signals fed back by sensors and various working condition signals and starts the fuel injector at the appropriate injection time to inject an appropriate amount of fuel into the cylinder to form a combustible mixture with the best air-fuel ratio. Actuators such as the fuel injector and ignition coil work together to keep the engine in good working condition.

The electronic fuel injection system has benefits as below:

- It can provide mixture with optimum concentration and enable the engine to maintain optimal dynamics, fuel efficiency and emission performance under various working conditions.
- In coordination with the emission control system, the electronic fuel injection system can significantly reduce the emission of such harmful gases as HC, CO and NOx.
- It can increase fuel injection pressure and enhance fuel atomization. One injector for each cylinder (multi-point injection) realizes even fuel distribution for each cylinder and helps increase running stability of the engine.
- The ECU adjusts and optimizes fuel injection and ignition timing according to the change in air density caused by changes in outside atmospheric pressure, ambient temperature, turbocharged pressure and turbocharged temperature.
- The fuel control system reacts quickly in the transition stage of acceleration and deceleration. This ensures good acceleration/deceleration performance of the vehicle.
- Its deceleration fuel cut-off function reduces emission and saves fuel.

VFS electromagnet component

The VFS electromagnet component is located on the cylinder head, near the front end of the engine. The working power supply of the VFS electromagnet component is provided by the main relay controlled by the ECU. The ECU controls the grounding of the VFS electromagnet component with pulse width modulation signals, which can continuously change the timing relationship between the crankshaft and camshaft so that the engine can obtain the required optimal valve timing under different operating conditions and realize the control of valve timing. It will help improve engine efficiency and idling stability, provide higher torque and power, as well as improve fuel economy and reduce hydrocarbon and nitrogen oxide emissions.

ECU

The ECU tests and calculates the required air-fuel mixture ratio and ignition advance angle of the engine according to the input data of each sensor, and directly controls the intake flow rate and corresponding fuel supply amount, fuel injection timing, high-pressure ignition timing, ignition closing angle, the idle speed of the engine and working state of other vehicle accessories (such as A/C compressor, cooling fan and other devices) under various operating conditions. Its function is to

process the data from sensors at different positions of the complete vehicle, judge the engine operation status and then accurately control the engine via actuator.

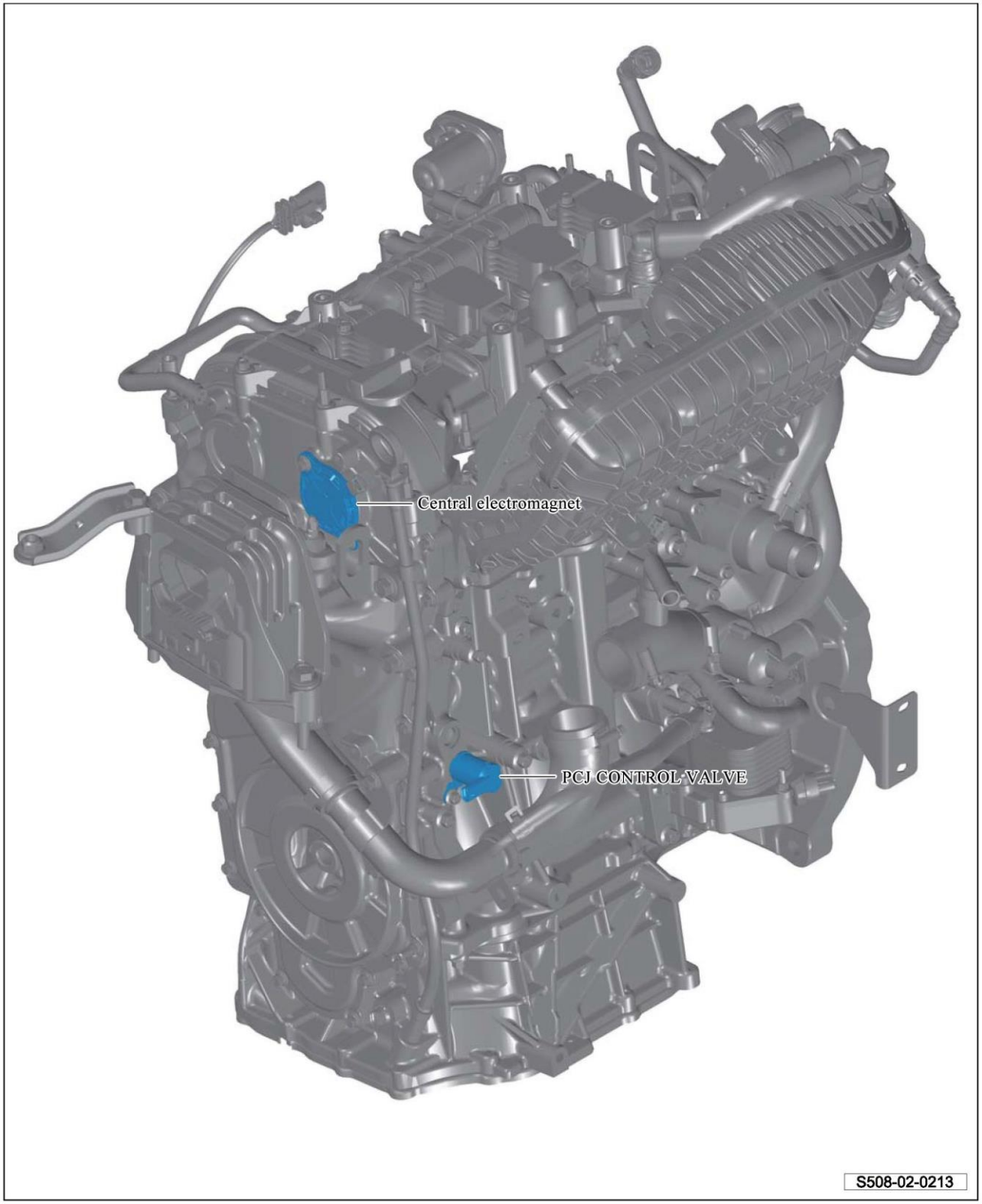
The ECU has the function of continuously monitoring and controlling the normal operation of the engine.

2.8.3 Component position

2.8.3.1 Component position

Component location diagram 1

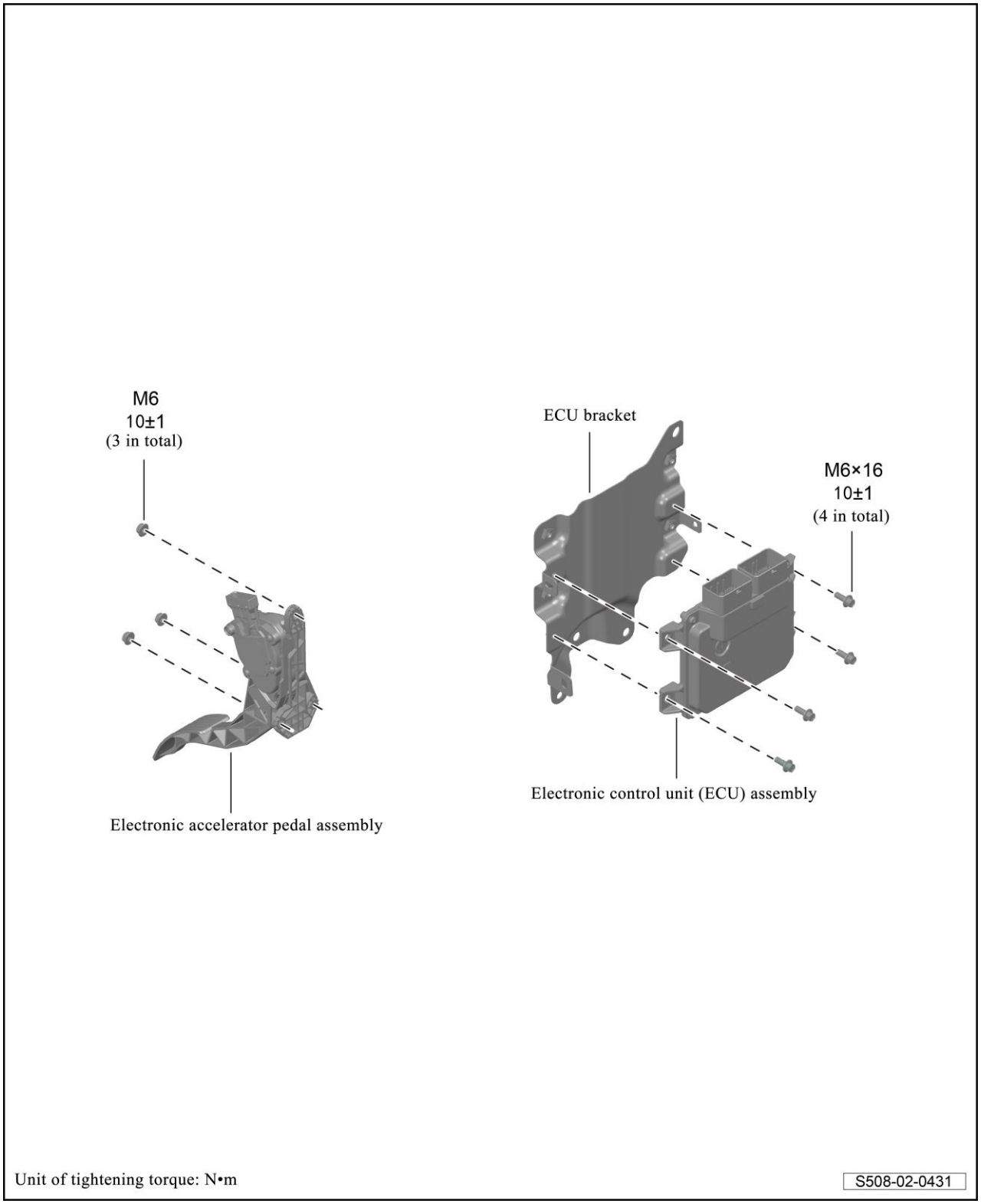
Component location diagram 2



2.8.4 Exploded view

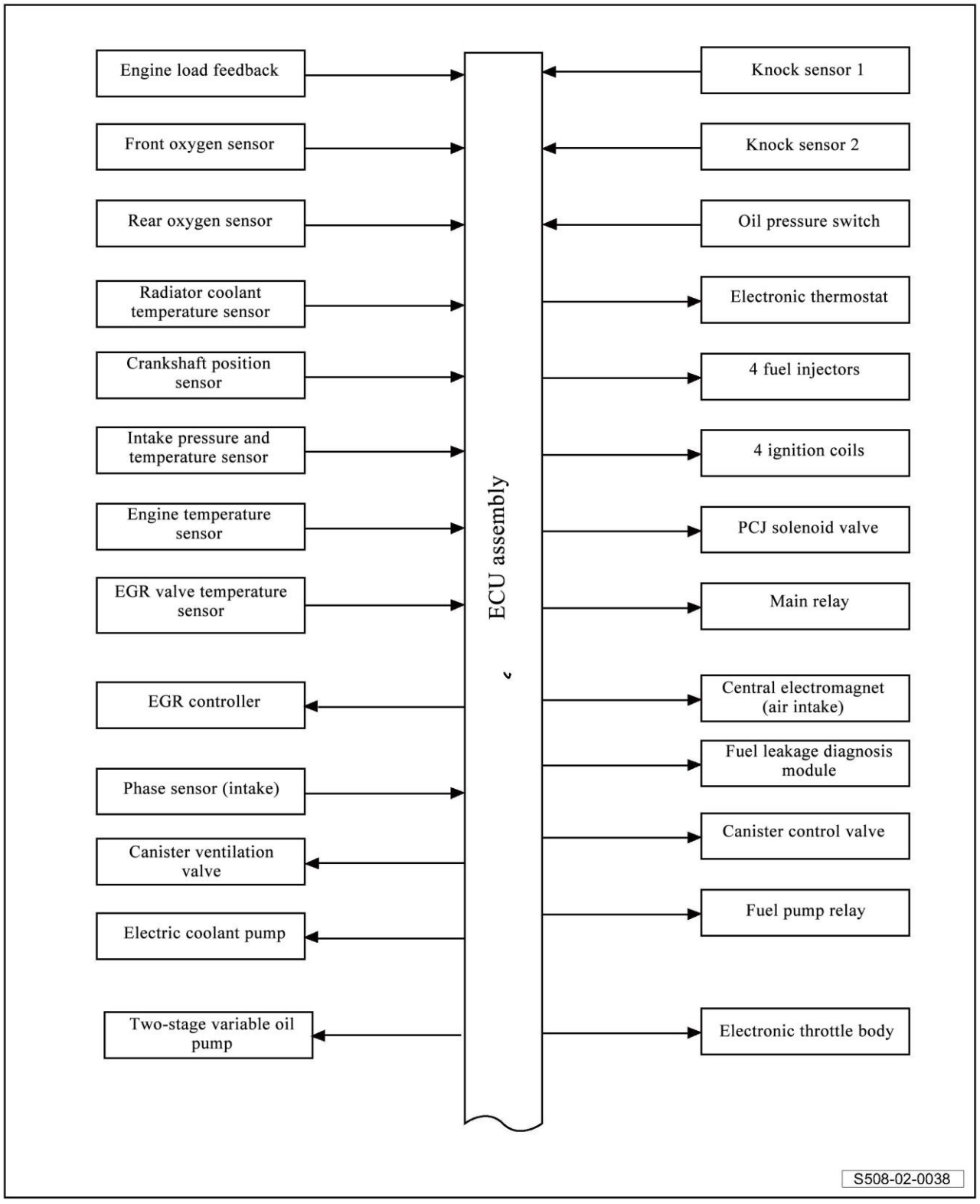
2.8.4.1 Exploded view

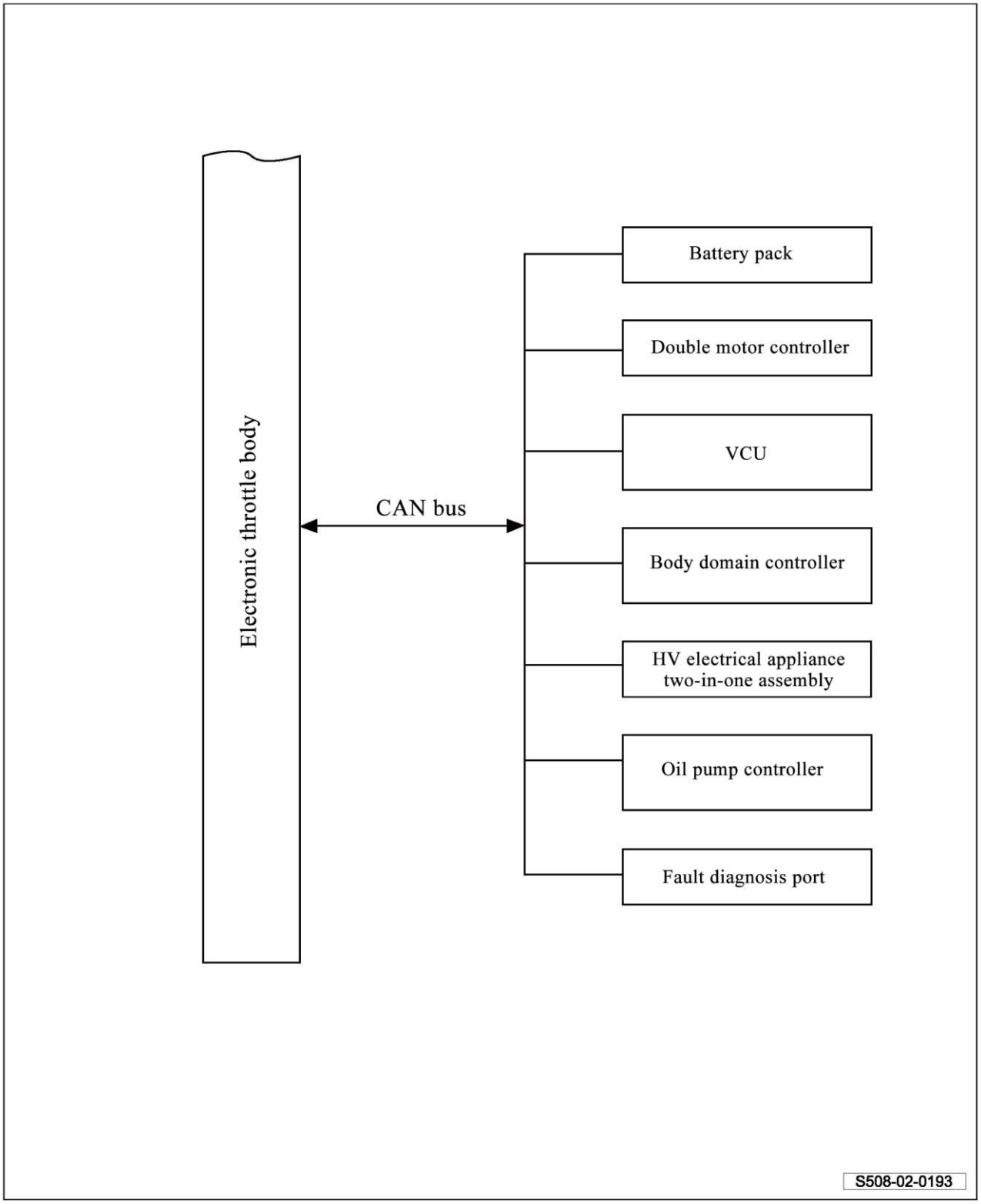
Exploded view



2.8.5 Electrical schematic diagram

2.8.5.1 Electrical schematic diagram




Electronic throttle body
CAN bus
Battery pack
Double motor controller
VCU
Body domain controller
HV electrical appliance two-in-one assembly
Oil pump controller
Fault diagnosis port
S508-02-0193

2.8.6 Diagnosis information and steps

2.8.6.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by EMS with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

2.8.6.2 Visual inspection

- Confirmation of fault symptom

The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

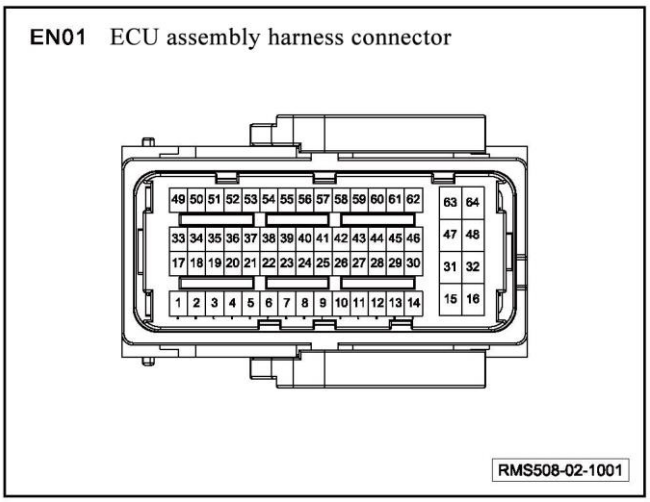
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

2.8.6.3 ECU terminal

ECU assembly harness connector (EN01)

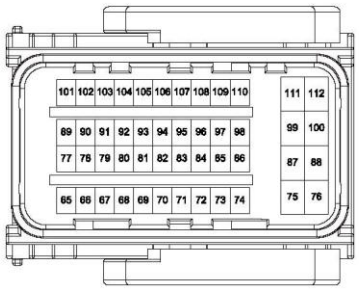


Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
2	0.5/blue-brown	IG1 power	—	—
3	0.35/white	Electronic thermostat control	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
6	0.5/blue	PWM signal	—	—
8	0.5/pink-white	RE+	—	—
9	0.35/Orange and white	Fuel pump relay control	—	—
11	0.35/brown-white	BD CAN-L	—	—
12	0.35/brown	BD CAN-H	—	—
13	0.75/purple-brown	ECU heating control	—	—
14	0.35/brown-gray	Main relay control	—	—
15	1.5/red-white	ECU module electricity	—	—
16	0.75/green-blue	Motor +	—	—
17	0.35/blue-red	Solenoid valve -	—	—
23	0.35/brown-black	Oil pressure	—	—
25	0.5/yellow	Knock 2 signal B	—	—
26	0.5/yellow-black	Knock 2 signal A	—	—
27	0.35/Yellow and red	+5V	—	—
28	0.35/green-black	-5V	—	—
30	0.35/Red	Radiator coolant temperature +	—	—
31	1.5/red-white	ECU module electricity	—	—
32	0.75/green	Motor -	—	—
34	0.5/blue-green	Water pump LIN signal	—	—
36	0.35/gray	Radiator coolant temperature -	—	—
42	0.5/pink	Temperature signal	—	—
47	1.5/black	Ground	—	0V
48	1.5/black	Ground	—	0V
49	0.5/pink, brown	Rear oxygen sensor signal -	—	—
53	0.5/pink-black	IPE	—	—
62	0.35/white	PCJ solenoid valve control	—	—
63	1.5/white	Battery power supply	The start switch is turned to any position location	Battery voltage
64	1.5/black	Ground	—	0V

ECU assembly harness connector (EN61)

EN61 ECU assembly harness connector



RMS508-02-1002

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
67	0.75/orange	Fuel injector 1 control terminal	—	—
68	0.75/pink	Fuel injector 3 control terminal	—	—
69	0.35/blue-green	Air pump-	—	—
70	0.75/pink-green	Front oxygen sensor heater -	—	—
71	0.75/yellow	Fuel injector 4 control terminal	—	—
72	0.75/brown	Fuel injector 2 control terminal	—	—
74	0.35/green-purple	Variable oil pump control	—	—
75	0.35/white	OCV control -	—	—
78	0.5/light-green	Throttle signal 1	—	—
79	0.35/purple-pink	Temperature signal	—	—
80	0.5/blue-brown	Throttle signal 2	—	—
81	0.35/green-red	EGR position signal	—	—
82	0.35/green, pink, red	EGR temperature+	—	—
84	0.35/gray-white	Engine coolant temperature	—	—
85	0.35/green-yellow	Camshaft signal	—	—
86	0.5/pink, red	APE	—	—
87	0.75/purple-white	Throttle motor +	—	—
88	0.75/purple-yellow	Throttle motor -	—	—
89	0.5/purple	Knock 1 signal A	—	—
97	0.35/yellow-white	Crankshaft position signal	—	—
98	0.5/white-green	EGR temperature -	—	—
99	0.75/orange-black	PWM ignition control 1	—	—
100	0.75/orange-blue	PWM ignition control 3	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
101	0.5/purple-black	Knock 1 signal B	—	—
102	0.35/Yellow and red	EGR/crankshaft position sensor ground	—	—
103	0.5/light green-white	+5V	—	—
106	0.35/orange-yellow	Carbon canister solenoid valve control	—	—
107	0.35/yellow-green	Pressure signal	—	—
108	0.35/purple-gray	Heater -	—	—
110	0.35/green-black	EGR/crankshaft position sensor power	—	—
111	0.75/orange-green	PWM ignition control 4	—	—
112	0.75/orange-gray	PWM ignition control 2	—	—

2.8.6.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	“1”	“X”	-
		Month	“1”	“C”	-
		Day	“1”	“Z”	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
CF00	Speed	Speed	0	8000	rpm
CF01	Intake pressure	Intake pressure	0	255	kpa
CF02	Coolant temperature	Coolant temperature	-60	160	℃
CF03	Vehicle speed	Vehicle speed	0	255	km/h

2.8.6.5 DTC list

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
P010700	Intake pressure sensor circuit low voltage	Limp processing	Short-circuited to ground	Check relevant harnesses
P010800	Intake pressure sensor circuit high voltage	Limp processing	Short-circuited to power supply	Check relevant harnesses
P011200	Intake temperature sensor circuit low voltage	Limp processing	Short-circuited to ground	Check relevant harnesses
P011300	Intake temperature sensor circuit high voltage	Limp processing	Short-circuited to power supply	Check relevant harnesses
P011600	Coolant temperature sensor signal unreasonable	Limp processing	Line interference or sensor body deviation	Check relevant harnesses and sensors
P011700	Coolant temperature sensor circuit low voltage	Limp processing	Short-circuited to ground	Check relevant harnesses
P011800	Coolant temperature sensor circuit high voltage	Limp processing	Short-circuited to power supply	Check relevant harnesses
P012200	Throttle position sensor A circuit low voltage	Limp processing, use another signal	Short-circuited to ground	Check relevant harnesses
P012300	Throttle position sensor A circuit high voltage	Limp processing, use another signal	Short-circuited to power supply	Check relevant harnesses
P013300	Front oxygen sensor response too slow	Limp processing	Part aging	Check relevant parts
P014000	Rear oxygen sensor circuit open	Limp processing	Open circuit	Check relevant harnesses

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
P013700	Rear oxygen sensor circuit low voltage	Limp processing	Short-circuited to ground	Check relevant harnesses
P013800	Rear oxygen sensor circuit high voltage	Limp processing	Short-circuited to power supply	Check relevant harnesses
P218300	Radiator outlet coolant temperature sensor signal unreasonable	Limp processing	Part fault	Check relevant parts
P218400	Radiator outlet coolant temperature sensor circuit voltage low	Limp processing	Short-circuited to ground	Check relevant harnesses
P218500	Radiator outlet coolant temperature sensor circuit high voltage	Limp processing	Short-circuited to power supply	Check relevant harnesses
P022100	Throttle position sensor B circuit signal unreasonable	Limp processing, use another signal	Short-circuited to ground	Check relevant harnesses
P022200	Throttle position sensor B circuit low voltage	Limp processing, use another signal	Short-circuited to ground	Check relevant harnesses
P022300	Throttle position sensor B circuit high voltage	Limp processing, use another signal	Short-circuited to power supply	Check relevant harnesses
P056200	Low system voltage	Limp processing	Short-circuited to ground	Check the ECU input voltage
P056300	High system voltage	Limp processing	Short-circuited to power supply	Check the ECU input voltage
P033600	Crankshaft sensor signal unreasonable	Limp processing, use camshaft signal for computation	Line interference	Check relevant signals
P033700	Crankshaft sensor circuit no signal	Limp processing, use camshaft signal for computation	Circuit disconnection	Check relevant harnesses
P034100	Camshaft sensor signal unreasonable	Limp processing, use crankshaft signal to judge cylinder sequence	Line interference	Check relevant signals
P034200	Camshaft sensor no signal	Limp processing, use crankshaft signal to judge cylinder sequence	Circuit disconnection	Check relevant harnesses
P001000	Intake camshaft regulating valve control circuit open	Limp processing	Open circuit	Check relevant harnesses
P208800	Intake camshaft regulating valve control circuit low voltage	Limp processing	Short-circuited to ground	Check relevant harnesses
P208900	Intake camshaft regulating valve control circuit high voltage	Limp processing	Short-circuited to power supply	Check relevant harnesses

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
P014100	Rear oxygen sensor heater control circuit open	Limp processing	Open circuit	Check relevant harnesses
P003700	Rear oxygen sensor heater control circuit low voltage	Limp processing	Short-circuited to ground	Check relevant harnesses
P003800	Rear oxygen sensor heater control circuit high voltage	Limp processing	Short-circuited to power supply	Check relevant harnesses
P020100	Injector #1 control circuit open	Cylinder isolated	Open circuit	Check relevant harnesses
P020200	Injector #2 control circuit open	Cylinder isolated	Open circuit	Check relevant harnesses
P020300	Injector #3 control circuit open	Cylinder isolated	Open circuit	Check relevant harnesses
P020400	Injector #4 control circuit open	Cylinder isolated	Open circuit	Check relevant harnesses
P035100	Ignition coil #1 circuit fault	Cylinder isolated	Open circuit	Check relevant harnesses
P035200	Ignition coil #2 circuit fault	Cylinder isolated	Open circuit	Check relevant harnesses
P035300	Ignition coil #3 circuit fault	Cylinder isolated	Open circuit	Check relevant harnesses
P035400	Ignition coil #4 circuit fault	Cylinder isolated	Open circuit	Check relevant harnesses
P030000	Single-cylinder or multi-cylinder misfire	Limp processing	Misfire	Check fuel injection, ignition and combustion
P030100	Cylinder I misfire	Cylinder isolated	Misfire	Check fuel injection, ignition and combustion
P030200	Cylinder II misfire	Cylinder isolated	Misfire	Check fuel injection, ignition and combustion
P030300	Cylinder III misfire	Cylinder isolated	Misfire	Check fuel injection, ignition and combustion
P030400	Cylinder IV misfire	Cylinder isolated	Misfire	Check fuel injection, ignition and combustion
P026100	Injector #1 drive circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P026200	Injector #1 drive circuit high voltage	Cylinder isolated	Short-circuited to power supply	Check relevant harnesses
P026400	Injector #2 drive circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P026500	Injector #2 drive circuit	Cylinder isolated	Short-circuited to	Check relevant

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	high voltage		power supply	harnesses
P026700	Injector #3 drive circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P026800	Injector #3 drive circuit high voltage	Cylinder isolated	Short-circuited to power supply	Check relevant harnesses
P027000	Injector #4 drive circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P027100	Injector #4 drive circuit high voltage	Cylinder isolated	Short-circuited to power supply	Check relevant harnesses
P230000	Ignition coil #1 control circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P230100	Ignition coil #1 control circuit high voltage	Cylinder isolated	Short-circuited to power supply	Check relevant harnesses
P230300	Ignition coil #2 control circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P230400	Ignition coil #2 control circuit high voltage	Cylinder isolated	Short-circuited to power supply	Check relevant harnesses
P230600	Ignition coil #3 control circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P230700	Ignition coil #3 control circuit high voltage	Cylinder isolated	Short-circuited to power supply	Check relevant harnesses
P230900	Ignition coil #4 control circuit low voltage	Cylinder isolated	Short-circuited to ground	Check relevant harnesses
P231000	Ignition coil #4 control circuit high voltage	Cylinder isolated	Short-circuited to power supply	Check relevant harnesses
P044400	Carbon canister solenoid valve control circuit open	Canister closed	Open circuit	Check relevant harnesses
P045800	Carbon canister solenoid valve control circuit low voltage	Canister closed	Short-circuited to ground	Check relevant harnesses
P045900	Carbon canister solenoid valve control circuit high voltage	Canister closed	Short-circuited to power supply	Check relevant harnesses
P210000	Throttle motor control circuit open	Recover throttle to natural opening	Open circuit	Check relevant harnesses
P210100	Throttle motor control circuit fault	Recover throttle to natural opening	Control power supply or too high temperature	Check relevant harnesses
P210200	Throttle motor control circuit low voltage	Recover throttle to natural opening	Short-circuited to ground	Check relevant harnesses
P210300	Throttle motor control circuit high voltage	Recover throttle to natural opening	Short-circuited to power supply	Check relevant harnesses
P211800	Throttle adjustment fault or control circuit open	Recover throttle to natural opening	Throttle not adjusted in place	Check relevant harnesses and throttle body

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
P211900	Throttle body mechanical fault	Try to adjust and recover to natural opening	Struck	Inspect the throttle body
P001600	Intake phase deviation too large	VVT not opened	Excessive deviation from initial position	Check phase and timing of camshaft
P042000	Three-way catalytic converter oxygen storage capacity aging (emission over-limit)	Limp processing	Oxygen storage below minimum limit	Check catalytic carrier
P050700	Idle speed control higher than target	High idle speed	High idle speed	Air leakage in pipeline
P001100	Camshaft system performance fault	Torque deviation	Excessive deviation between camshaft phase and target	Check camshaft-related harness, camshaft body and related oil line
P044200	Oil and gas leakage of fuel evaporation system	Limp processing	Leakage in fuel system pipeline	Check the pipeline related to fuel system (protective fuel tank)
P017100	Long-term lean fuel injection system	Limp processing	Fuel learning too thin for a long time	Check related fuel system and fuel injection system
P017200	Long-term rich fuel injection system	Limp processing	Fuel learning too heavy for a long time	Check related fuel system and fuel injection system
P120A00	Cold start emission reduction fault	Limp processing	Excessive deviation between emission warmer and set target	Check the oil line, gas path, etc.
P123F00	Linear oxygen sensor heater circuit low voltage	Limp processing	Short-circuited to ground	Check relevant harnesses
P124000	Linear oxygen sensor heater circuit high voltage	Limp processing	Check power circuit	Check relevant harnesses
P124100	Linear oxygen sensor heater circuit open	Limp processing	Open circuit	Check relevant harnesses
P045500	Serious oil and gas leakage of fuel evaporation system	Limp processing	Minor leakage in fuel system pipeline	Check relevant pipeline for leakage
P124D00	Linear oxygen sensor pump current circuit open	Abnormal line oxygen signal	Open circuit	Check relevant harnesses
P124E00	Line oxygen sensor pump current circuit short-circuited to ground	Abnormal line oxygen signal	Short-circuited to ground	Check relevant harnesses
P124F00	Line oxygen sensor	Abnormal line	Short-circuited to	Check relevant

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	pump current circuit short-circuited to power supply	oxygen signal	power supply	harnesses
P125000	Linear oxygen sensor ground circuit open	Abnormal line oxygen signal	Open circuit	Check relevant harnesses
P125100	Line oxygen sensor ground wire circuit short-circuited to ground	Abnormal line oxygen signal	Short-circuited to ground	Check relevant harnesses
P125200	Line oxygen sensor ground wire circuit short-circuited to power supply	Abnormal line oxygen signal	Short-circuited to power supply	Check relevant harnesses
P125300	Linear oxygen sensor's Nernst voltage circuit open	Abnormal line oxygen signal	Open circuit	Check relevant harnesses
P125400	Line oxygen sensor's Nernst voltage circuit short-circuited to ground	Abnormal line oxygen signal	Short-circuited to ground	Check relevant harnesses
P125500	Line oxygen sensor's Nernst voltage circuit short-circuited to power supply	Abnormal line oxygen signal	Short-circuited to power supply	Check relevant harnesses
P125900	Line oxygen sensor short-circuited to power supply	Abnormal line oxygen signal	Short-circuited to power supply	Check relevant harnesses
P040100	Insufficient EGR flow	Limp processing	EGR greatly less than target	Check the EGR
P040200	Excessive EGR flow	Limp processing	EGR greatly larger than target	Check the EGR
P040500	EGR position sensor low voltage	EGR off	Short-circuited to ground	Check relevant harnesses
P040600	EGR position sensor high voltage	EGR off	Short-circuited to power supply	Check relevant harnesses
P040C00	EGR temperature sensor low voltage	EGR off	Short-circuited to ground	Check relevant harnesses
P040D00	EGR temperature sensor high voltage	EGR off	Short-circuited to power supply	Check relevant harnesses
P048700	EGR valve drive circuit open	EGR off	Open circuit	Check relevant harnesses
P048900	EGR valve drive circuit short-circuited to ground	EGR off	Short-circuited to ground	Check relevant harnesses
P049000	EGR valve drive circuit short-circuited to power supply	EGR off	Short-circuited to power supply	Check relevant harnesses
P045200	Fuel tank pressure sensor signal low voltage	Failure to carry out leakage diagnosis	Short-circuited to ground	Check relevant sensor

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
P045300	Fuel tank pressure sensor signal high voltage	Failure to carry out leakage diagnosis	Short-circuited to power supply	Check relevant sensor
P044700	Carbon canister stop valve control circuit open	Failure to carry out leakage diagnosis	Open circuit	Check relevant harnesses
P049800	Carbon canister stop valve control circuit low voltage	Failure to carry out leakage diagnosis	Short-circuited to ground	Check relevant harnesses
P049900	Carbon canister stop valve control circuit high voltage	Failure to carry out leakage diagnosis	Short-circuited to power supply	Check relevant harnesses
U029387	Lost communication with VCU	Engine flameout	Lost communication	Check relevant harnesses
U016487	Lost communication with AC	-	Lost communication	Check relevant harnesses
U012287	Lost communication with ESP	-	Lost communication	Check relevant harnesses
U031187	Lost communication with GCU	-	Lost communication	Check relevant harnesses
U015587	Lost communication with IC	-	Lost communication	Check relevant harnesses
U010987	Lost communication with PCM	-	Lost communication	Check relevant harnesses
U007588	BUS OFF	-	Lost communication	Check relevant harnesses

2.8.6.6 DTC: P010700, P010800

DTC	Description
P010700	Intake pressure sensor circuit low voltage
P010800	Intake pressure sensor circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check intake pressure and temperature sensor.

A Check whether the intake pressure and temperature sensor gets stained with oil or is covered by carbon deposits.

Yes → Clean oil stains or replace the intake pressure and temperature sensor.

No

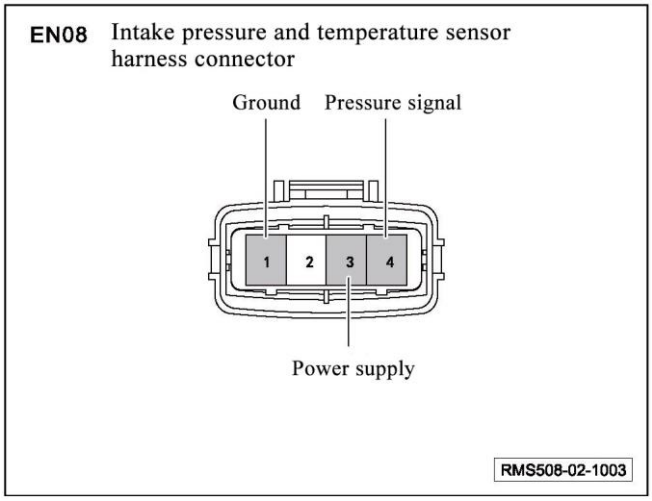
Step 3	Check the intake pipeline.

A Check the intake pipeline for air leakage.

Yes → Check and repair the leaky intake pipeline.

No

Step 4	Check the circuit between the intake pressure and temperature sensor and the ECU assembly for open circuit.



A Turn the start switch to "OFF" position.

B Disconnect intake pressure and temperature sensor harness connector EN08.

C Disconnect ECU assembly harness connector EN01 and EN61.

D Measure the resistance of circuit between terminal 1 of the intake pressure and temperature sensor harness connector EN08 and terminal 28 of the ECU assembly harness connector EN01.

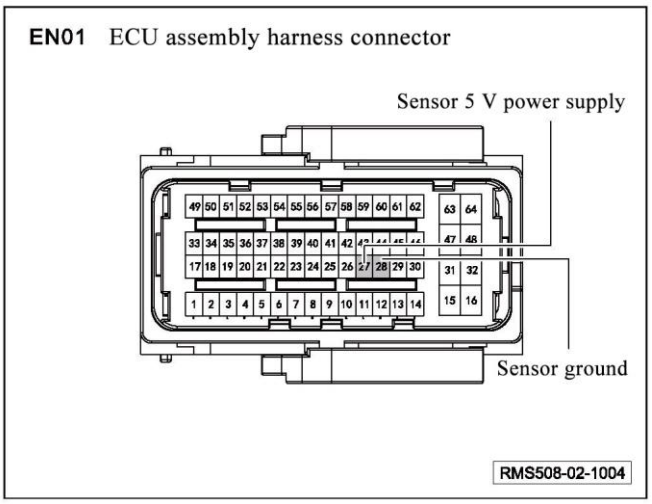
E Measure the resistance of circuit between terminal 3 of the intake pressure and temperature sensor harness connector EN08 and terminal 27 of the ECU assembly harness connector EN01.

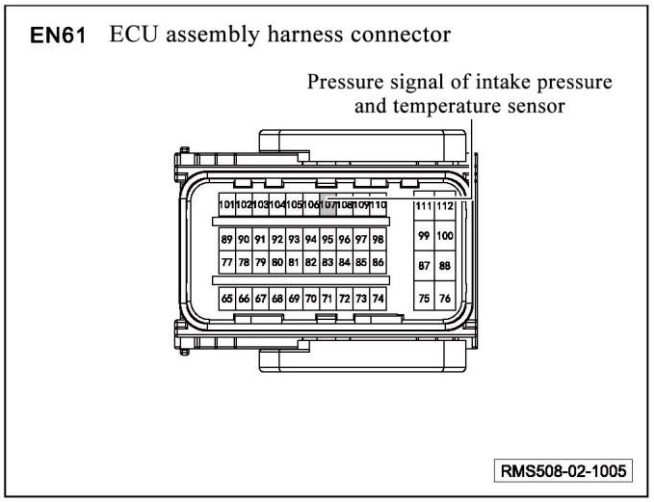
F Measure the resistance of circuit between terminal 4 of the intake pressure and temperature sensor harness connector EN08 and terminal 107 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

G Make sure that the measured value conforms to the standard value.

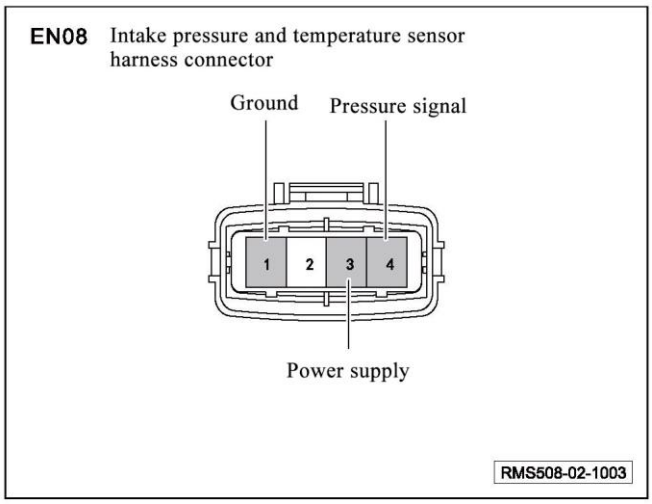
No → Replace or repair the harness or connector.





Yes

Step 5	Check whether the control circuit of the intake pressure and temperature sensor is short-circuited to the ground.



A Turn the start switch to "OFF" position.

B Disconnect intake pressure and temperature sensor harness connector EN08.

C Disconnect ECU assembly harness connector EN01 and EN61.

D Measure the resistance of the circuit between terminal 1 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

E Measure the resistance of the circuit between terminal 3 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

F Measure the resistance of the circuit between terminal 4 of the intake pressure and temperature sensor harness connector EN08 and the body

ground.

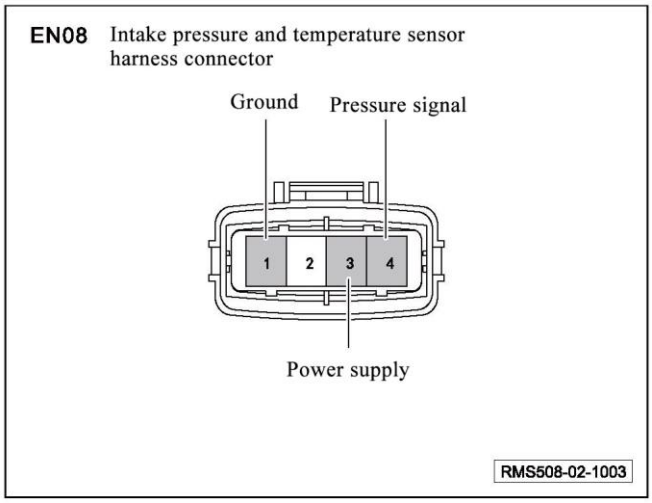
Standard resistance value: 10 kΩ or higher

G Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 6	Check whether the control circuit of the intake pressure and temperature sensor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect intake pressure and temperature sensor harness connector EN08.
C Disconnect ECU assembly harness connector EN01 and EN61.
D Put the Start switch to “ON” position.
E Measure the voltage of the circuit between terminal 1 of the intake pressure and temperature sensor harness connector EN08 and the body ground.
F Measure the voltage of the circuit between terminal 3 of the intake pressure and temperature sensor harness connector EN08 and the body ground.
G Measure the voltage of the circuit between terminal 4 of the intake pressure and temperature sensor harness connector EN08 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the intake pressure and temperature sensor.

A Replace the intake pressure and temperature sensor.
B Is the fault eliminated after replacing the intake pressure and temperature sensor?

Yes → The system works normally.

Yes

Step 8	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

2.8.6.7 DTC: P011200, P011300

DTC	Description
P011200	Intake temperature sensor circuit low voltage
P011300	Intake temperature sensor circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check intake pressure and temperature sensor.

A Check whether the intake pressure and temperature sensor gets stained with oil or is covered by carbon deposits.

Yes → Clean oil stains or replace the intake pressure and temperature sensor.

No

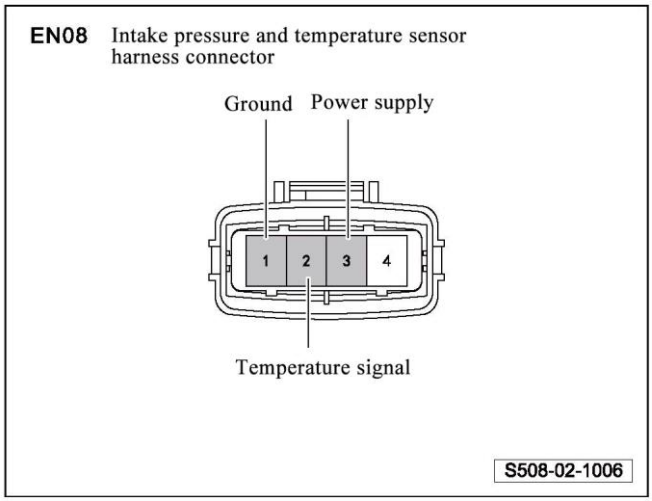
Step 3	Check the intake pipeline.

A Check the intake pipeline for air leakage.

Yes → Check and repair the leaky intake pipeline.

No

Step 4	Check the circuit between the intake pressure and temperature sensor and the ECU assembly for open circuit.



A Turn the start switch to "OFF" position.

B Disconnect intake pressure and temperature sensor harness connector EN08.

C Disconnect ECU assembly harness connector EN01 and EN61.

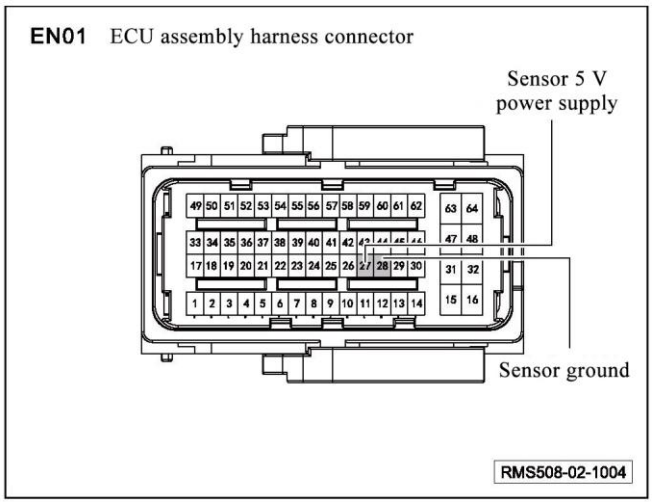
D Measure the resistance of circuit between terminal 1 of the intake pressure and temperature sensor harness connector EN08 and terminal 28 of the ECU assembly harness connector EN01.

E Measure the resistance of circuit between terminal 2 of the intake pressure and temperature sensor harness connector EN08 and terminal 79 of the ECU assembly harness connector EN61.

F Measure the resistance of circuit between terminal 3 of the intake pressure and temperature sensor harness connector EN08 and terminal 27 of the ECU assembly harness connector EN01.

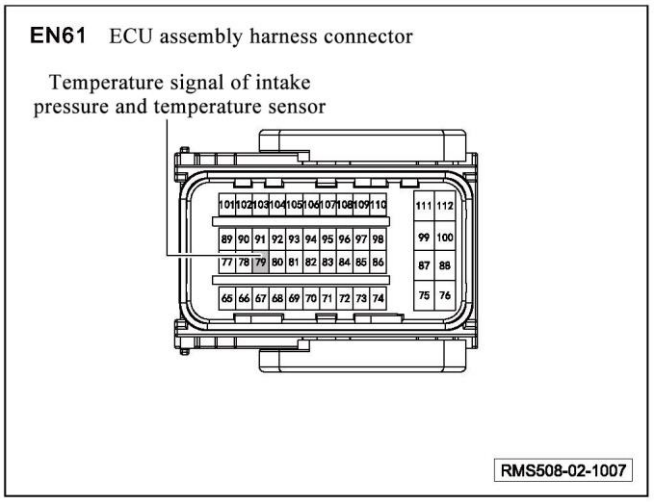
Standard resistance value: <1Ω

G Make sure that the measured value conforms to the standard value.



No

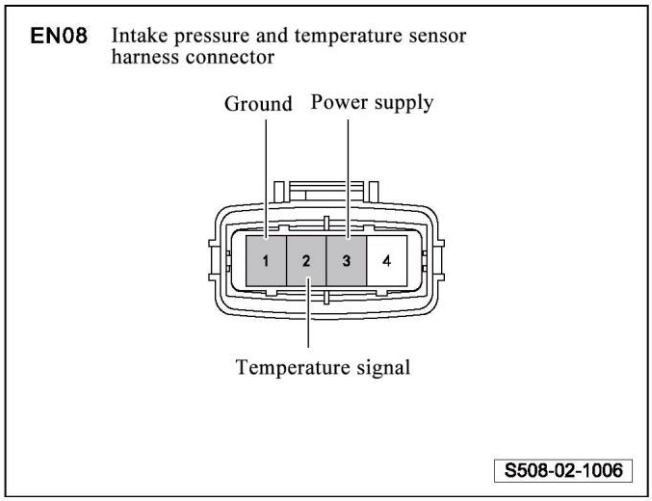
Replace or repair the harness or connector.



Yes

Step 5	Check whether the control circuit of the intake pressure and temperature sensor is short-circuited to

	the ground.



A Turn the start switch to "OFF" position.

B Disconnect intake pressure and temperature sensor harness connector EN08.

C Disconnect ECU assembly harness connector EN01 and EN61.

D Measure the resistance of the circuit between terminal 1 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

E Measure the resistance of the circuit between terminal 2 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

F Measure the resistance of the circuit between terminal 3 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

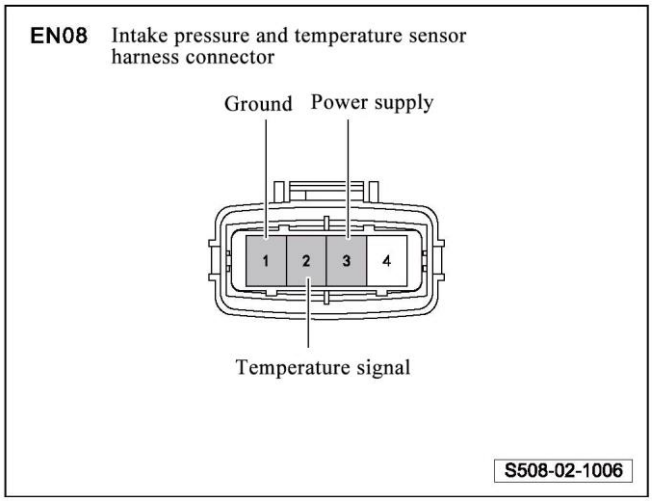
Standard resistance value: 10 kΩ or higher

G Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.

Yes

Step 6	Check whether the control circuit of the intake pressure and temperature sensor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.

B Disconnect intake pressure and temperature sensor harness connector EN08.

C Disconnect ECU assembly harness connector EN01 and EN61.

D Put the Start switch to “ON” position.

E Measure the voltage of the circuit between terminal 1 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

F Measure the voltage of the circuit between terminal 2 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

G Measure the voltage of the circuit between terminal 3 of the intake pressure and temperature sensor harness connector EN08 and the body ground.

Standard voltage value: 0V

H Confirm whether the voltage value conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the intake pressure and temperature sensor.

A Replace the intake pressure and temperature sensor.

B Is the fault eliminated after replacing the intake pressure and temperature sensor?

Yes → The system works normally.

No

Step 8	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

2.8.6.8 DTC: P011600, P011700 ...

DTC	**DTC definition**
P011600	Coolant temperature sensor signal unreasonable
P011700	Coolant temperature sensor circuit low voltage
P011800	Coolant temperature sensor circuit high voltage

1. Diagnosis steps

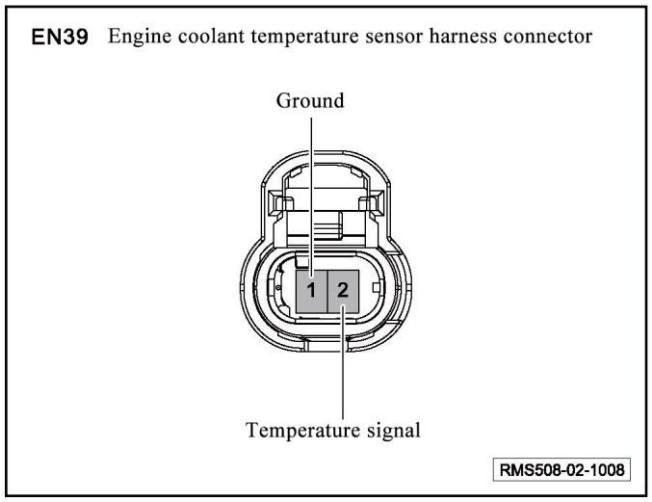
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

No

Step 2	Check whether the circuit between the engine coolant temperature sensor and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the engine coolant temperature sensor harness connector EN39.

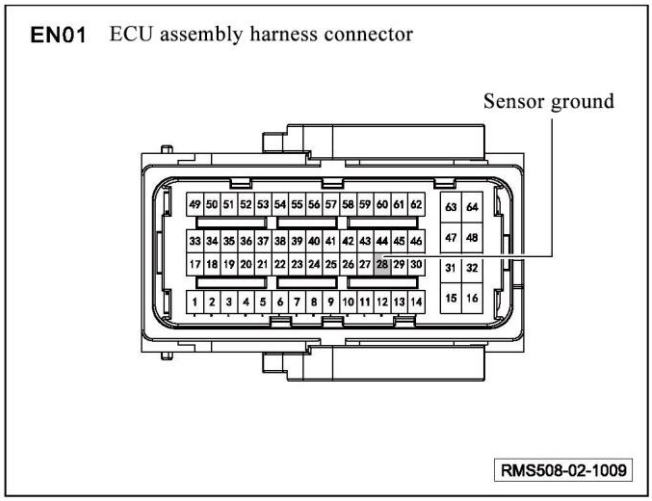
C Disconnect ECU assembly harness connector EN01 and EN61.

D Measure the resistance of circuit between terminal 1 of the engine coolant temperature sensor harness connector EN39 and terminal 28 of the ECU assembly harness connector EN01.

E Measure the resistance of circuit between terminal 2 of the engine coolant temperature sensor harness connector EN39 and terminal 84 of the ECU assembly harness connector EN61.

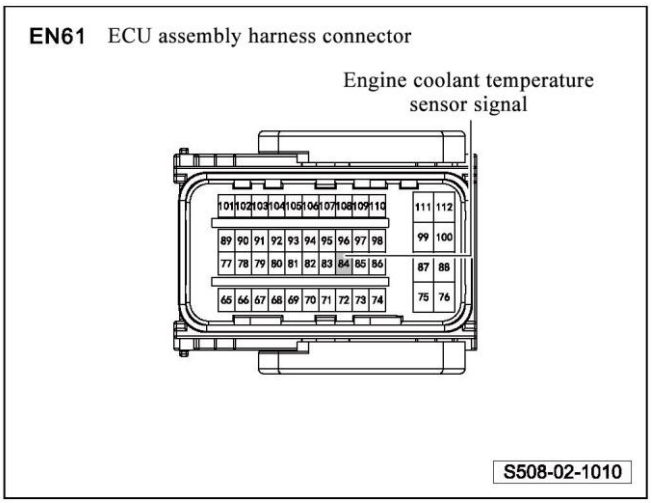
Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value



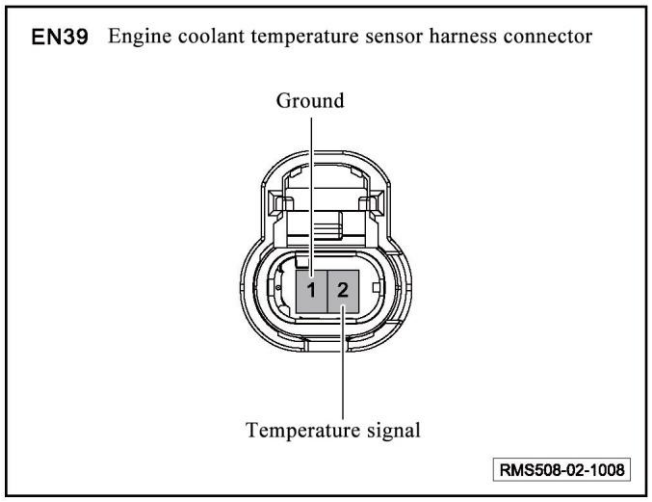
No

Replace or repair the harness or connector.



Yes

Step 3	Check whether the control circuit of the engine coolant temperature sensor is short-circuited to ground.

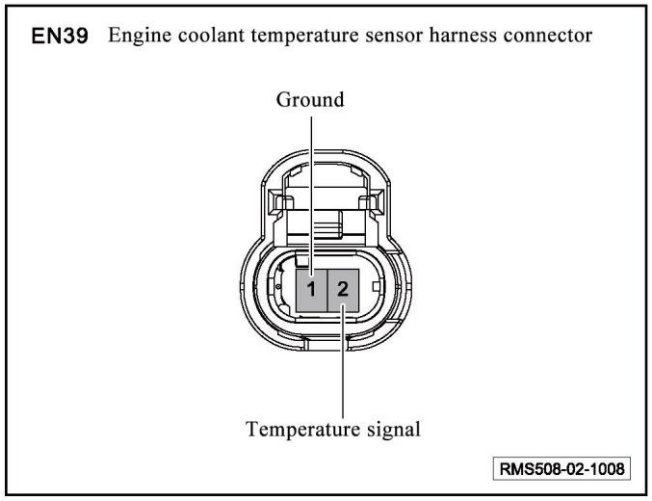


A Turn the start switch to "OFF" position.
B Disconnect the engine coolant temperature sensor harness connector EN39.
C Disconnect ECU assembly harness connector EN01 and EN61.
D Measure the resistance between terminal 1 of the engine coolant temperature sensor harness connector EN39 and the body ground.
E Measure the resistance between terminal 2 of the engine coolant temperature sensor harness connector EN39 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the engine coolant temperature sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the engine coolant temperature sensor harness connector EN39.
C Disconnect ECU assembly harness connector EN01 and EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the engine coolant temperature sensor harness connector EN39 and the body ground.
F Measure the voltage between terminal 2 of the engine coolant temperature sensor harness connector EN39 and the body ground.
Standard voltage value: 0V
G Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the ECT sensor.

A Replace the ECT sensor.
B Is the fault eliminated after replacing the engine coolant temperature sensor?

Yes → The system works normally.

No

Step 6	Check the spark plug.
	A Replace the ECU assembly. B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.9 DTC: P012200, P012300

DTC	Description
P012200	Throttle position sensor A circuit low voltage
P012300	Throttle position sensor A circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

Yes → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

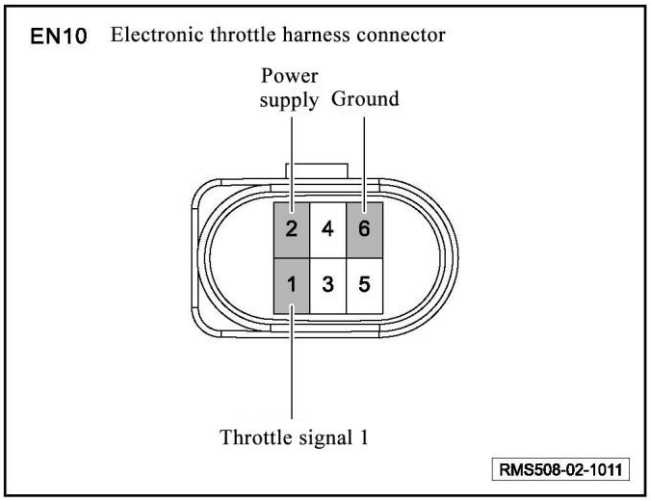
Step 2	Check the electronic throttle harness connector.

A Check the electronic throttle harness connector for corrosion, oxidation or looseness.

Yes → Replace or repair the harness or connector.

No

Step 3	Check whether the circuit between the electronic throttle position sensor 1 and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

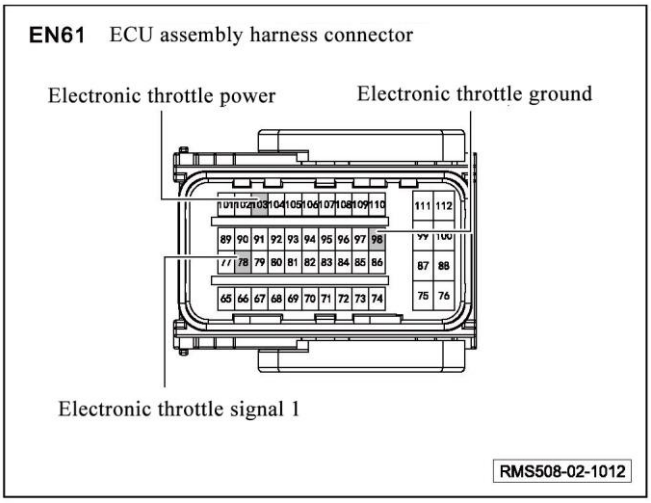
D Measure the resistance of the circuit between terminal 1 of the electronic throttle harness connector EN10 and terminal 78 of the ECU assembly harness connector EN61.

E Measure the resistance of the circuit between terminal 2 of the electronic throttle harness connector EN10 and terminal 103 of the ECU assembly harness connector EN61.

F Measure the resistance of the circuit between terminal 6 of the electronic throttle harness connector EN10 and terminal 98 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

G Make sure that the measured value conforms to the standard value.



No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the circuit between the electronic throttle position sensor 1 and the ECU assembly is short circuited to ground.

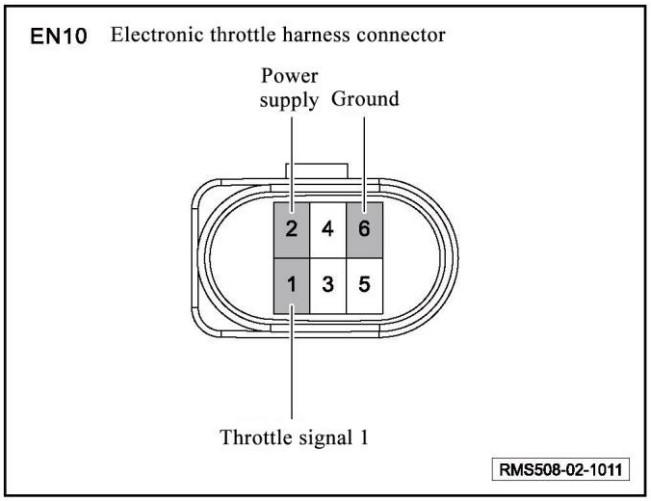
A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance between terminal 1 of the electronic throttle harness connector EN10 and the body ground.

E Measure the resistance between terminal 2 of the electronic throttle harness connector EN10 and the body ground.



F Measure the resistance between terminal 6 of the electronic throttle harness connector EN10 and the body ground.

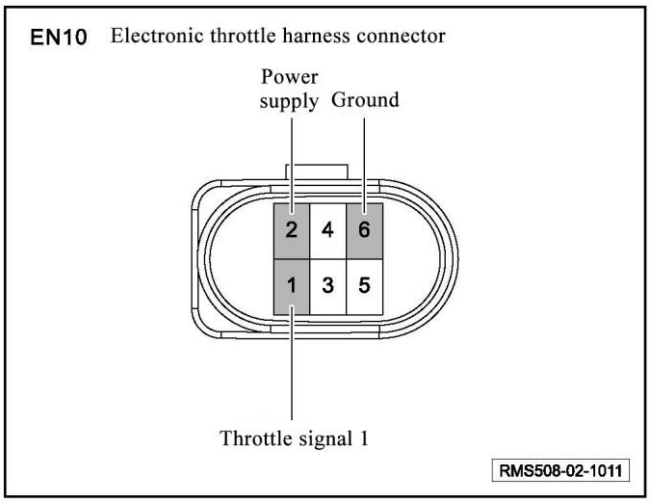
Standard resistance value: 10 kΩ or higher

G Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit between the electronic throttle position sensor 1 and the ECU assembly is short circuited to power.



A Turn the start switch to "OFF" position.
B Disconnect the electronic throttle harness connector EN10.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the electronic throttle harness connector EN10 and the body ground.
F Measure the voltage between terminal 2 of the electronic throttle harness connector EN10 and the body ground.
G Measure the voltage between terminal 6 of the electronic throttle harness connector EN10 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Replace the electronic throttle body.

A Replace the electronic throttle body.
B Is the fault eliminated after replacing the electronic throttle body?

Yes → The system works normally.

No

Step 7	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

2.8.6.10 DTC: P013300, P124D00.....

DTC	Description
P013300	Front oxygen sensor response too slow
P124D00	Linear oxygen sensor pump current circuit open

P124E00	Line oxygen sensor pump current circuit short-circuited to ground
P124F00	Line oxygen sensor pump current circuit short-circuited to power supply
P125000	Linear oxygen sensor ground circuit open
P125100	Line oxygen sensor ground wire circuit short-circuited to ground
P125200	Line oxygen sensor ground wire circuit short-circuited to power supply
P125300	Linear oxygen sensor's Nernst voltage circuit open
P125400	Line oxygen sensor's Nernst voltage circuit short-circuited to ground
P125500	Line oxygen sensor's Nernst voltage circuit short-circuited to power supply
P125900	Line oxygen sensor short-circuited to power supply

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit between the front oxygen sensor and the ECU assembly is open circuited.

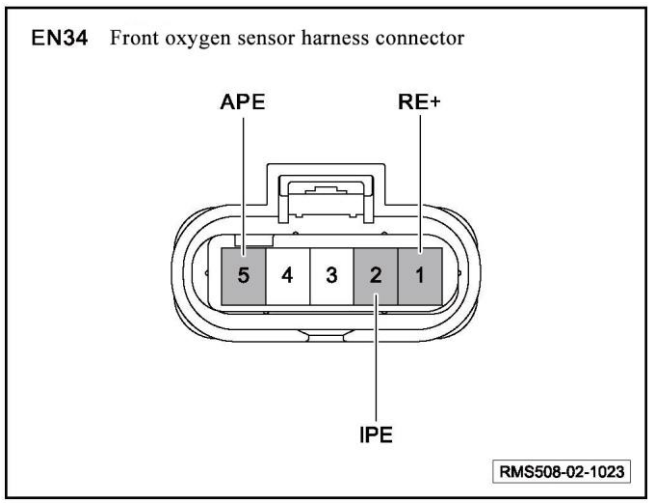
A Turn the start switch to "OFF" position.

B Disconnect the front oxygen sensor harness connector EN34.

C Disconnect ECU assembly harness connector EN01 and EN61.

D Measure the resistance of the circuit between terminal 1 of the front oxygen sensor harness connector EN34 and terminal 8 of the ECU assembly harness connector EN01.

E Measure the resistance of the circuit between terminal 2 of the front oxygen sensor harness connector EN34 and terminal 53 of the ECU assembly harness connector EN01.

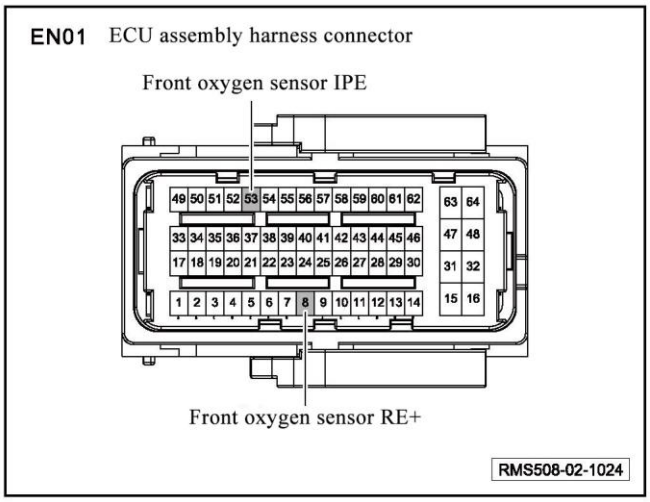


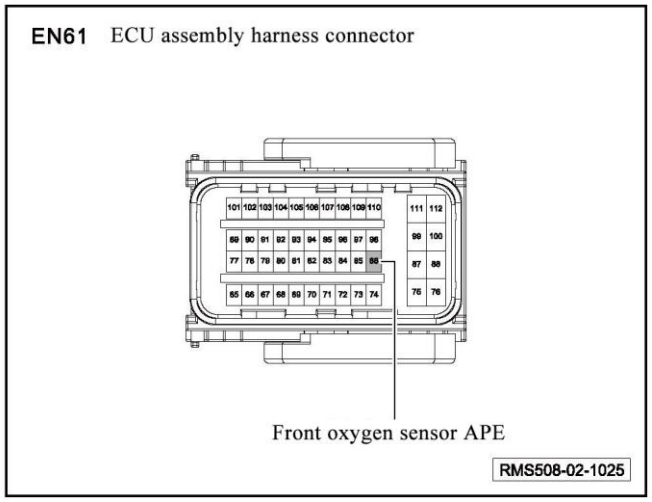
F Measure the resistance of the circuit between terminal 5 of the front oxygen sensor harness connector EN34 and terminal 86 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

G Make sure that the measured value conforms to the standard value.

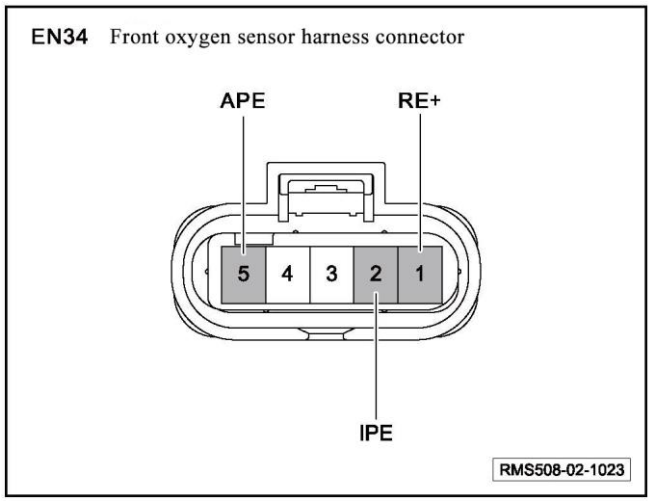
No	Replace or repair the harness or connector.





Yes

Step 3	Check whether the control circuit of the front oxygen sensor is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the front oxygen sensor harness connector EN34.

C Disconnect ECU assembly harness connector EN01 and EN61.

D Measure the resistance of the circuit between terminal 1 of the front oxygen sensor harness connector EN34 and terminal 8 of the ECU assembly harness connector EN01.

E Measure the resistance of the circuit between terminal 2 of the front oxygen sensor harness connector EN34 and terminal 53 of the ECU assembly harness connector EN01.

F Measure the resistance of the circuit between terminal 5 of the front oxygen sensor harness

connector EN34 and terminal 86 of the ECU assembly harness connector EN61.

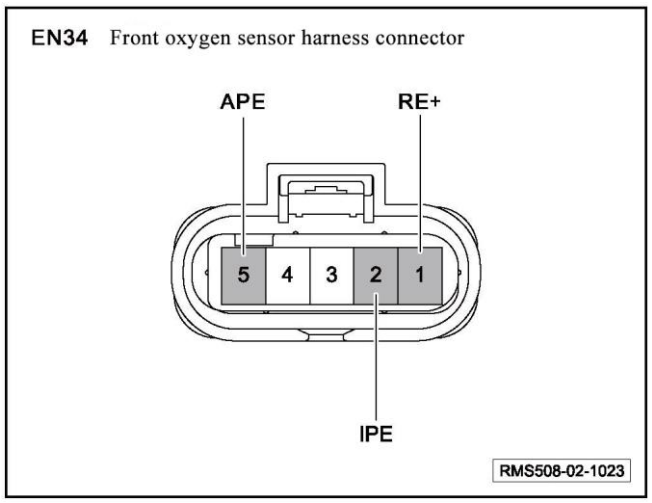
Standard resistance value: <1Ω

G Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the front oxygen sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the front oxygen sensor harness connector EN34.
C Disconnect ECU assembly harness connector EN01 and EN61.
D Put the Start switch to “ON” position.
E Measure the voltage of the circuit between terminal 1 of the front oxygen sensor harness connector EN34 and the body ground.
F Measure the voltage of the circuit between terminal 2 of the front oxygen sensor harness connector EN34 and the body ground.
G Measure the voltage of the circuit between terminal 5 of the front oxygen sensor harness connector EN34 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the front oxygen sensor.

A Replace the front oxygen sensor.
B Is the fault eliminated after replacing the front oxygen sensor?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.11 DTC: P014000, P013700.....

DTC	Description
P014000	Rear oxygen sensor circuit open
P013700	Rear oxygen sensor circuit low voltage

P013800	Rear oxygen sensor circuit high voltage

1. Diagnosis steps

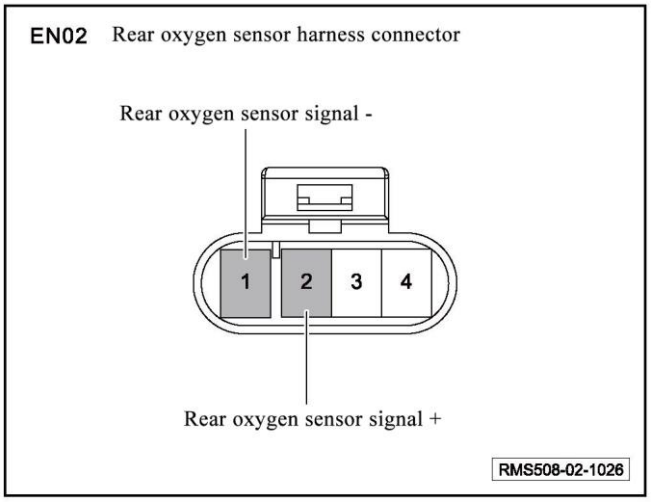
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

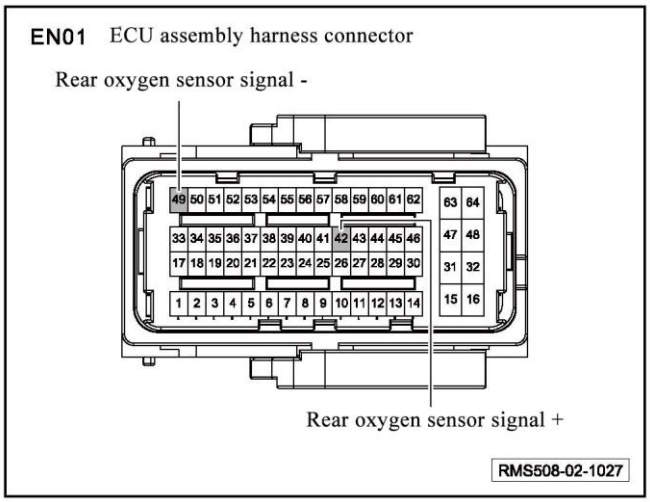
No

Step 2	Check whether the circuit between the rear oxygen sensor and the ECU assembly is open circuited.



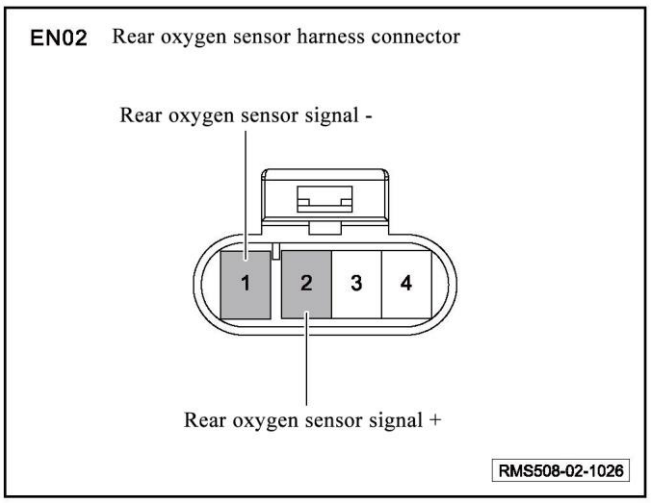
A Turn the start switch to "OFF" position.
B Disconnect the rear oxygen sensor harness connector EN02.
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance of the circuit between terminal 1 of the rear oxygen sensor harness connector EN02 and terminal 49 of the ECU assembly harness connector EN01.
E Measure the resistance of the circuit between terminal 2 of the rear oxygen sensor harness connector EN02 and terminal 42 of the ECU assembly harness connector EN01.
Standard resistance value: <1Ω
F Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.


EN01 ECU assembly harness connector
Rear oxygen sensor signal -
49 50 51 52 53 54 55 56 57 58 59 60 61 62
63 64
33 34 35 36 37 38 39 40 41 42 43 44 45 46
47 48
17 18 19 20 21 22 23 24 25 26 27 28 29 30
31 32
1 2 3 4 5 6 7 8 9 10 11 12 13 14
15 16
Rear oxygen sensor signal +
RMS508-02-1027

Yes

Step 3	Check whether the control circuit of the rear oxygen sensor is short-circuited to ground.

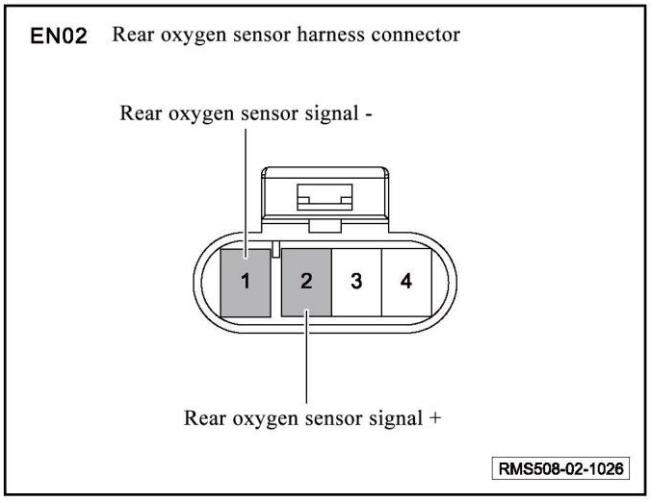


A Turn the start switch to "OFF" position.
B Disconnect the rear oxygen sensor harness connector EN02.
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance of the circuit between terminal 1 of the rear oxygen sensor harness connector EN02 and the body ground.
E Measure the resistance of the circuit between terminal 2 of the rear oxygen sensor harness connector EN02 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the rear oxygen sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the rear oxygen sensor harness connector EN02.
C Disconnect the ECU assembly harness connector EN01.
D Put the Start switch to “ON” position.
E Measure the voltage of the circuit between terminal 1 of the rear oxygen sensor harness connector EN02 and the body ground.
F Measure the voltage of the circuit between terminal 2 of the rear oxygen sensor harness connector EN02 and the body ground.
Standard voltage value: 0V
G Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the rear oxygen sensor.

A Replace the rear oxygen sensor.
B Is the fault eliminated after replacing the rear oxygen sensor?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.12 DTC: P218300, P218400.....

DTC	**DTC definition**
P218300	Radiator outlet coolant temperature sensor signal unreasonable
P218400	Radiator outlet coolant temperature sensor circuit voltage low
P218500	Radiator outlet coolant temperature sensor circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit between the radiator coolant temperature sensor and the ECU assembly is open circuited.

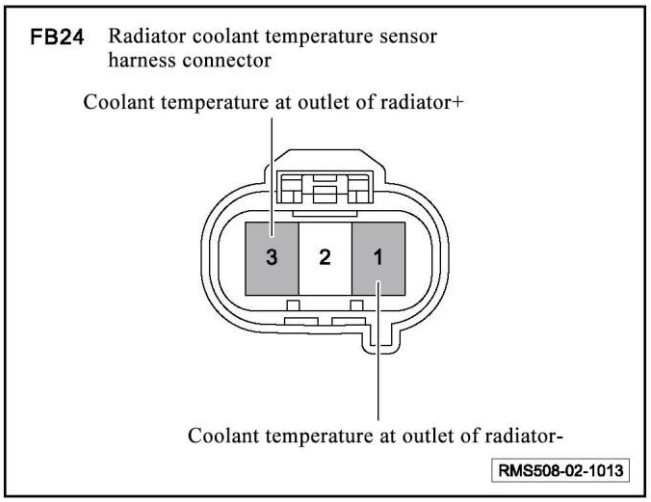
A Turn the start switch to "OFF" position.

B Disconnect the radiator coolant temperature sensor harness connector FB24.

C Disconnect the ECU assembly harness connector EN01.

D Measure the resistance of the circuit between terminal 1 of the radiator coolant temperature sensor harness connector FB24 and terminal 30 of the ECU assembly harness connector EN01.

E Measure the resistance of the circuit between terminal 3 of the radiator coolant temperature

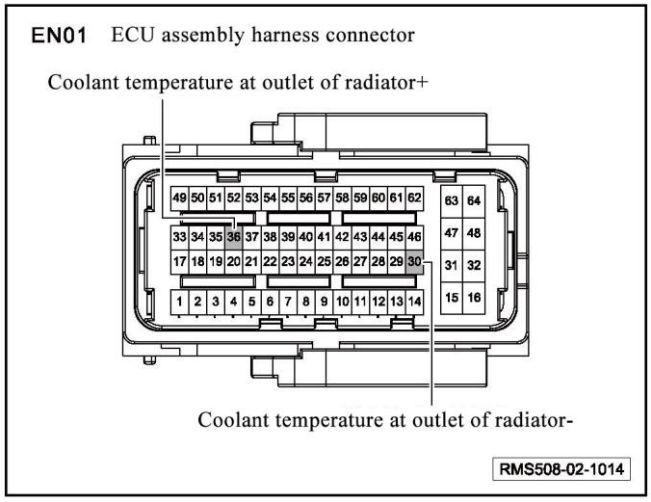


sensor harness connector FB24 and terminal 36 of the ECU assembly harness connector EN01.

Standard resistance value: <1Ω

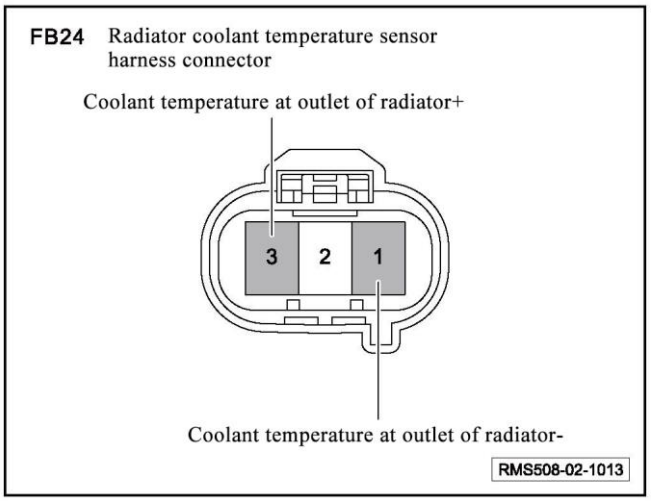
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 3	Check whether the control circuit of the radiator coolant temperature sensor is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the radiator coolant temperature sensor harness connector FB24.

C Disconnect the ECU assembly harness connector EN01.

D Measure the resistance between terminal 1 of the radiator coolant temperature sensor harness connector FB24 and body ground.

E Measure the resistance between terminal 3 of the radiator coolant temperature sensor harness connector FB24 and body ground.

Standard resistance value: 10 kΩ or higher

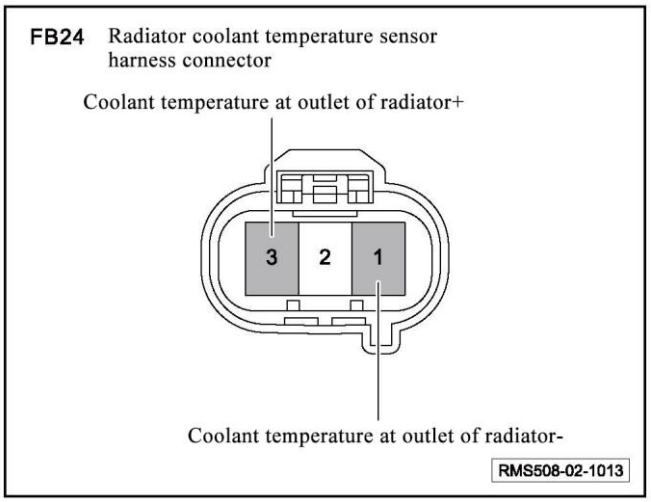
F Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the radiator coolant temperature sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the radiator coolant temperature sensor harness connector FB24.
C Disconnect the ECU assembly harness connector EN01.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the radiator coolant temperature sensor harness connector FB24 and body ground.
F Measure the voltage between terminal 3 of the radiator coolant temperature sensor harness connector FB24 and body ground.
Standard voltage value: 0V
G Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the radiator coolant temperature sensor.

A Replace the radiator coolant temperature sensor.
B Is the fault eliminated after replacing the radiator coolant temperature sensor?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.13 DTC: P022100, P022200...

DTC	Description
P022100	Throttle position sensor B circuit signal unreasonable
P022200	Throttle position sensor B circuit low voltage
P022300	Throttle position sensor B circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

Yes → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

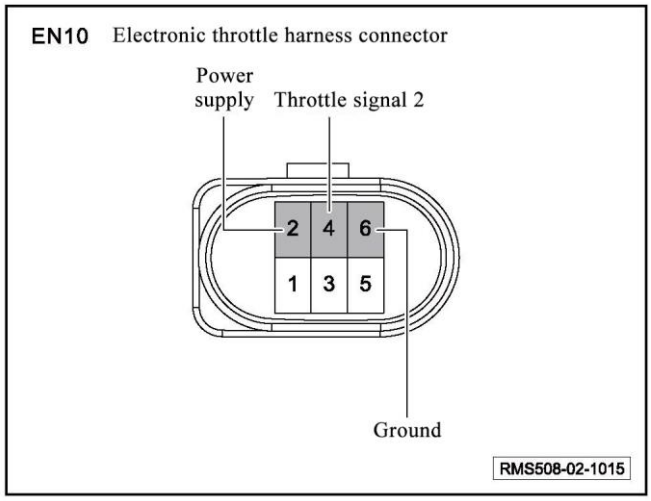
Step 2	Check the electronic throttle harness connector.

A Check the electronic throttle harness connector for corrosion, oxidation or looseness.

No → Replace or repair the harness or connector.

No

Step 3	Check whether the circuit between the electronic throttle position sensor 2 and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 2 of the electronic throttle harness connector EN10 and terminal 103 of the ECU assembly harness connector EN61.

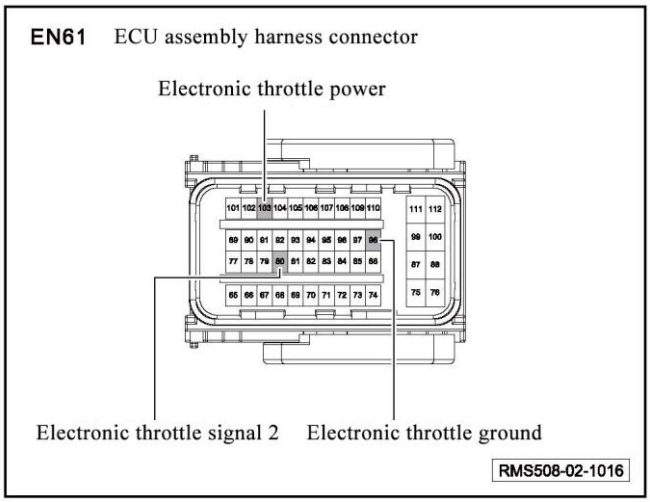
E Measure the resistance of the circuit between terminal 4 of the electronic throttle harness connector EN10 and terminal 80 of the ECU assembly harness connector EN61.

F Measure the resistance of the circuit between terminal 6 of the electronic throttle harness connector EN10 and terminal 98 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

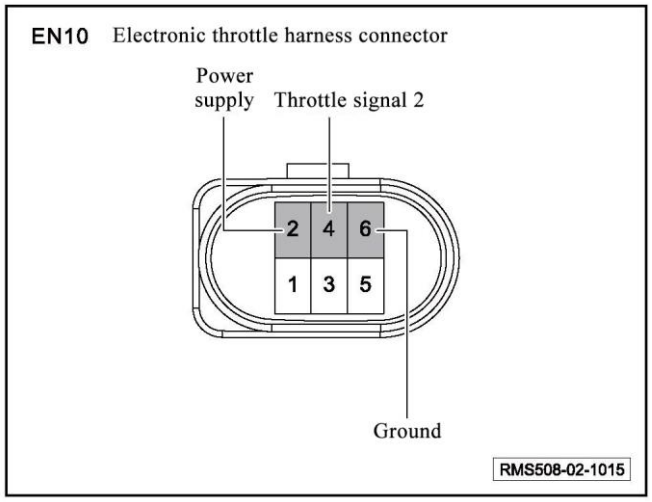
G Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the circuit between the electronic throttle position sensor 2 and the ECU assembly is short circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance between terminal 2 of the electronic throttle harness connector EN10 and the body ground.

E Measure the resistance between terminal 4 of the electronic throttle harness connector EN10 and the body ground.

F Measure the resistance between terminal 6 of the electronic throttle harness connector EN10 and the body ground.

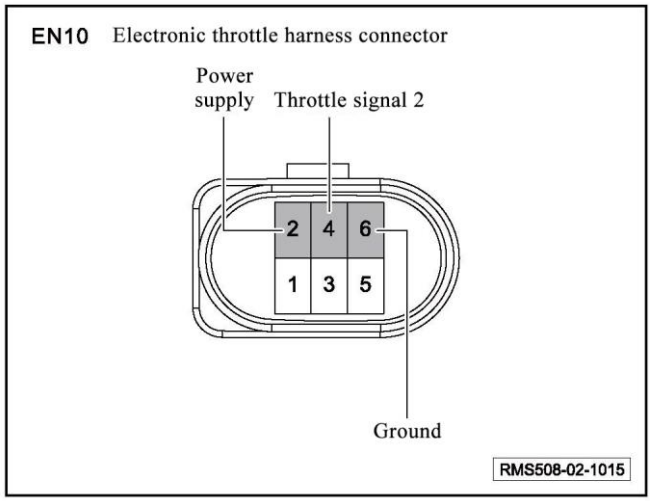
Standard resistance value: 10 kΩ or higher

G Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit between the electronic throttle position sensor 2 and the ECU assembly is short circuited to power.



A Turn the start switch to "OFF" position.
B Disconnect the electronic throttle harness connector EN10.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 2 of the electronic throttle harness connector EN10 and the body ground.
F Measure the voltage between terminal 4 of the electronic throttle harness connector EN10 and the body ground.
G Measure the voltage between terminal 6 of the electronic throttle harness connector EN10 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the electronic throttle body.

A Replace the electronic throttle body.
B Is the fault eliminated after replacing the electronic throttle body?

Yes	The system works normally.

No

Step 7	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

2.8.6.14 DTC: P056200, P056300

DTC	Description
P056200	Low system voltage
P056300	High system voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: 11~14V

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses LF08 and LF33 of the ECU assembly.

A Check whether the fuses LF08 and LF33 are blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuits of fuses LF08 and LF33.

A Check whether the fuses LF08 and LF33 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

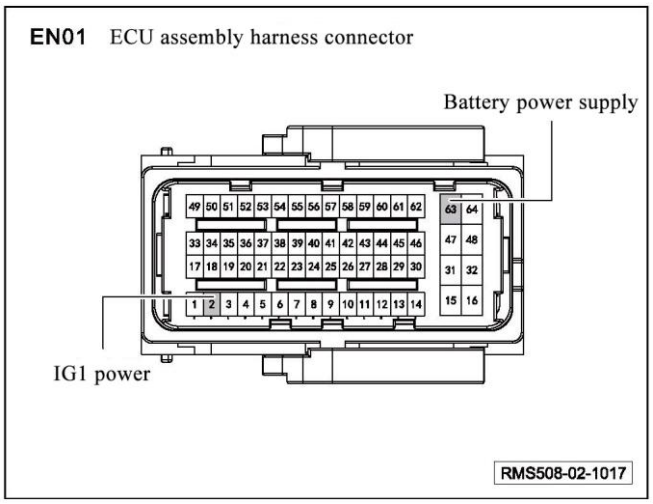
Rated value of fuse: LF08: 20A, LF33: 5A

D Confirm whether the ECU assembly works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the ECU assembly.

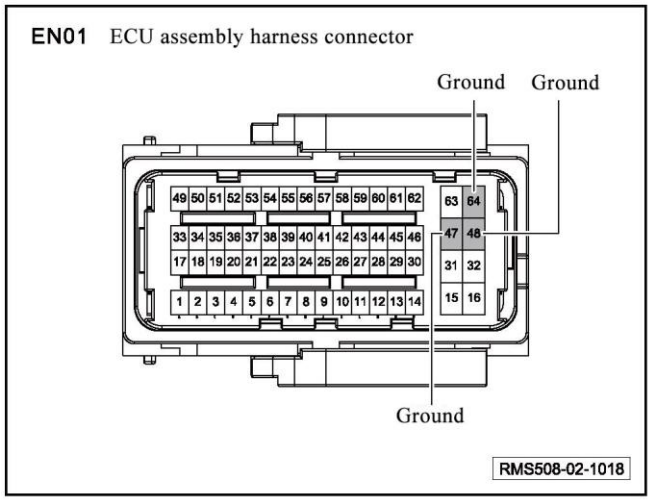


A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 2/63 of the ECU assembly harness connector EN01 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness

Yes

Step 6	Check the ground circuit of the ECU assembly.



A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Measure the resistance between terminal 47/48/64 of the ECU assembly harness connector EN01 and the body ground.
Standard resistance value: <1Ω
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness

No

Step 7	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

2.8.6.15 DTC: P033600, P033700

DTC	Description
P033600	Crankshaft sensor signal unreasonable
P033700	Crankshaft sensor circuit no signal

1. Diagnosis steps

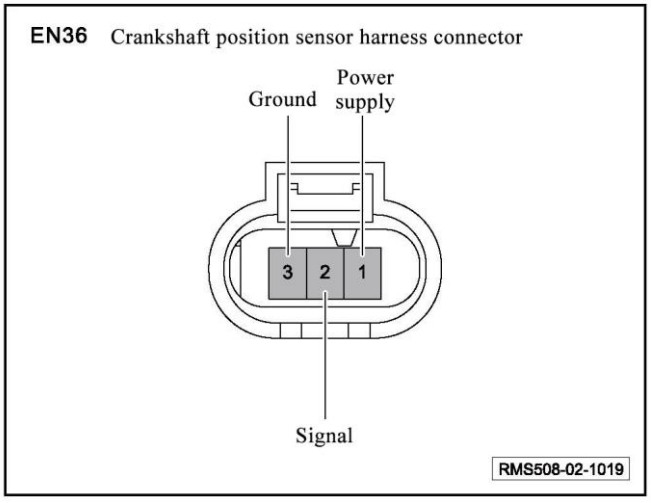
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

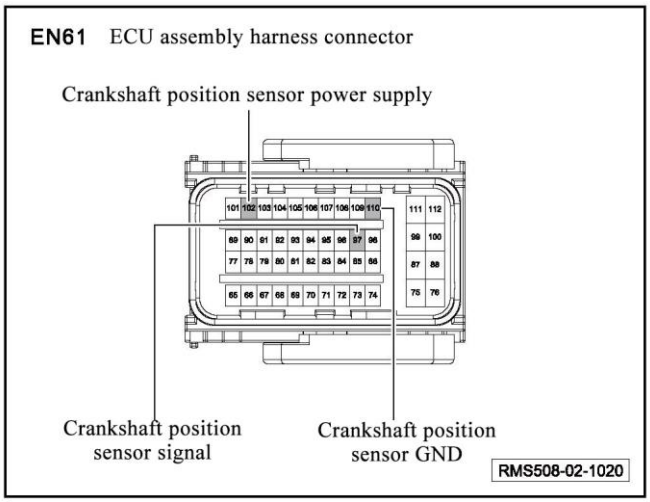
Yes

Step 2	Check whether the circuit between the crankshaft position sensor and the ECU assembly is open circuited.



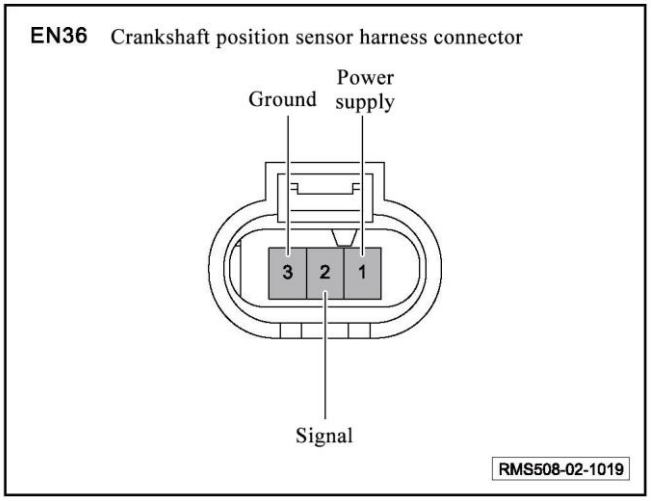
A Turn the start switch to "OFF" position.
B Disconnect harness connector EN36 of crankshaft position sensor.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 1 of the crankshaft position sensor harness connector EN36 and terminal 102 of the ECU assembly harness connector EN61.
E Measure the resistance of the circuit between terminal 2 of the crankshaft position sensor harness connector EN36 and terminal 97 of the ECU assembly harness connector EN61.
F Measure the resistance of the circuit between terminal 3 of the crankshaft position sensor harness connector EN36 and terminal 110 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
G Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 3	Check whether the control circuit of the crankshaft position sensor is short-circuited to the ground.



A Turn the start switch to "OFF" position.

B Disconnect harness connector EN36 of crankshaft position sensor.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance between terminal 1 of the crankshaft position sensor harness connector EN36 and the body ground.

E Measure the resistance between terminal 2 of the crankshaft position sensor harness connector EN36 and the body ground.

F Measure the resistance between terminal 3 of the crankshaft position sensor harness connector EN36 and the body ground.

Standard resistance value: 10 kΩ or higher

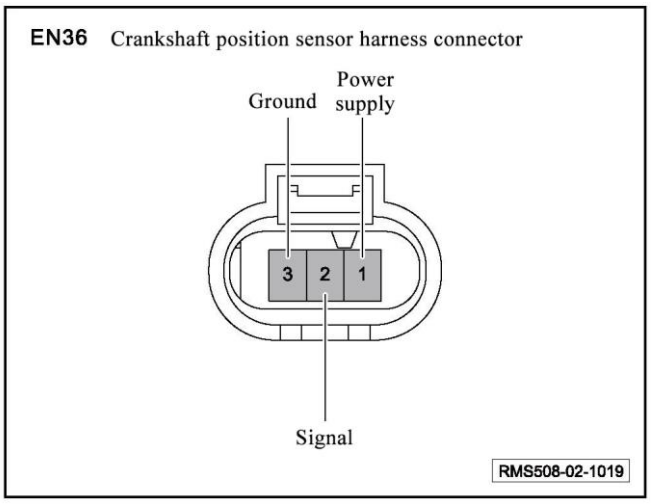
G Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the crankshaft position sensor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect harness connector EN36 of crankshaft position sensor.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the crankshaft position sensor harness connector EN36 and the body ground.
F Measure the voltage between terminal 2 of the crankshaft position sensor harness connector EN36 and the body ground.
G Measure the voltage between terminal 3 of the crankshaft position sensor harness connector EN36 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the crankshaft position sensor.

A Replace the crankshaft position sensor.
B Is the fault eliminated after replacing the crankshaft position sensor?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.16 DTC: P034100, P034200...

DTC	**DTC definition**
P034100	Camshaft sensor signal unreasonable
P034200	Camshaft sensor no signal
P001000	Intake camshaft regulating valve control circuit open
P208800	Intake camshaft regulating valve control circuit low voltage

P208900	Intake camshaft regulating valve control circuit high voltage

1. Diagnosis steps

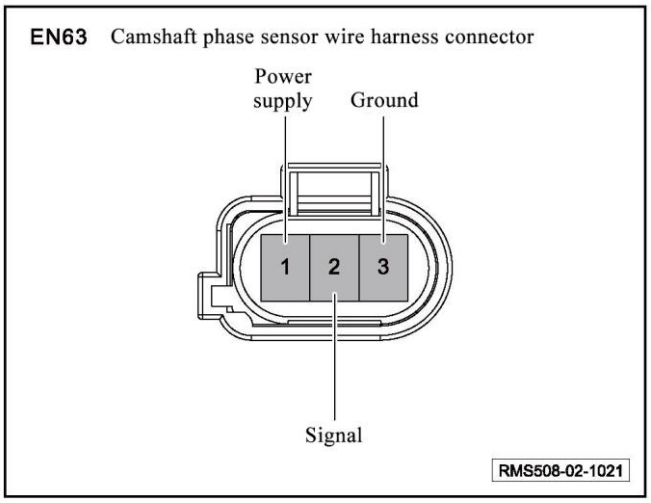
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

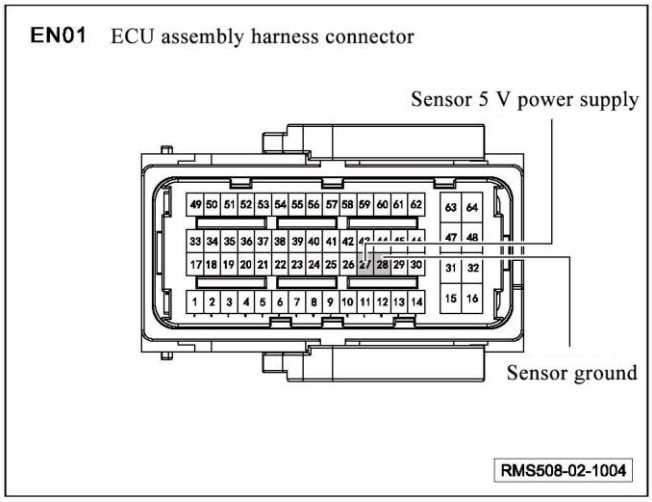
Yes

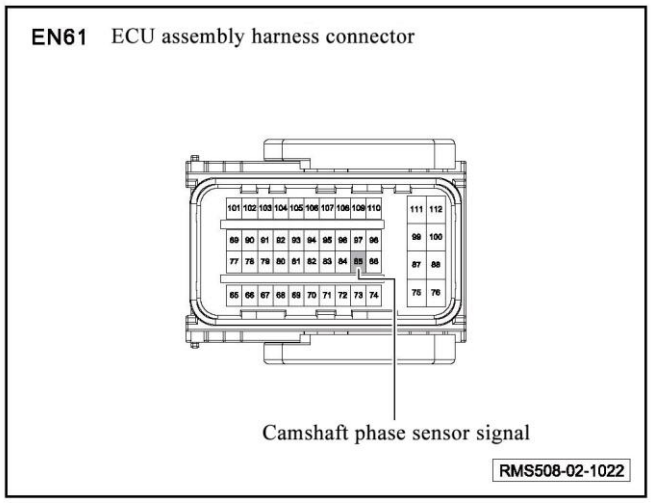
Step 2	Check the circuit between the camshaft phase sensor and the ECU assembly.



A Turn the start switch to "OFF" position.
B Disconnect the camshaft phase sensor harness connector EN63.
C Disconnect ECU assembly harness connector EN01 and EN61.
D Measure the resistance of the circuit between terminal 1 of the camshaft phase sensor harness connector EN63 and terminal 27 of the ECU assembly harness connector EN01.
E Measure the resistance of the circuit between terminal 2 of the camshaft phase sensor harness connector EN63 and terminal 85 of the ECU assembly harness connector EN61.
F Measure the resistance of the circuit between terminal 3 of the camshaft phase sensor harness connector EN63 and terminal 28 of the ECU assembly harness connector EN01.
Standard resistance value: <1Ω
G Confirm if the resistance conforms to the standard value

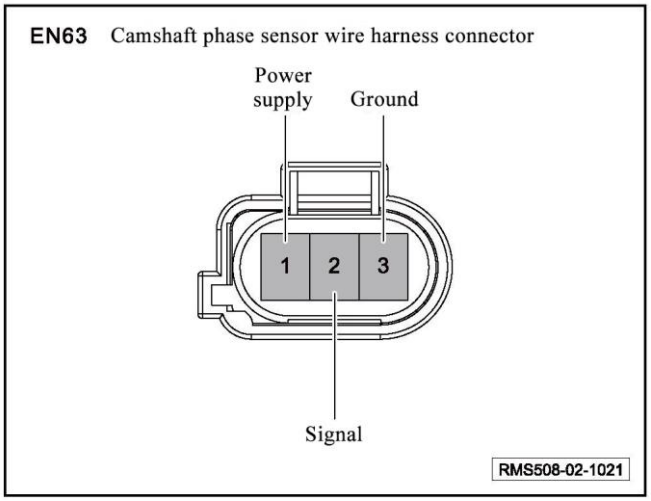
No → Repair or replace the harness.


EN01 ECU assembly harness connector
Sensor 5 V power supply
Sensor ground
RMS508-02-1004



Yes

Step 3	Check whether the control circuit of the camshaft phase sensor is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the camshaft phase sensor harness connector EN63.

C Disconnect ECU assembly harness connector EN01 and EN61.

D Measure the resistance between terminal 1 of the camshaft phase sensor harness connector EN63 and the body ground.

E Measure the resistance between terminal 2 of the camshaft phase sensor harness connector EN63 and the body ground.

F Measure the resistance between terminal 3 of the camshaft phase sensor harness connector EN63 and the body ground.

Standard resistance value: 10 kΩ or higher

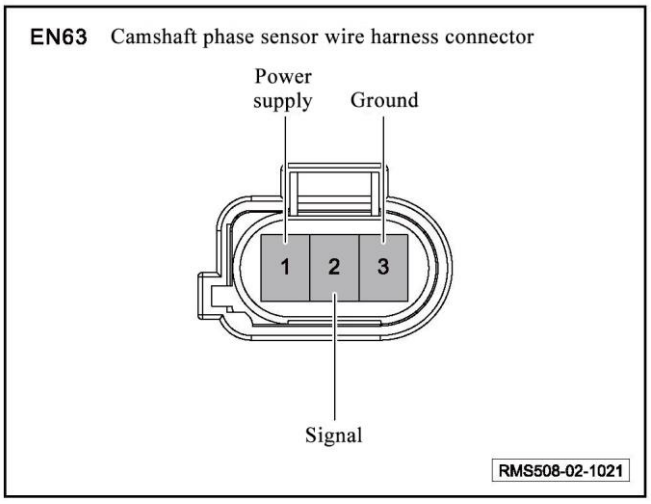
G Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the camshaft phase sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the camshaft phase sensor harness connector EN63.
C Disconnect ECU assembly harness connector EN01 and EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the camshaft phase sensor harness connector EN63 and the body ground.
F Measure the voltage between terminal 2 of the camshaft phase sensor harness connector EN63 and the body ground.
G Measure the voltage between terminal 3 of the camshaft phase sensor harness connector EN63 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the camshaft phase sensor.

A Replace the camshaft phase sensor.
B Is the fault eliminated after replacing the camshaft phase sensor?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.17 DTC: P014100, P003700 ...

DTC	Description
P014100	Rear oxygen sensor heater control circuit open
P003700	Rear oxygen sensor heater control circuit low voltage
P003800	Rear oxygen sensor heater control circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF39 of the rear oxygen sensor.

A Check whether the fuse IF39 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse IF39.

A Check whether the fuse LF39 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

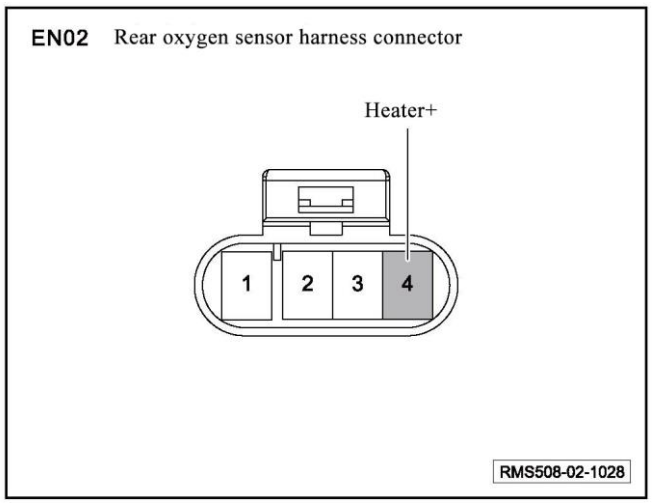
Rated value of fuse: LF39 7.5A

D Confirm whether the rear oxygen sensor heater works normally.

Yes → The system works normally.

No

Step 4	Check the rear oxygen sensor circuit

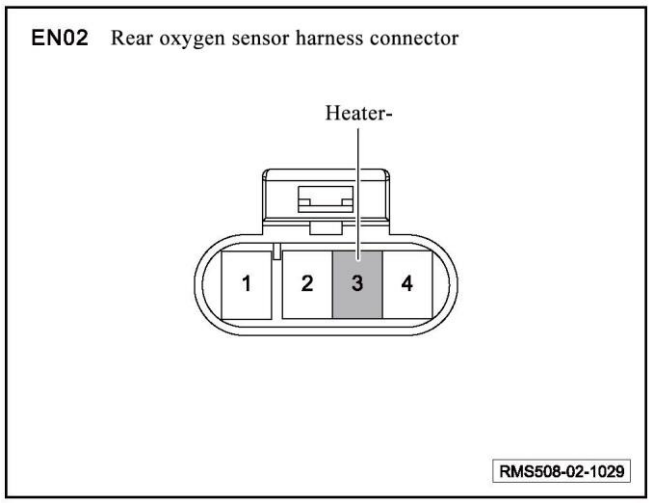


A Turn the start switch to "OFF" position.
B Disconnect the rear oxygen sensor harness connector EN02.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 4 of the rear oxygen sensor harness connector EN02 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

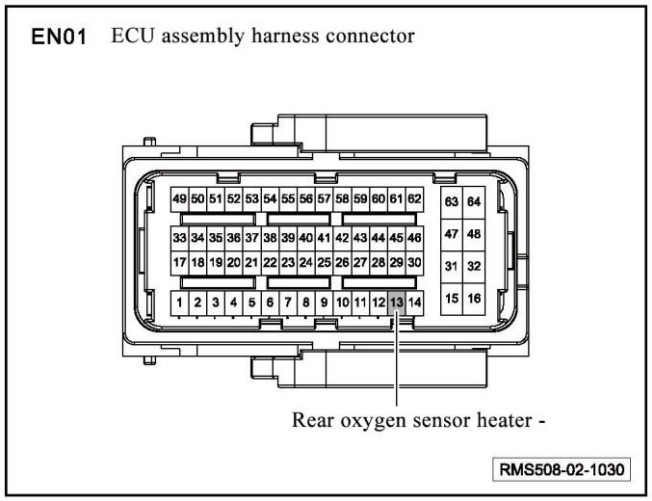
Yes

Step 5	Check whether the circuit between the rear oxygen sensor and the ECU assembly is open circuited.



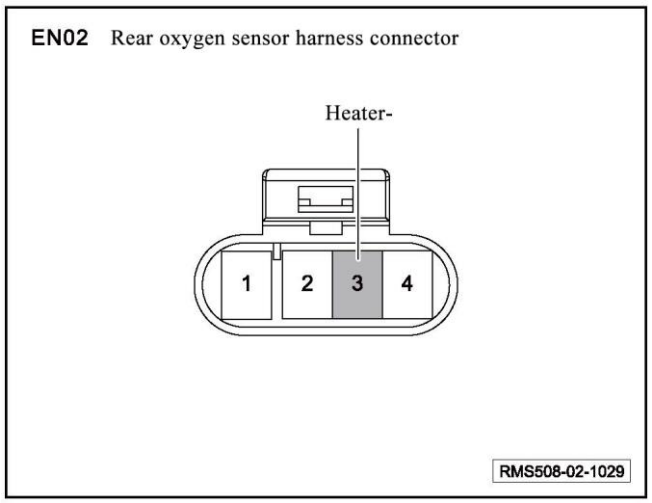
A Turn the start switch to "OFF" position.
B Disconnect the rear oxygen sensor harness connector EN02.
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance of the circuit between terminal 3 of the rear oxygen sensor harness connector EN02 and terminal 13 of the ECU assembly harness connector EN01.
Standard resistance value: <1Ω
E Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



Yes

Step 6	Check whether the control circuit of the rear oxygen sensor heater is short-circuited to ground.

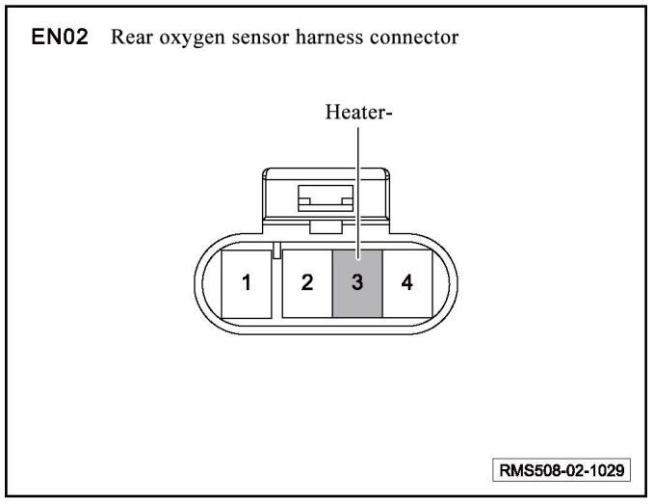


A Turn the start switch to "OFF" position.
B Disconnect the rear oxygen sensor harness connector EN02.
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance between terminal 3 of the rear oxygen sensor harness connector EN02 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check whether the control circuit of the rear oxygen sensor heater is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the rear oxygen sensor harness connector EN02.
C Disconnect the ECU assembly harness connector EN01.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 3 of the rear oxygen sensor harness connector EN02 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 8	Replace the rear oxygen sensor.

A Replace the rear oxygen sensor.
B Is the fault eliminated after replacing the rear oxygen sensor?

Yes → The system works normally.

No

Step 9	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

2.8.6.18 DTC: P020100, P026100 ...

DTC	Description
P020100	Injector #1 control circuit open
P026100	Injector #1 drive circuit low voltage
P026200	Injector #1 drive circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF38 of 1# cylinder fuel injector.

A Check whether the fuse LF38 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF38.

A Check whether the fuse LF38 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

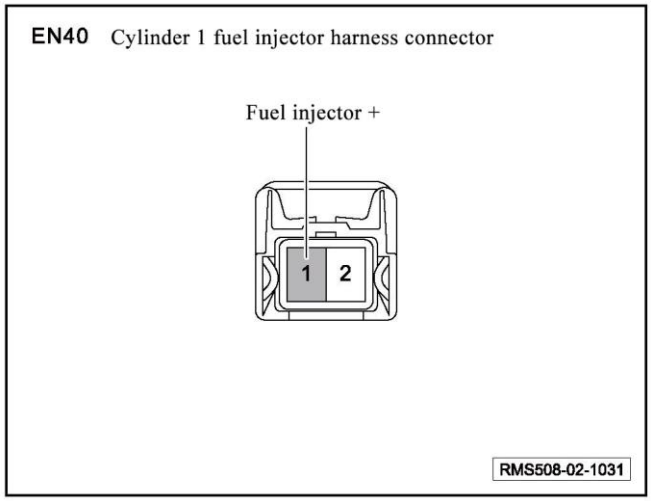
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF38 20A

D Confirm whether the fuel injector of cylinder 1 works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of fuel injector in cylinder 1.



A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 injector harness connector EN40.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 1 of 1# cylinder fuel injector harness connector EN40 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

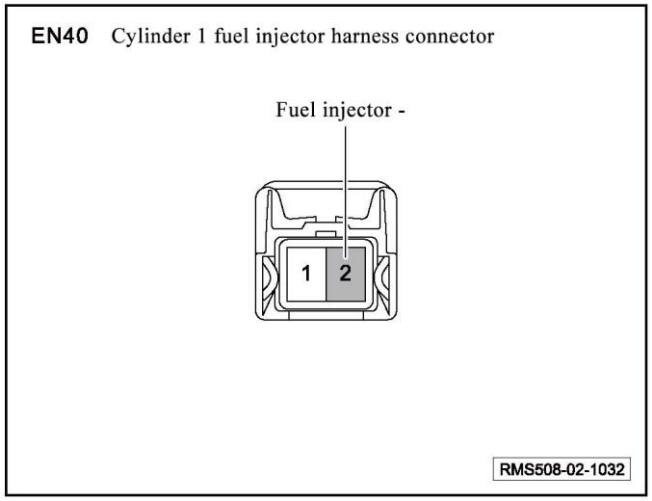
Step 5	Check the cylinder 1 fuel injector.

A Turn the start switch to "OFF" position.
B Remove 1# cylinder fuel injector.
C Check whether the resistance of the cylinder 1 fuel injector is normal
Standard resistance value: 2.0Ω (@20℃)

No → Replace the fuel rail component.

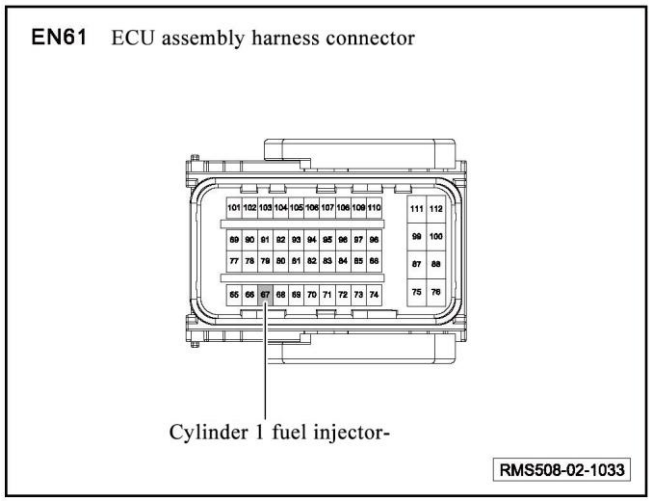
Yes

Step 6	Check whether the circuit between 1# cylinder fuel injector and the ECU assembly is open circuited.



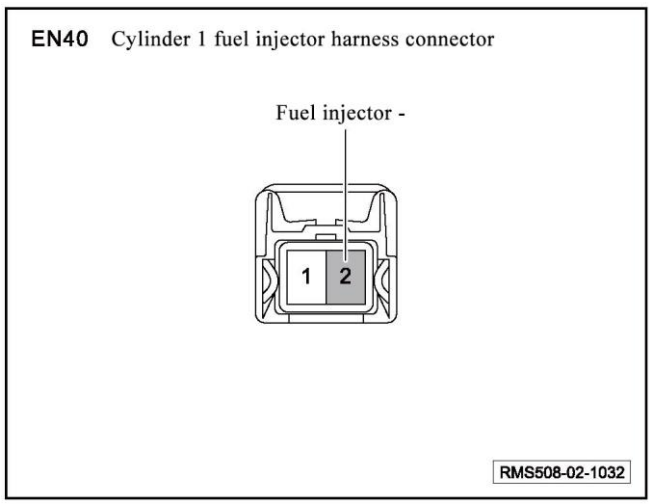
A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 injector harness connector EN40.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 2 of 1# cylinder fuel injector harness connector EN40 and terminal 67 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 7	Check whether the control circuit of the cylinder 1 fuel injector is short-circuited to ground.



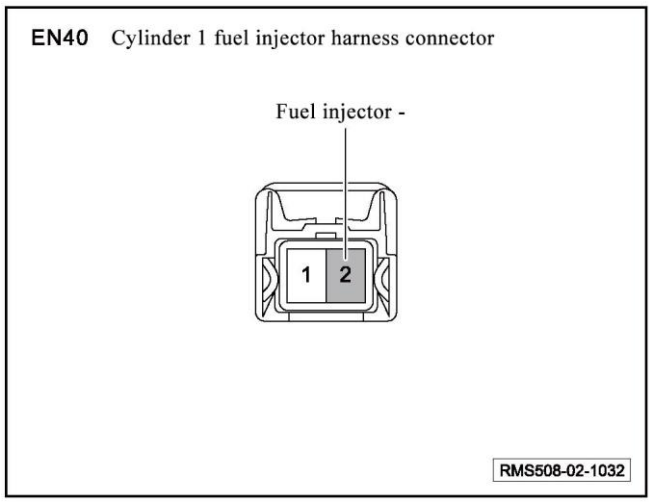
A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 injector harness connector EN40.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance between terminal 2 of the cylinder 1 injector harness connector EN40 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 1 fuel injector is short-circuited to power supply.

A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 injector harness connector EN40.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 2 of 1# cylinder fuel injector harness connector EN40 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.



No

Replace or repair the harness or connector.

Yes

Step 9	Replace the fuel rail component.

A Replace the fuel rail component.

B Is the fault eliminated after replacing the fuel rail component?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.19 DTC: P020200, P026400 ...

DTC	Description
P020200	Injector #2 control circuit open
P026400	Injector #2 drive circuit low voltage
P026500	Injector #2 drive circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF38 of 2# cylinder fuel injector.

A Check whether the fuse LF38 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF38.

A Check whether the fuse LF38 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

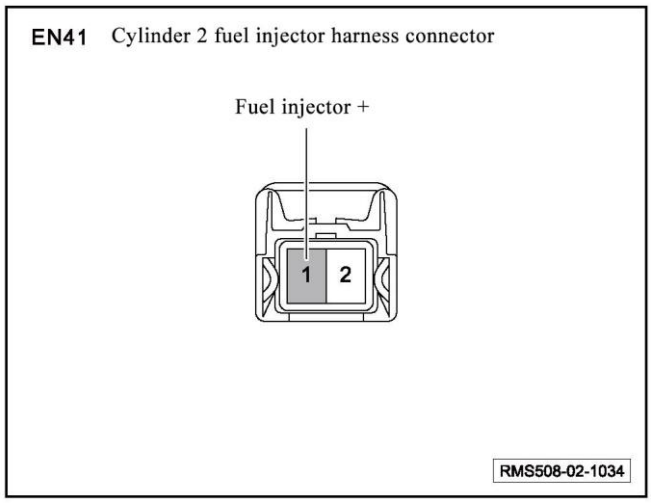
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF38 20A

D Confirm whether the cylinder 2 fuel injector works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of cylinder 2 fuel injector.



A Turn the start switch to "OFF" position.

B Disconnect cylinder 2 injector harness connector EN41.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 1 of 2# cylinder fuel injector harness connector EN41 and the body ground.
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check the cylinder 2 fuel injector.

A Turn the start switch to "OFF" position.

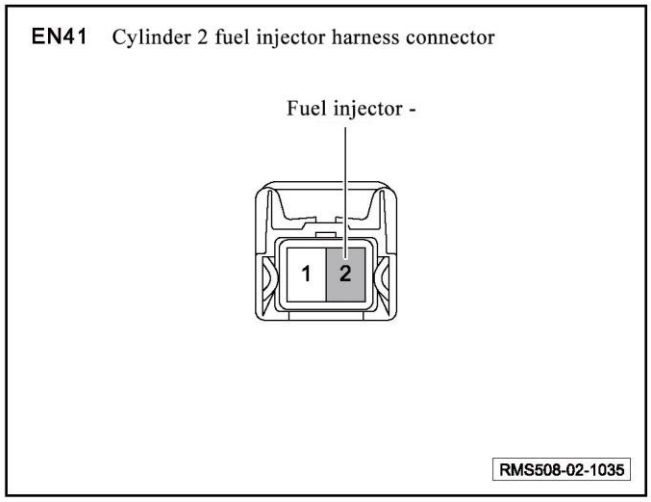
B Remove 2# cylinder fuel injector.

C Check whether the resistance of the cylinder 2 fuel injector is normal.
Standard resistance value: 2.0Ω (@20℃)

No → Replace the fuel rail component.

Yes

Step 6	Check whether the circuit between 2# cylinder fuel injector and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect cylinder 2 injector harness connector EN41.

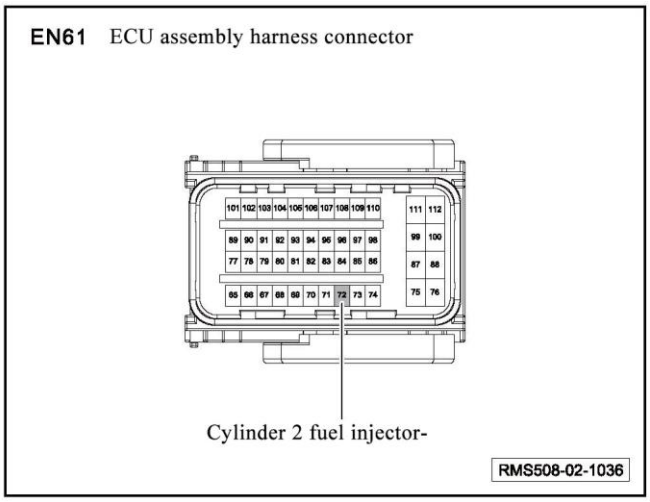
C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 2 of 2# cylinder fuel injector harness connector EN41 and terminal 72 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 7	Check whether the control circuit of the cylinder 2 fuel injector is short-circuited to ground.

A Turn the start switch to "OFF" position.

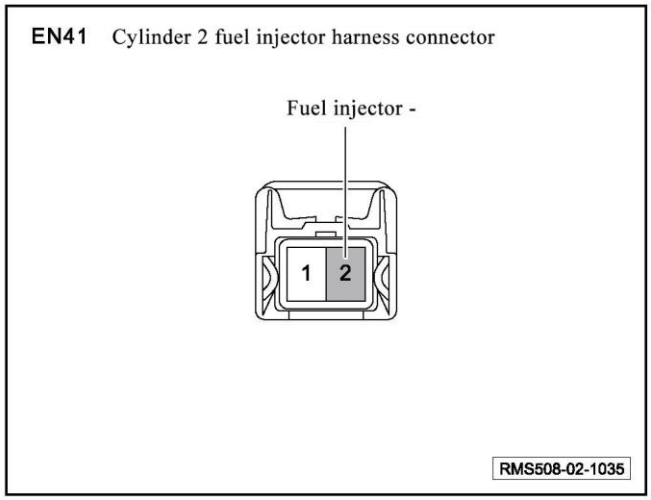
B Disconnect cylinder 2 injector harness connector EN41.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance between terminal 2 of the cylinder 2 injector harness connector EN41 and the body ground.

Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

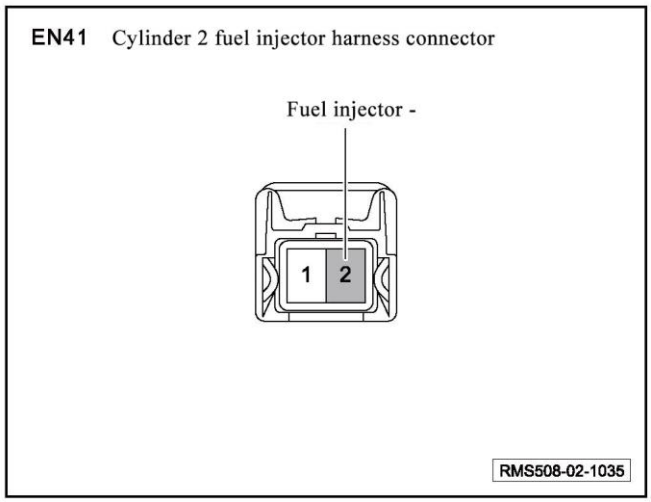


No

Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 2 fuel injector is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect cylinder 2 injector harness connector EN41.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 2 of 2# cylinder fuel injector harness connector EN41 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 9	Replace the fuel rail component.

A Replace the fuel rail component.
B Is the fault eliminated after replacing the fuel rail component?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.20 DTC: P020300, P026700 ...

DTC	Description
P020300	Injector #3 control circuit open
P026700	Injector #3 drive circuit low voltage
P026800	Injector #3 drive circuit high voltage

1. Diagnosis steps

Step 1	Check the fuel pipeline for pressure relief.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF38 of 3# cylinder fuel injector.

A Check whether the fuse LF38 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF38.

A Check whether the fuse LF38 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

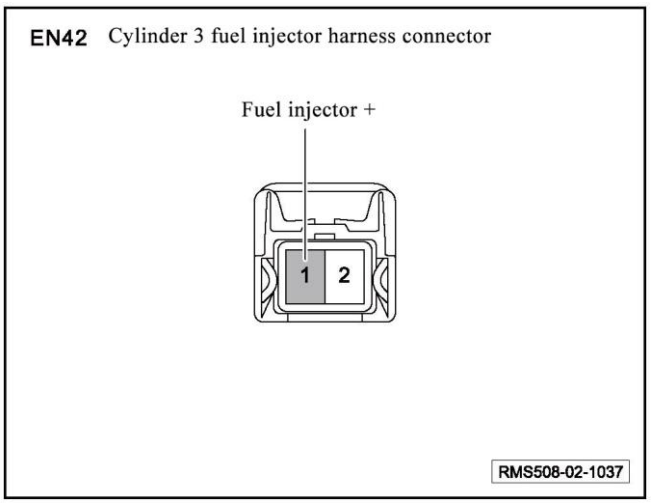
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF38 20A

D Confirm whether the cylinder 3 fuel injector works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of cylinder 3 fuel injector.



A Turn the start switch to "OFF" position.
B Disconnect cylinder 3 injector harness connector EN42.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 1 of 3# cylinder fuel injector harness connector EN42 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

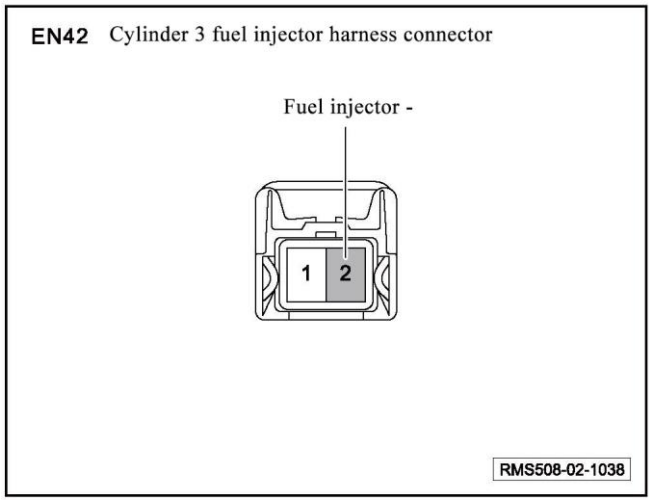
Step 5	Check the cylinder 3 fuel injector.

A Turn the start switch to "OFF" position.
B Remove 3# cylinder fuel injector.
C Check whether the resistance of the cylinder 3 fuel injector is normal.
Standard resistance value: 2.0Ω (@20℃)

No → Replace the fuel rail component.

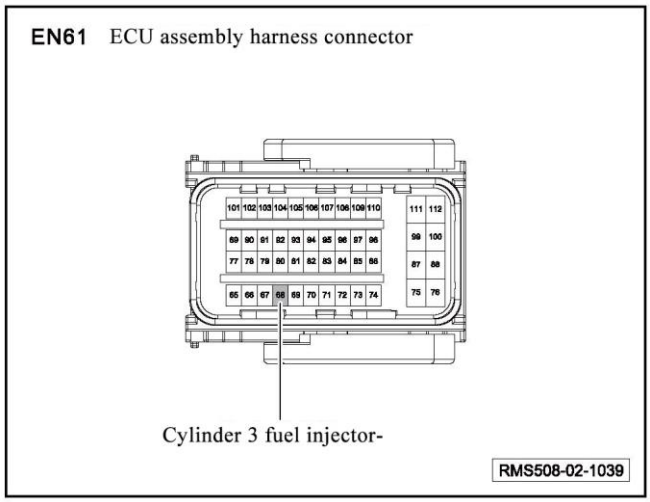
Yes

Step 6	Check whether the circuit between 3# cylinder fuel injector and the ECU assembly is open circuited.



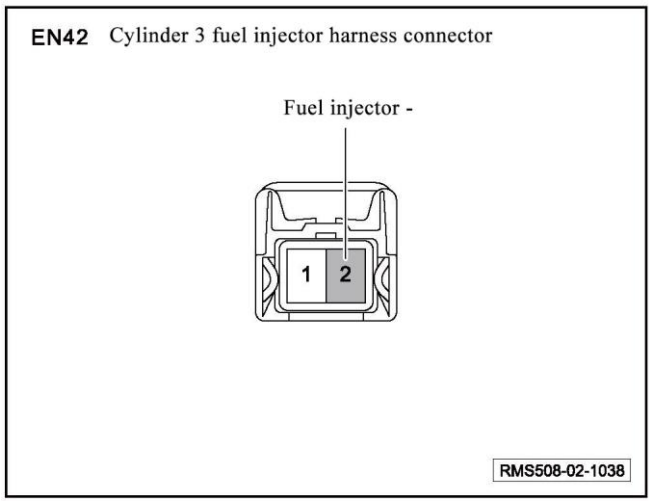
A Turn the start switch to "OFF" position.
B Disconnect cylinder 3 injector harness connector EN42.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 2 of 3# cylinder fuel injector harness connector EN42 and terminal 68 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 7	Check whether the control circuit of the cylinder 3 fuel injector is short-circuited to ground.



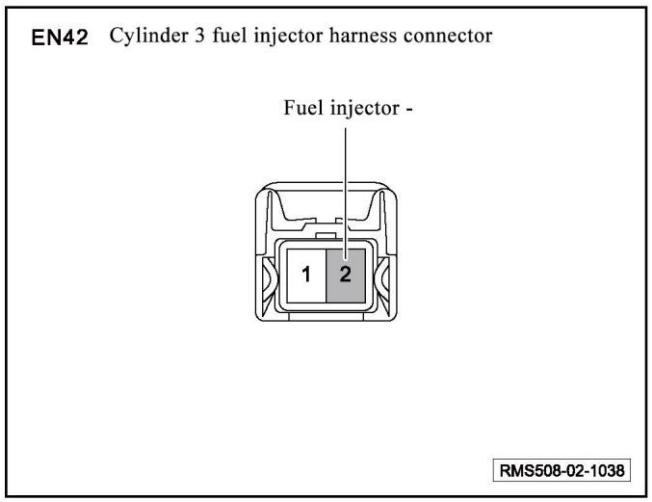
A Turn the start switch to "OFF" position.
B Disconnect cylinder 3 injector harness connector EN42.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance between terminal 2 of the cylinder 3 injector harness connector EN42 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 3 fuel injector is short-circuited to power supply.

A Turn the start switch to "OFF" position.
B Disconnect cylinder 3 injector harness connector EN42.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 2 of 3# cylinder fuel injector harness connector EN42 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.



No

Replace or repair the harness or connector.

Yes

Step 9	Replace the fuel rail component.

A Replace the fuel rail component.

B Is the fault eliminated after replacing the fuel rail component?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.21 DTC: P020400, P027000 ...

DTC	Description
P020400	Injector #4 control circuit open
P027000	Injector #4 drive circuit low voltage
P027100	Injector #4 drive circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF38 of 4# cylinder fuel injector.

A Check whether the fuse LF38 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF38.

A Check whether the fuse LF38 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

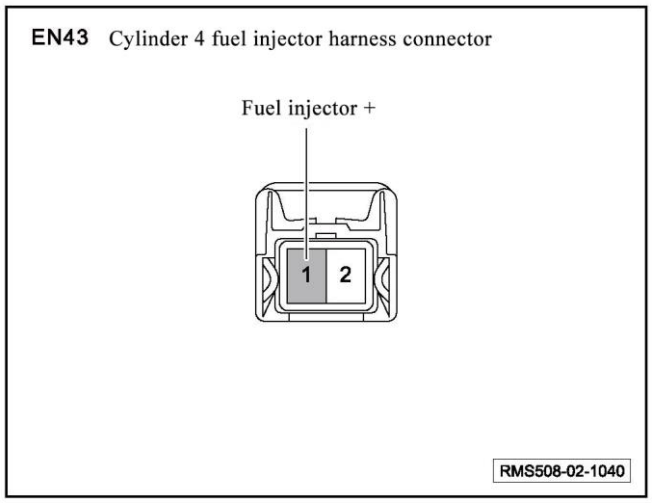
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF38 20A

D Confirm whether the cylinder 4 fuel injector works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of cylinder 4 fuel injector.



A Turn the start switch to "OFF" position.

B Disconnect cylinder 4 injector harness connector EN43.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 1 of 4# cylinder fuel injector harness connector EN43 and the body ground.
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check the cylinder 4 fuel injector.

A Turn the start switch to "OFF" position.

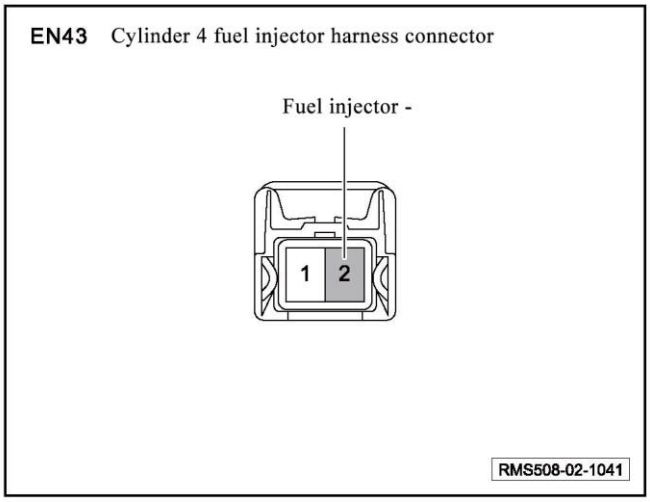
B Remove 4# cylinder fuel injector.

C Check whether the resistance of the cylinder 4 fuel injector is normal.
Standard resistance value: 2.0Ω (@20℃)

No → Replace the fuel rail component.

Yes

Step 6	Check whether the circuit between 4# cylinder fuel injector and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect cylinder 4 injector harness connector EN43.

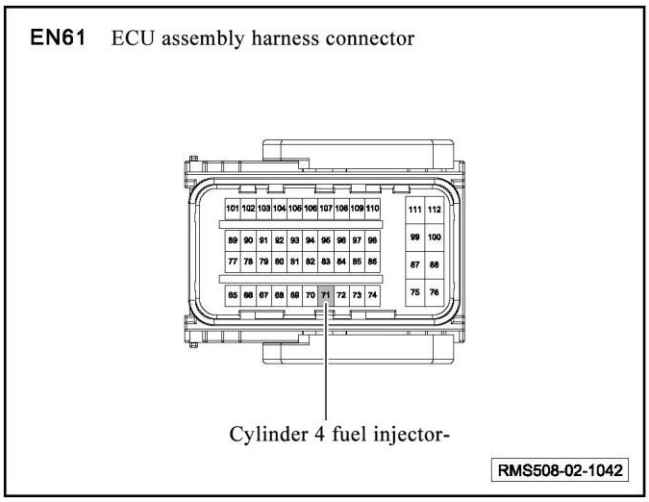
C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 2 of 4# cylinder fuel injector harness connector EN43 and terminal 71 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 7	Check whether the control circuit of the cylinder 4 fuel injector is short-circuited to ground.

A Turn the start switch to "OFF" position.

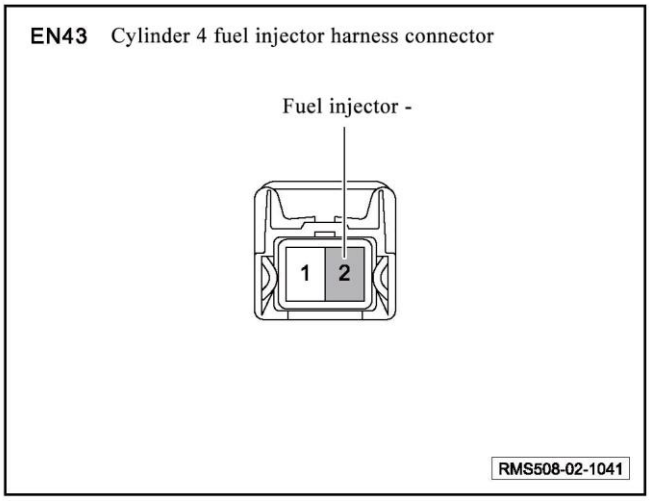
B Disconnect cylinder 4 injector harness connector EN43.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance between terminal 2 of the cylinder 4 injector harness connector EN43 and the body ground.

Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

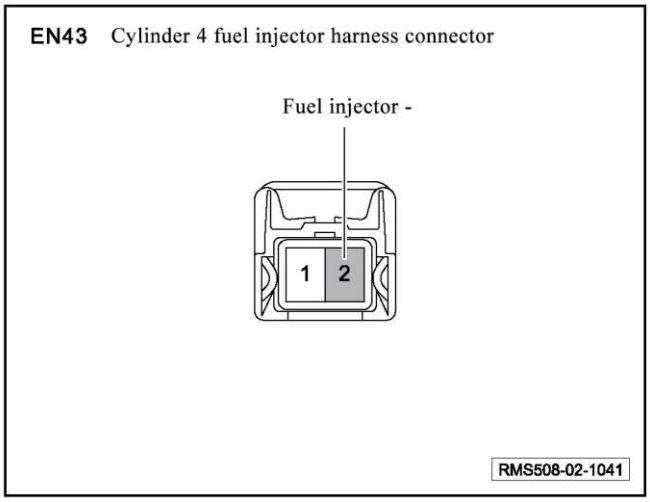


No

Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 4 fuel injector is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect cylinder 4 injector harness connector EN43.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 2 of 4# cylinder fuel injector harness connector EN43 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 9	Replace the fuel rail component.

A Replace the fuel rail component.
B Is the fault eliminated after replacing the fuel rail component?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.22 DTC: P035100, P230000...

DTC	Description
P035100	Ignition coil #1 circuit fault
P230000	Ignition coil #1 control circuit low voltage
P230100	Ignition coil #1 control circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF37 of the cylinder 1 ignition coil.

A Check whether the fuse LF37 is blown.

No → Go to Step 4.

Yes

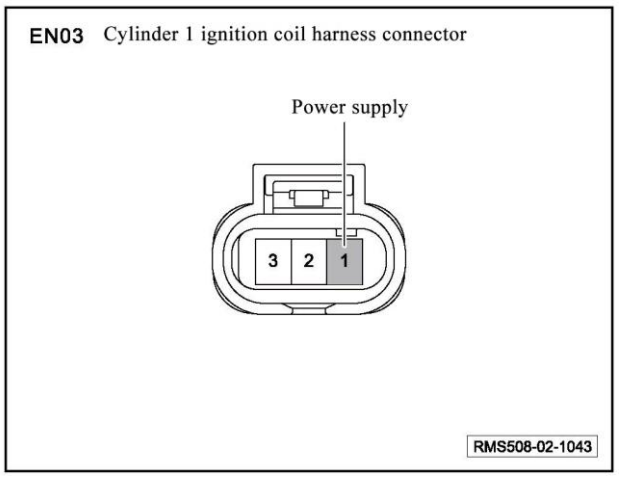
Step 3	Check and repair the circuit of fuse LF37.

A Check whether the fuse LF37 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF37 20A.
D Confirm whether the cylinder 1 ignition coil works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of the cylinder 1 ignition coil.

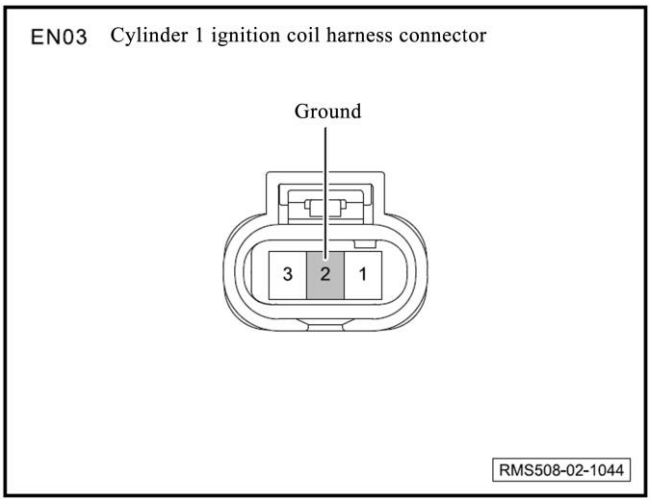


A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 ignition coil harness connector EN03.
C Put the Start switch to “ON” position.
D Measure the voltage of circuit between terminal 1 of the cylinder 1 ignition coil harness connector EN03 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check the ground circuit of the cylinder 1 ignition coil.



A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 ignition coil harness connector EN03.
C Measure the resistance of circuit between terminal 2 of the cylinder 1 ignition coil harness connector EN03 and the body ground.
Standard resistance value: <1Ω
D Make sure that the measured value conforms to the standard value.

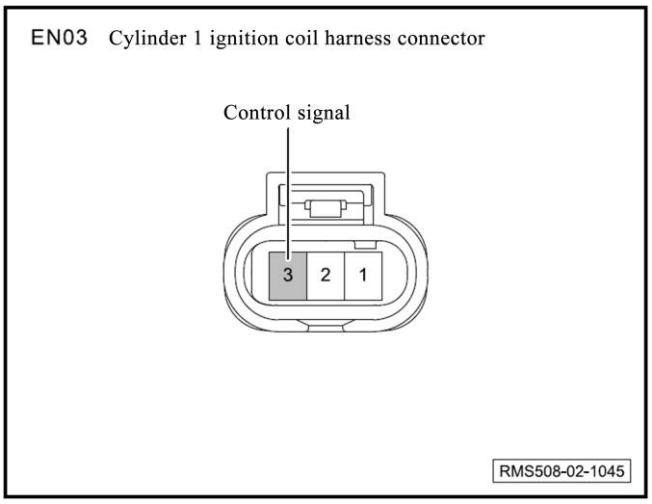
No → Replace or repair the harness or connector.

Yes

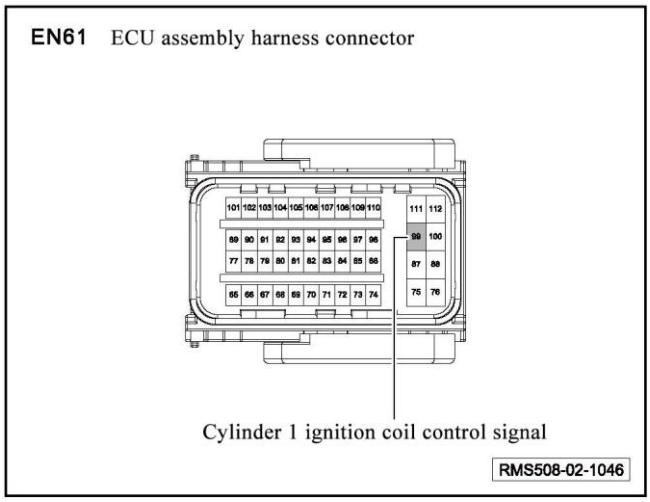
Step 6	Check whether the circuit between 1# cylinder ignition coil and the ECU assembly is open circuited.

A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 ignition coil harness connector EN03.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 3 of 1# cylinder ignition coil harness connector EN03 and terminal 99 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
E Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or

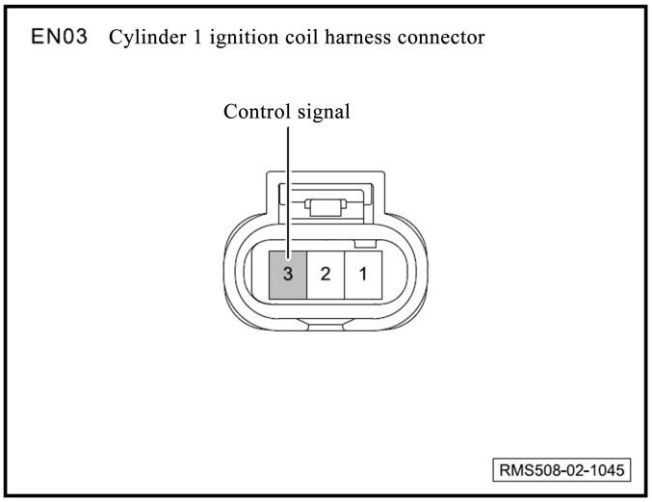

EN03 Cylinder 1 ignition coil harness connector
Control signal
3
2
1
RMS508-02-1045

connector.



Yes

Step 7	Check whether the control circuit of the cylinder 1 ignition coil is short-circuited to ground.



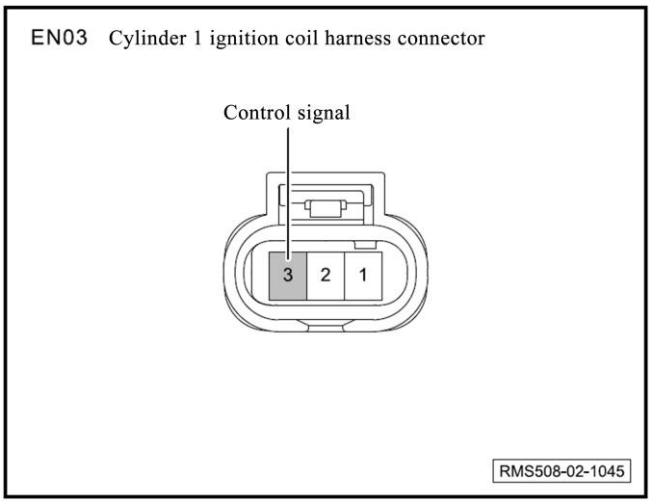
A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 ignition coil harness connector EN03.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of circuit between terminal 3 of the cylinder 1 ignition coil harness connector EN03 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 1 ignition coil is short-circuited to power supply.

A Turn the start switch to "OFF" position.
B Disconnect cylinder 1 ignition coil harness connector EN03.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage of circuit between terminal 3 of the cylinder 1 ignition coil harness connector EN03 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.



No

Replace or repair the harness or connector.

Yes

Step 9	Replace the cylinder 1 ignition coil.

A Replace the cylinder 1 ignition coil.

B Is the fault eliminated after replacing the cylinder 1 ignition coil?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.23 DTC: P035200, P230300.....

DTC	Description
P035200	Ignition coil #2 circuit fault
P230300	Ignition coil #2 control circuit low voltage
P230400	Ignition coil #2 control circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF37of the cylinder 2 ignition coil.

A Check whether the fuse LF37 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF37.

A Check whether the fuse LF37 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

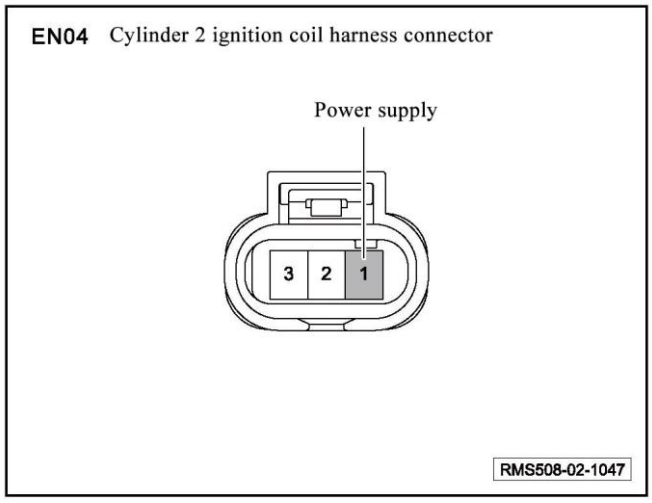
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF37 20A.

D Confirm whether the cylinder 2 ignition coil works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of the cylinder 2 ignition coil.



A Turn the start switch to "OFF" position.

B Disconnect the cylinder 2 ignition coil harness connector EN04.

C Put the Start switch to “ON” position.

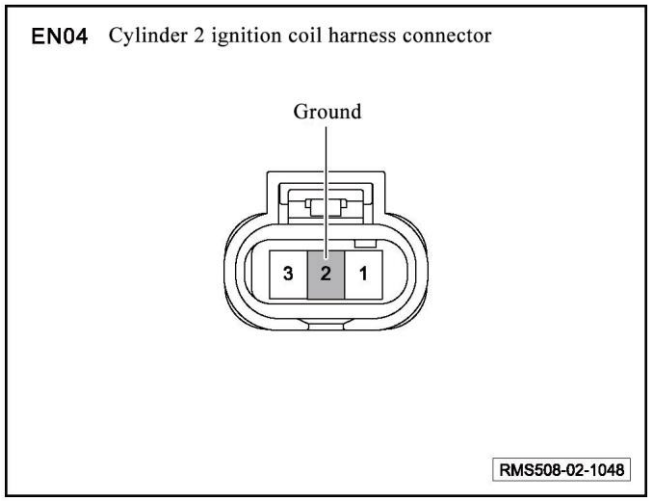
D Measure the voltage of circuit between terminal 1 of the cylinder 2 ignition coil harness connector EN04 and the body ground.
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check the ground circuit of the cylinder 2 ignition coil.

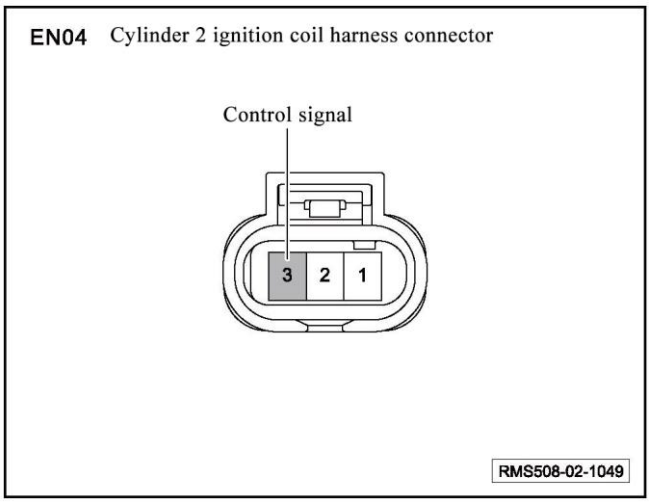


A Turn the start switch to "OFF" position.
B Disconnect the cylinder 2 ignition coil harness connector EN04.
C Measure the resistance of circuit between terminal 2 of the cylinder 2 ignition coil harness connector EN04 and the body ground.
Standard resistance value: <1Ω
D Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.

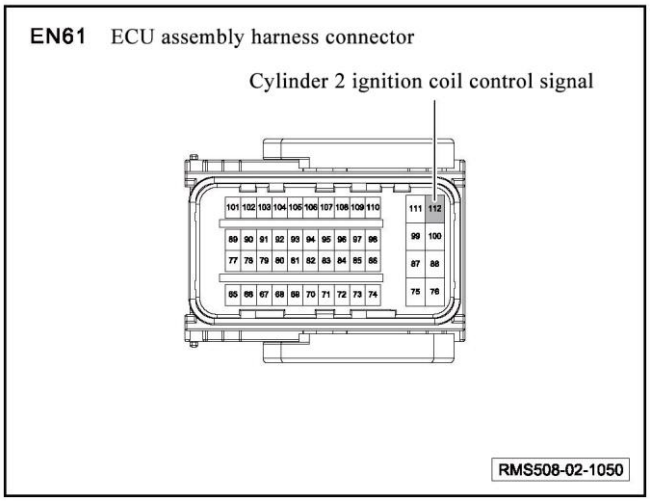
Yes

Step 6	Check whether the circuit between 2# cylinder ignition coil and the ECU assembly is open circuited.



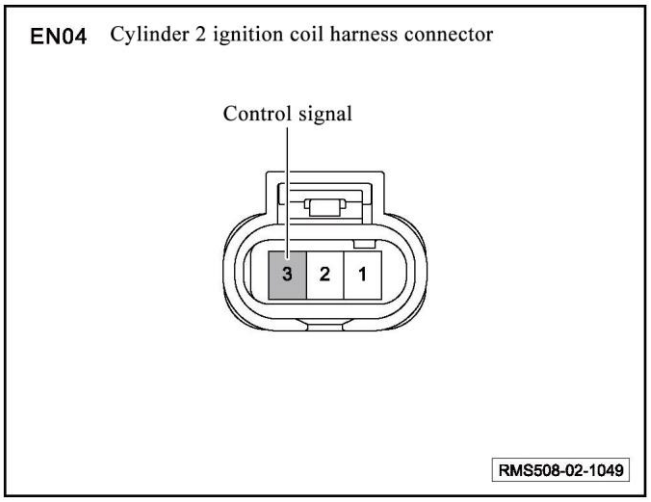
A Turn the start switch to "OFF" position.
B Disconnect the cylinder 2 ignition coil harness connector EN04.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 3 of 2# cylinder ignition coil harness connector EN04 and terminal 112 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
E Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



Yes

Step 7	Check whether the control circuit of the cylinder 2 ignition coil is short-circuited to ground.

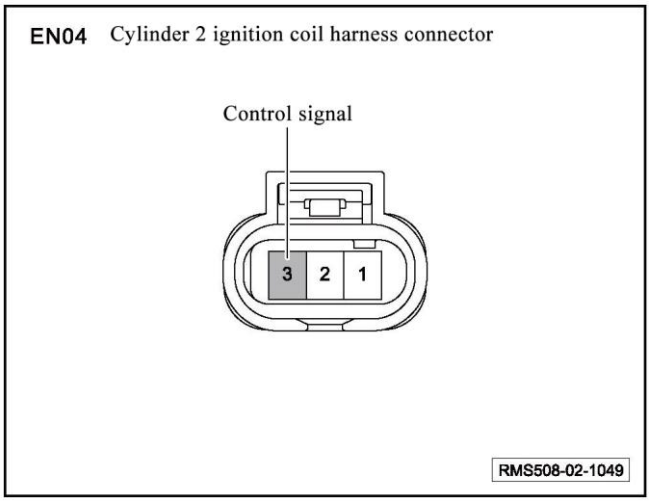


A Turn the start switch to "OFF" position.
B Disconnect the cylinder 2 ignition coil harness connector EN04.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of circuit between terminal 3 of the cylinder 2 ignition coil harness connector EN04 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 2 ignition coil is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the cylinder 2 ignition coil harness connector EN04.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage of the circuit between terminal 3 of the cylinder 2 ignition coil harness connector EN04 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 9	Replace the cylinder 2 ignition coil.

A Replace the cylinder 2 ignition coil.
B Is the fault eliminated after replacing the ignition coil of Cylinder 2?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.24 DTC: P035300, P230600...

DTC	Description
P035300	Ignition coil #3 circuit fault
P230600	Ignition coil #3 control circuit low voltage
P230700	Ignition coil #3 control circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF37 of the cylinder 3 ignition coil.

A Check whether the fuse LF37 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF37.

A Check whether the fuse LF37 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

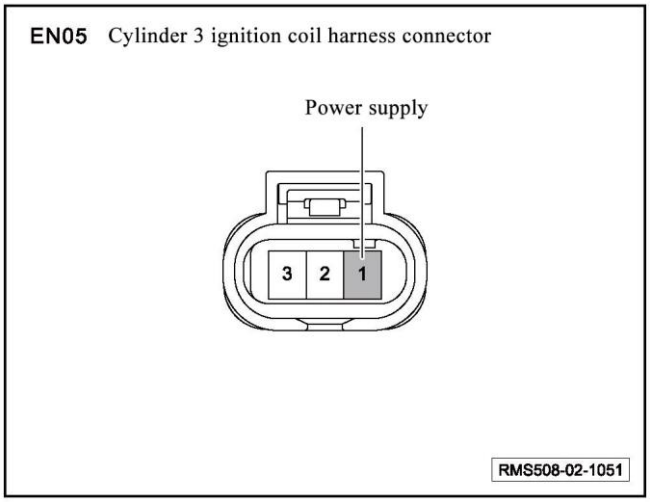
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF37 20A.

D Confirm whether the cylinder 3 ignition coil works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of the cylinder 3 ignition coil.

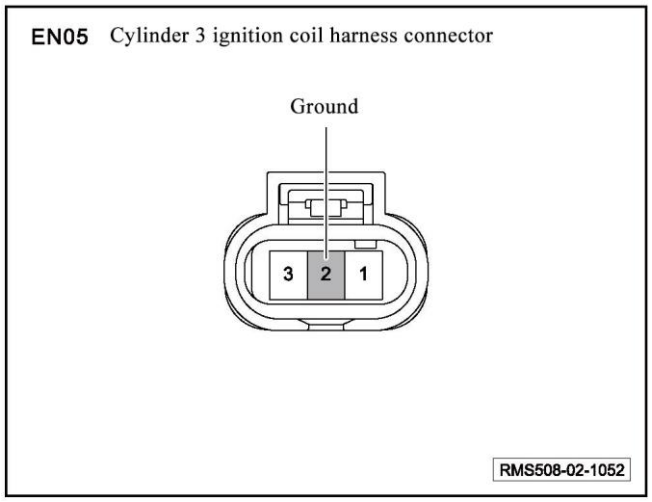


A Turn the start switch to "OFF" position.
B Disconnect the cylinder 3 ignition coil harness connector EN05.
C Put the Start switch to “ON” position.
D Measure the voltage of circuit between terminal 1 of the cylinder 3 ignition coil harness connector EN05 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check the ground circuit of the cylinder 3 ignition coil.

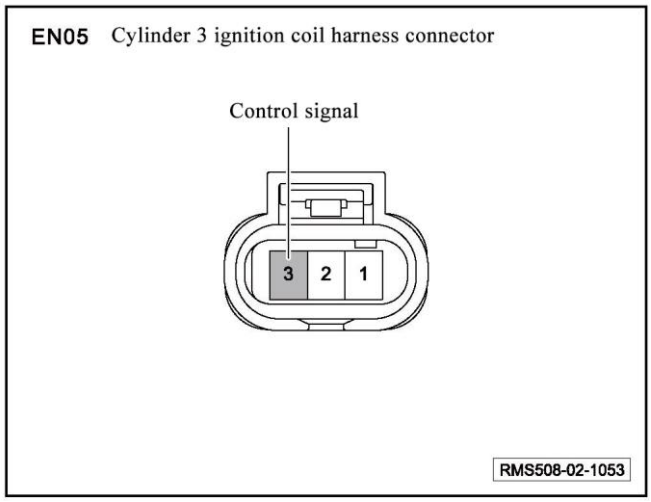


A Turn the start switch to "OFF" position.
B Disconnect the cylinder 3 ignition coil harness connector EN05.
C Measure the resistance of circuit between terminal 2 of the cylinder 3 ignition coil harness connector EN05 and the body ground.
Standard resistance value: <1Ω
D Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Check whether the circuit between 3# cylinder ignition coil and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the cylinder 3 ignition coil harness connector EN05.

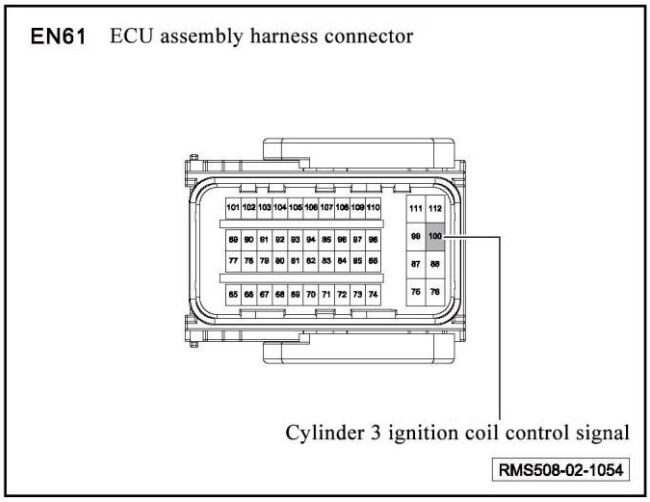
C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 3 of 3# cylinder ignition coil harness connector EN05 and terminal 100 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

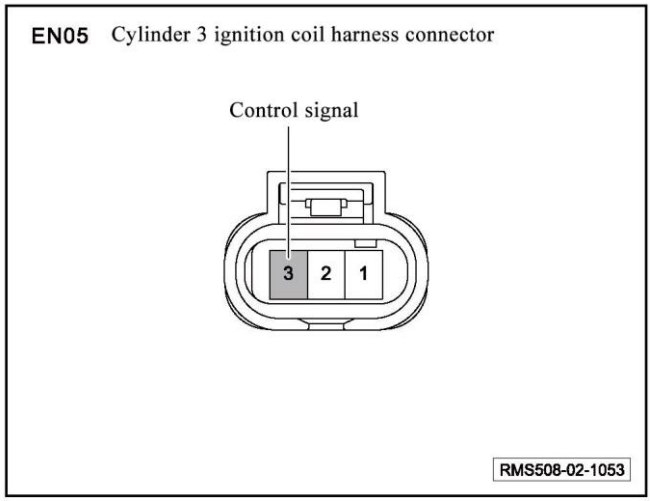
E Make sure that the measured value conforms to the standard value.

No	Replace or repair the harness or connector.



Yes

Step 7	Check whether the control circuit of the cylinder 3 ignition coil is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the cylinder 3 ignition coil harness connector EN05.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of circuit between terminal 3 of the cylinder 3 ignition coil harness connector EN05 and the body ground.

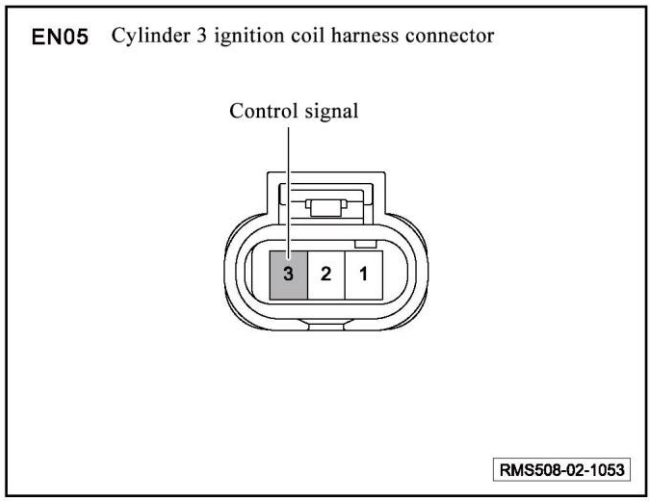
Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 3 ignition coil is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the cylinder 3 ignition coil harness connector EN05.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage of circuit between terminal 3 of the cylinder 3 ignition coil harness connector EN05 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 9	Replace the cylinder 3 ignition coil.

A Replace the cylinder 3 ignition coil.
B Is the fault eliminated after replacing the ignition coil of Cylinder 3?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.25 DTC: P035400, P230900...

DTC	Description
P035400	Ignition coil #4 circuit fault
P230900	Ignition coil #4 control circuit low voltage
P231000	Ignition coil #4 control circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF37 of the cylinder 4 ignition coil.

A Check whether the fuse LF37 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF37.

A Check whether the fuse LF37 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

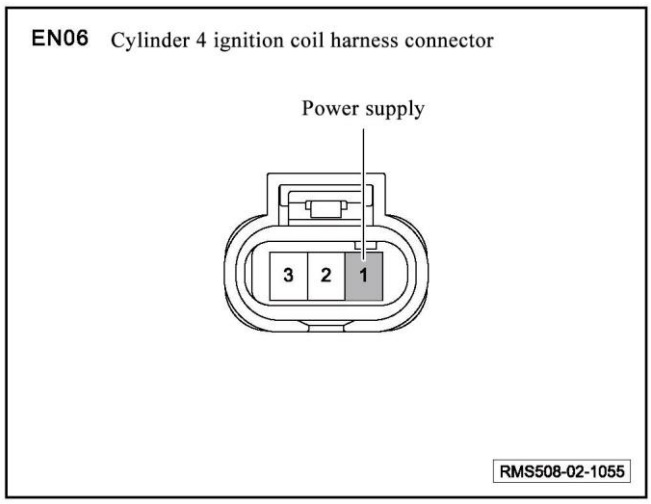
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF37 20A.

D Confirm whether the cylinder 4 ignition coil works normally.

Yes → The system works normally.

No

Step 4	Check the power supply circuit of the cylinder 4 ignition coil.

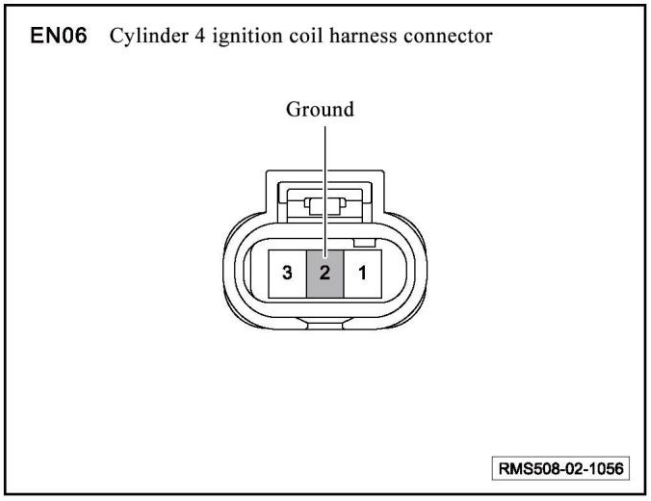


A Turn the start switch to "OFF" position.
B Disconnect the cylinder 4 ignition coil harness connector EN06.
C Put the Start switch to “ON” position.
D Measure the voltage of circuit between terminal 1 of the cylinder 4 ignition coil harness connector EN06 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check the ground circuit of the cylinder 4 ignition coil.



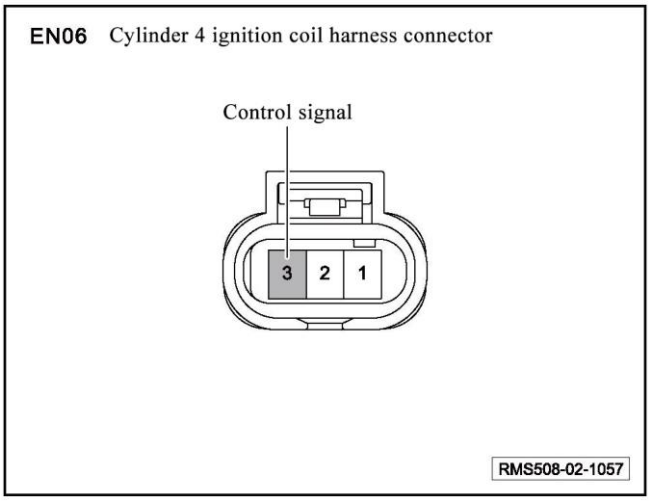
A Turn the start switch to "OFF" position.
B Disconnect the cylinder 4 ignition coil harness connector EN06.
C Measure the resistance of circuit between terminal 2 of the cylinder 4 ignition coil harness connector EN06 and the body ground.
Standard resistance value: <1Ω
D Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

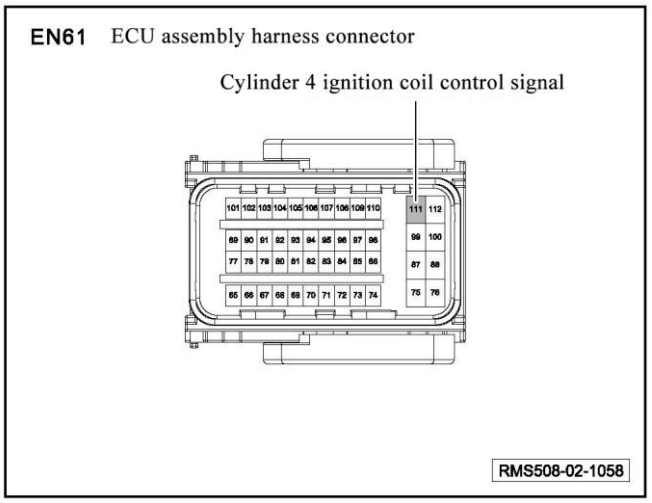
Step 6	Check whether the circuit between 4# cylinder ignition coil and the ECU assembly is open circuited.

A Turn the start switch to "OFF" position.
B Disconnect the cylinder 4 ignition coil harness connector EN06.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 3 of 4# cylinder ignition coil harness connector EN06 and terminal 111 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
E Make sure that the measured value conforms to the standard value.



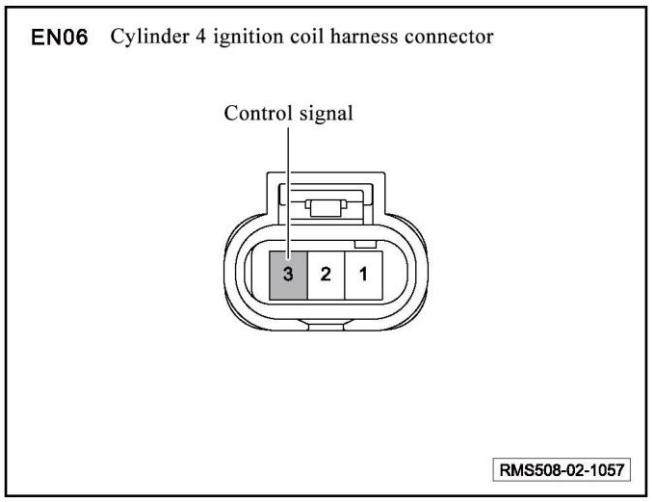
No

Replace or repair the harness or connector.



Yes

Step 7	Check whether the control circuit of the cylinder 4 ignition coil is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the cylinder 4 ignition coil harness connector EN06.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of circuit between terminal 3 of the cylinder 4 ignition coil harness connector EN06 and the body ground.

Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 8	Check whether the control circuit of the cylinder 4 ignition coil is short-circuited to power supply.

A Turn the start switch to "OFF" position.

B Disconnect the cylinder 4 ignition coil harness connector EN06.

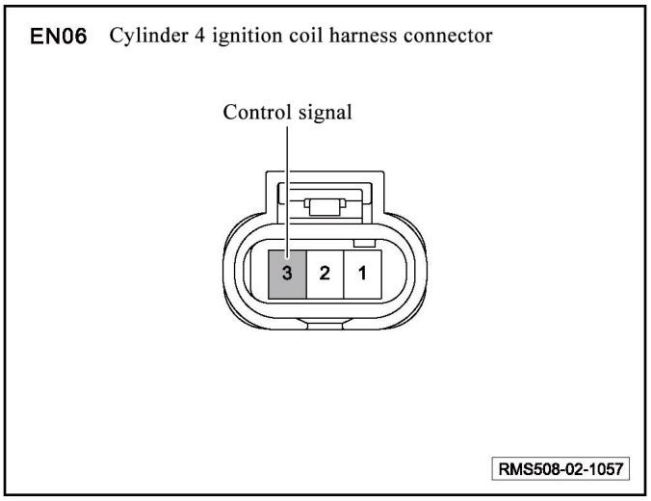
C Disconnect ECU assembly harness connector EN61.

D Put the Start switch to “ON” position.

E Measure the voltage of circuit between terminal 3 of the cylinder 4 ignition coil harness connector EN06 and the body ground.

Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.



No

Replace or repair the harness or connector.

Yes

Step 9	Replace the cylinder 4 ignition coil.

A Replace the cylinder 4 ignition coil.

B Is the fault eliminated after replacing the ignition coil of Cylinder 4?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.26 DTC: P030000, P030100.....

DTC	Description
P030000	Single-cylinder or multi-cylinder misfire
P030100	Cylinder I misfire
P030200	Cylinder II misfire
P030300	Cylinder III misfire
P030400	Cylinder IV misfire

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the vacuum pipe and intake system.

A Check whether the vacuum pipe of carbon canister solenoid valve is connected incorrectly or leaks.

B Check whether the vacuum pipe of intake pressure sensor is connected incorrectly or leaks.

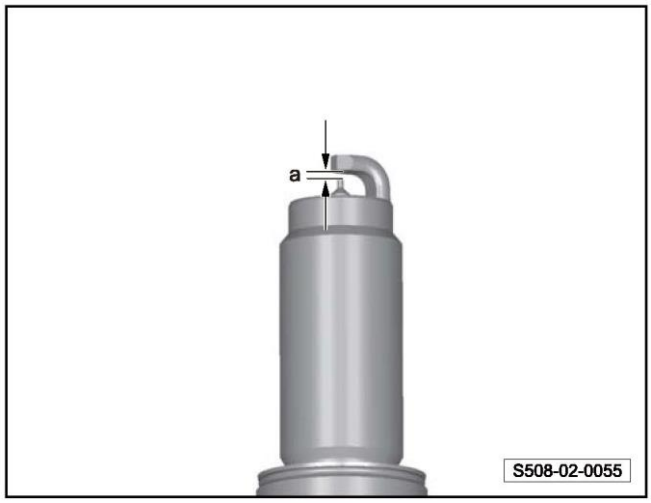
C Check whether the crankcase ventilation valve and vent pipe are connected incorrectly or leak.

D Check the intake system for air leakage.

Yes → Handle the faulty part.

No

Step 3	Check the spark plug.



A Turn the start switch to "OFF" position.

B Remove the spark plug and check if the spark plug clearance (a) is normal.

Standard spark plug gap: 1.05~1.15mm

C Confirm whether the spark plug gap a reaches the standard value.

No → Replace the spark plug.

Yes

Step 4	Check the ignition coil.

A Check whether the jump-spark of ignition coil is normal.

No → Replace the ignition coil.

Yes

Step 5	Check the compression pressure of the misfire cylinder.

A Check whether the compression pressure of the misfire cylinder is too low.

Yes → Check the reason for low compression pressure in the cylinder.

No

Step 6	Check the fuel and fuel injector of the misfire cylinder.

A Check whether the fuel injector leaks or gets stuck.
B Check whether the fuel quality is abnormal.

Yes → Handle the faulty part.

No

Step 7	Check the pressure of the fuel system.

A Check if the pressure of the fuel system is normal.

No → Check and repair the fuel system.

Yes

Step 8	Check the valve timing system.

A Check whether the valve timing is correct.

No → Readjust the valve timing.

Yes

Step 9	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

Yes → Repair or replace the harness.

Yes

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.27 DTC: P044400, P045800 ...

DTC	Description
P044400	Carbon canister solenoid valve control circuit open
P045800	Carbon canister solenoid valve control circuit low voltage
P045900	Carbon canister solenoid valve control circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the canister and its pipeline.

A Check the canister and its pipeline for blockage or leakage.

Yes → Repair or replace the canister and its pipeline.

No

Step 3	Check the canister solenoid valve.

A Turn the start switch to "OFF" position.
B Remove the canister solenoid valve.
C Measure whether the resistance at both ends of the canister solenoid valve is normal.
Standard resistance value: 16±2Ω

No → Replace the canister solenoid valve.

Yes

Step 4	Yes

A Check whether the fuse LF38 is blown.

No → Go to Step 6.

Yes

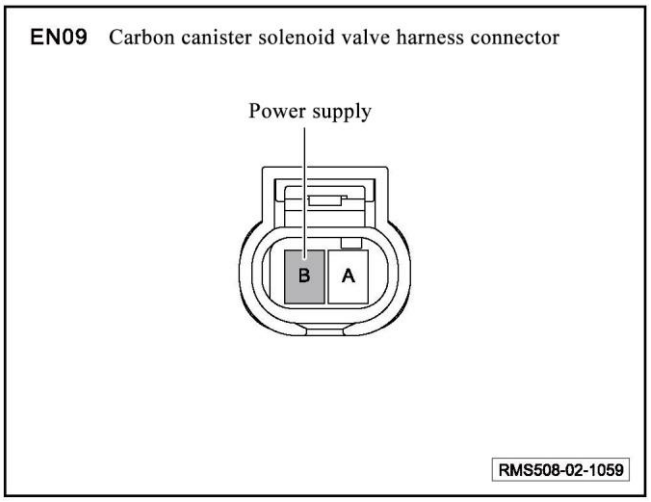
Step 5	Check and repair the circuit of fuse LF38.

A Check whether the fuse LF38 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: LF38 20A
D Confirm whether the canister solenoid valve works normally.

Yes → The system works normally.

No

Step 6	Check the carbon canister solenoid valve feed circuit.

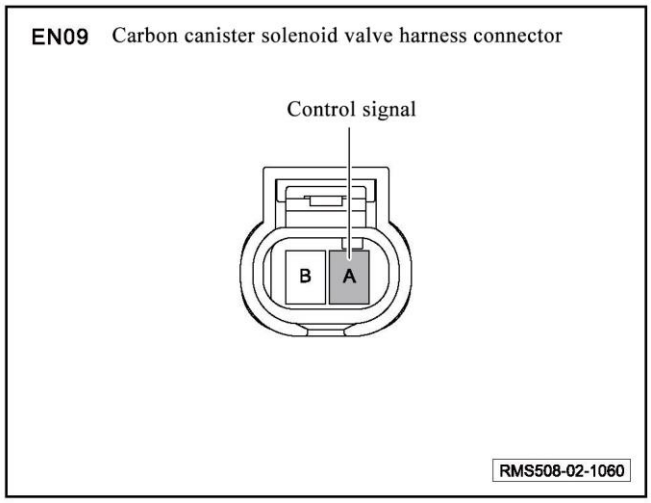


A Turn the start switch to "OFF" position.
B Disconnect canister solenoid valve harness connector EN09.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal B of the canister solenoid valve harness connector EN09 and the body ground.
Standard voltage value: 11~14V
E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

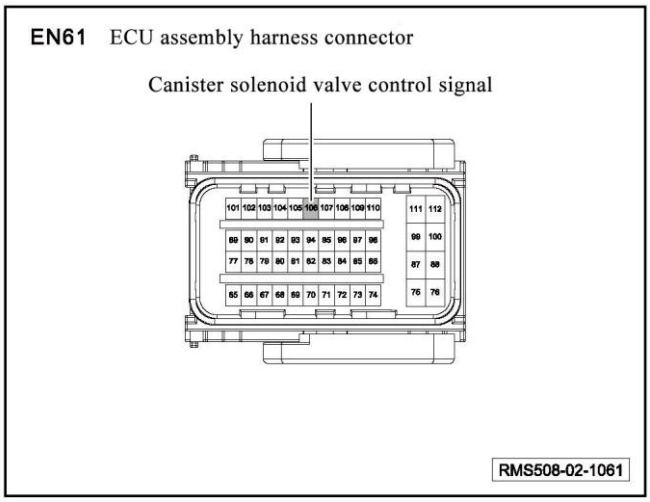
Yes

Step 7	Check whether the circuit between the canister solenoid valve and the ECU assembly is open circuited.



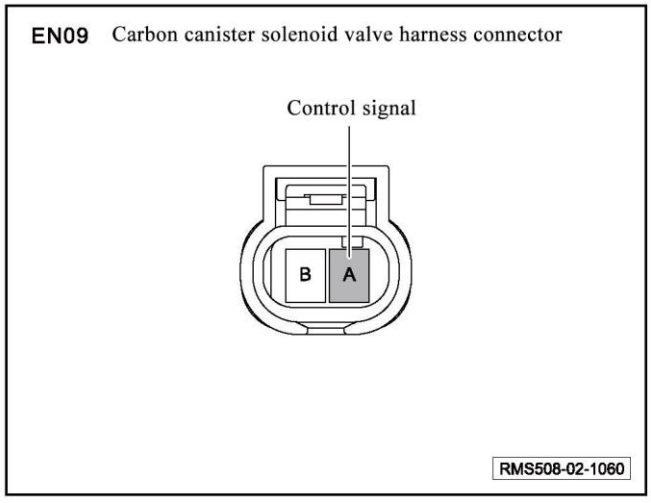
A Turn the start switch to "OFF" position.
B Disconnect canister solenoid valve harness connector EN09.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal A of the canister solenoid valve harness connector EN09 and terminal 106 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
E Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



Yes

Step 8	Check whether the control circuit of the carbon canister solenoid valve is short-circuited to ground.

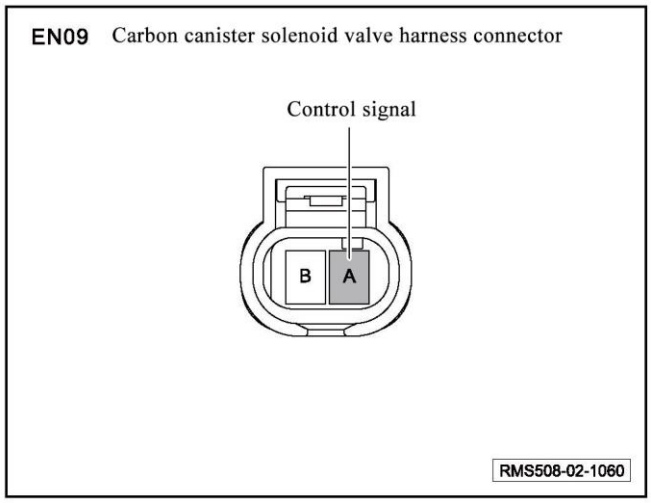


A Turn the start switch to "OFF" position.
B Disconnect canister solenoid valve harness connector EN09.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of circuit between terminal A of the canister solenoid valve harness connector EN09 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 9	Check whether the control circuit of the carbon canister solenoid valve is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect canister solenoid valve harness connector EN09.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal A of the canister solenoid valve harness connector EN09 and body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 10	Replace the canister solenoid valve.

A Replace the canister solenoid valve.
B Is the fault eliminated after replacing the canister solenoid valve?

Yes → The system works normally.

No

Step 11	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 12	The diagnosis is over.

2.8.6.28 DTC: P210000, P210100 ...

DTC	Description
P210000	Throttle motor control circuit open
P210100	Throttle motor control circuit fault
P210200	Throttle motor control circuit low voltage
P210300	Throttle motor control circuit high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

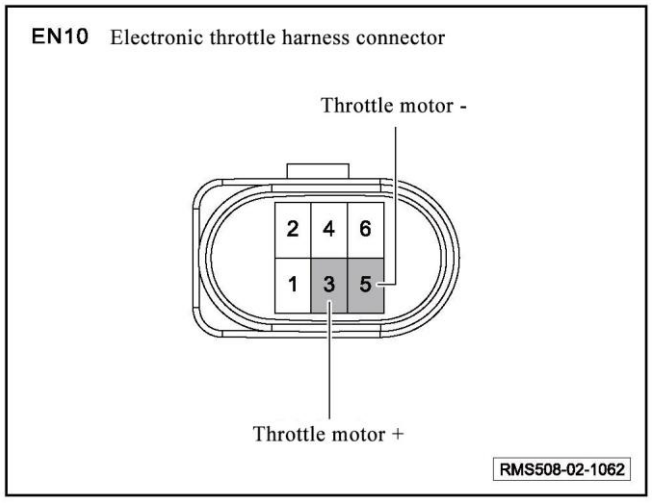
Step 2	Check the electronic throttle harness connector.

A Check the electronic throttle harness connector for corrosion, oxidation or looseness.

Yes → Replace or repair the harness or connector.

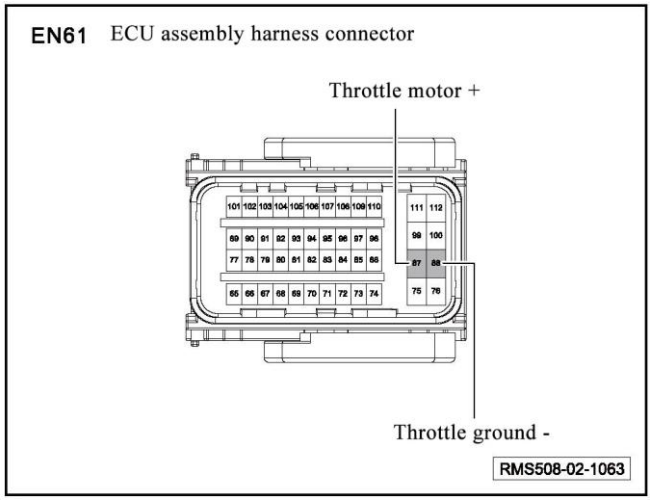
No

Step 3	Check the circuit between the electronic throttle drive motor and the ECU assembly.



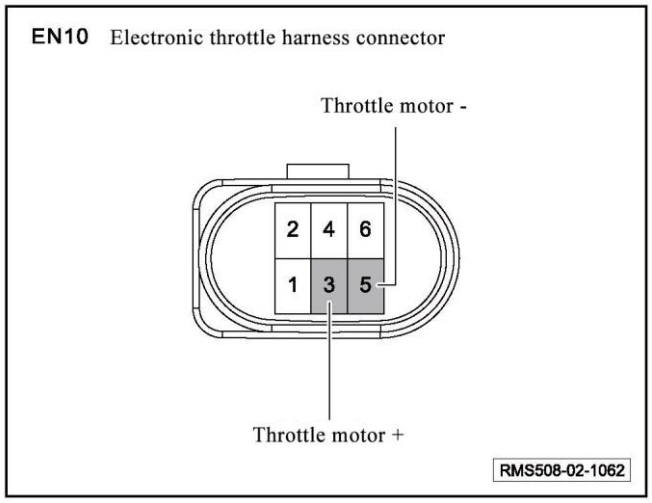
A Turn the start switch to "OFF" position.
B Disconnect the electronic throttle harness connector EN10.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 3 of the electronic throttle harness connector EN10 and terminal 87 of the ECU assembly harness connector EN61.
E Measure the resistance of the circuit between terminal 5 of the electronic throttle harness connector EN10 and terminal 88 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the circuit between the electronic throttle drive motor and the ECU assembly is short circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance between terminal 3 of the electronic throttle harness connector EN10 and the body ground.

E Measure the resistance between terminal 5 of the electronic throttle harness connector EN10 and the body ground.

Standard resistance value: 10 kΩ or higher

F Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit between the electronic throttle drive motor and the ECU assembly is short circuited to power.

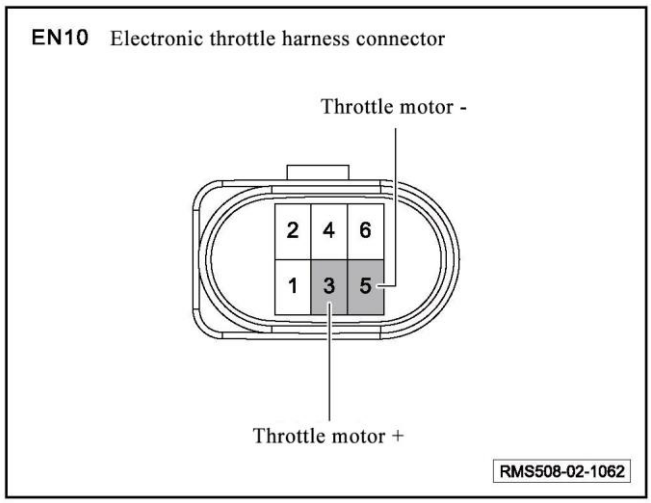
A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 3 of the electronic throttle harness connector EN10 and



the body ground.

F Measure the voltage between terminal 5 of the electronic throttle harness connector EN10 and the body ground.

Standard voltage value: 0V

G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the electronic throttle body.

A Replace the electronic throttle body.

B Is the fault eliminated after replacing the electronic throttle body?

Yes → The system works normally.

No

Step 7	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

2.8.6.29 DTC: P211800, P211900

DTC	Description
P211800	Throttle adjustment fault or control circuit open
P211900	Throttle body mechanical fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

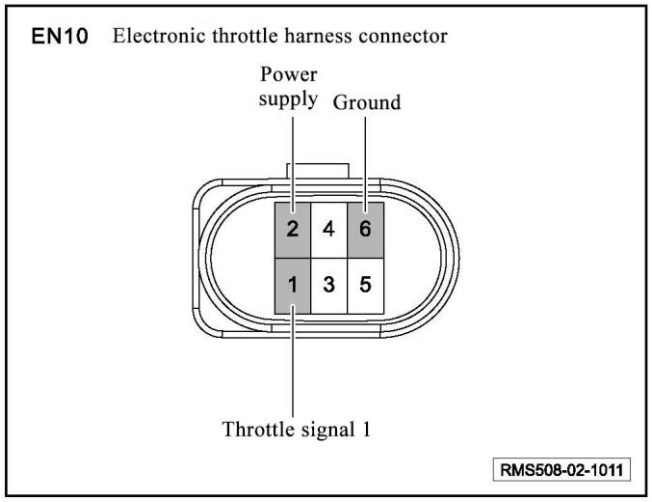
Step 2	Perform the throttle adaptive learning program.

A After performing the throttle adaptive learning program, read the DTC again to check whether the same DTC is displayed.

No → Go to Step 4.

Yes

Step 3	Check whether the circuit between the electronic throttle position sensor 1 and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 1 of the electronic throttle harness connector EN10 and terminal 78 of the ECU assembly harness connector EN61.

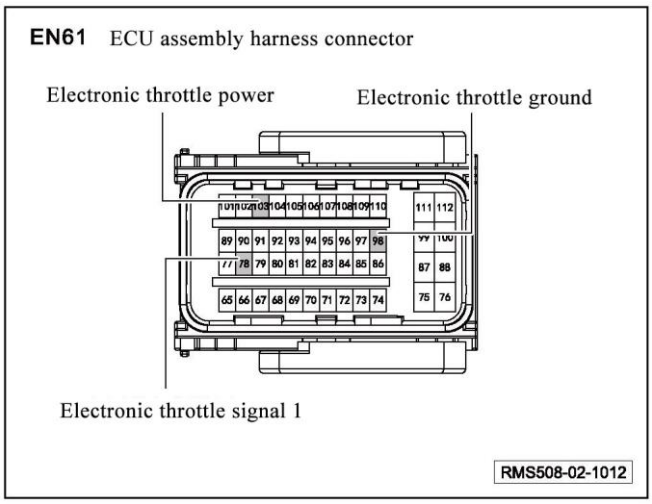
E Measure the resistance of the circuit between terminal 2 of the electronic throttle harness connector EN10 and terminal 103 of the ECU assembly harness connector EN61.

F Measure the resistance of the circuit between terminal 6 of the electronic throttle harness connector EN10 and terminal 98 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

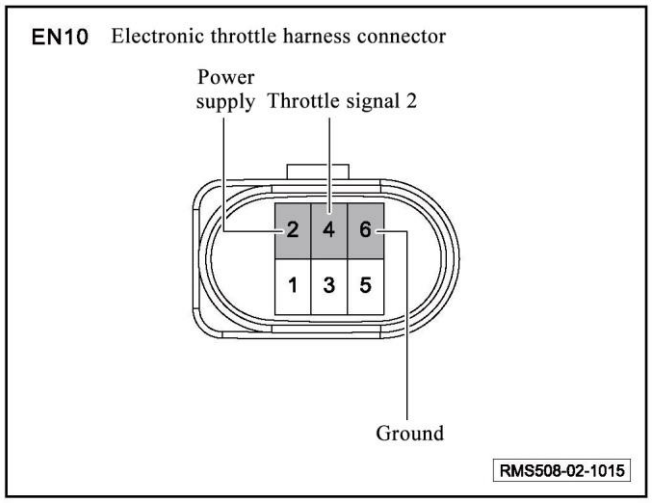
G Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the circuit between the electronic throttle position sensor 2 and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 2 of the electronic throttle harness connector EN10 and terminal 103 of the ECU assembly harness connector EN61.

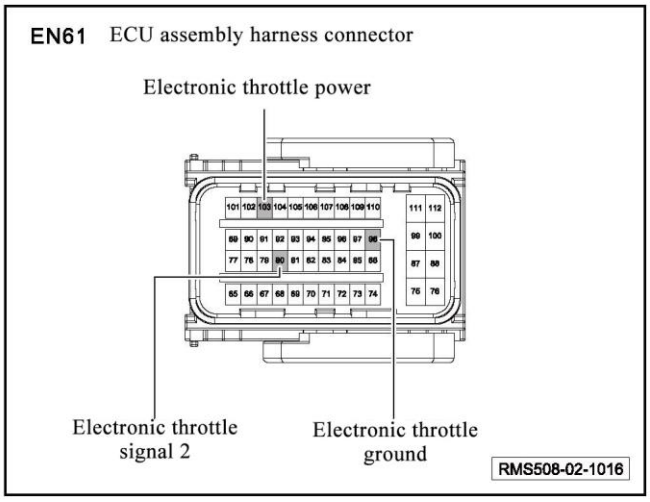
E Measure the resistance of the circuit between terminal 4 of the electronic throttle harness connector EN10 and terminal 80 of the ECU assembly harness connector EN61.

F Measure the resistance of the circuit between terminal 6 of the electronic throttle harness connector EN10 and terminal 98 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

G Make sure that the measured value conforms to the standard value.

No	Replace or repair the harness or connector.



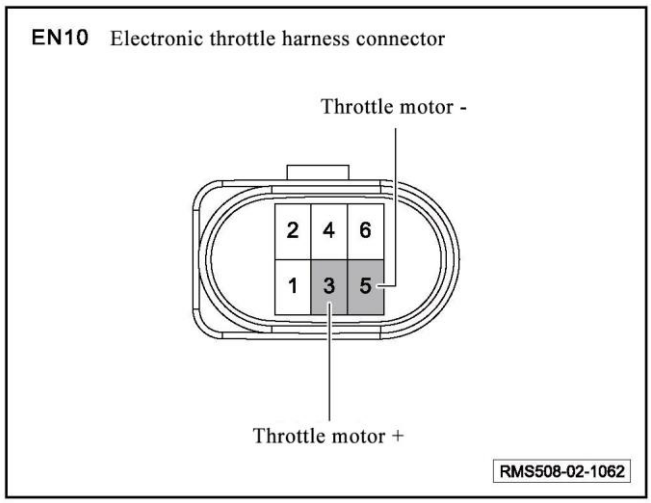
Yes

Step 5	Check the circuit between the electronic throttle drive motor and the ECU assembly.

A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.



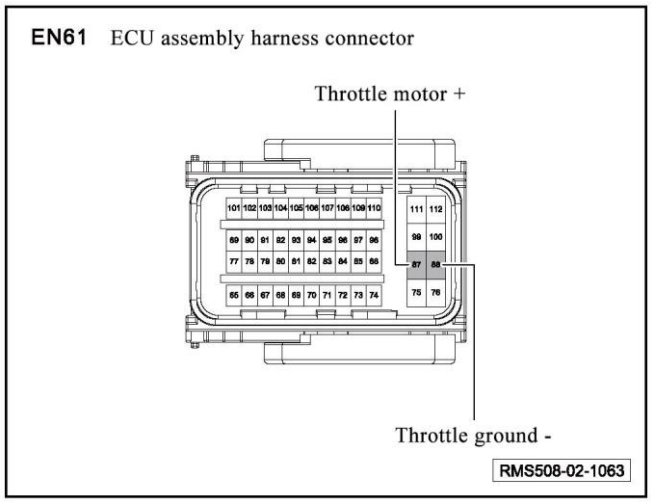
D Measure the resistance of the circuit between terminal 3 of the electronic throttle harness connector EN10 and terminal 87 of the ECU assembly harness connector EN61.

E Measure the resistance of the circuit between terminal 5 of the electronic throttle harness connector EN10 and terminal 88 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.



Yes

Step 6	Replace the electronic throttle body.

A Replace the electronic throttle body.

B Is the fault eliminated after replacing the electronic throttle body?

Yes → The system works normally.

No

Step 7	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

2.8.6.30 DTC: P001600, P001100

DTC	Description
P001600	Intake phase deviation too large
P001100	Camshaft system performance fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Recalibrate the relative position of the intake camshaft phaser to the camshaft.

A Turn the start switch to "OFF" position.

B Recalibrate the relative position of the intake camshaft phaser to the camshaft.

C Put the Start switch to “ON” position.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	The system works normally.

A Open the oil filler cap and pull out the engine oil dipstick to check whether the oil is too black, too thick or has not been replaced for a long time or the oil level is too low.

Yes → Replace the engine oil and oil filter or eliminate the engine oil leakage.

No

Step 4	Check the intake valve timing fuel pipeline.

A Check whether the intake valve timing fuel pipeline is blocked.

Yes → Remove foreign matters.

Yes

Step 5	Check the basic valve timing.

A Check whether the basic valve timing is correct with an appropriate tool.

No → Recalibrate the basic valve timing.

Yes

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

Is the fault eliminated after replacing the ECU assembly?

2.8.6.31 DTC: P042000

DTC	Description
P042000	Three-way catalytic converter oxygen storage capacity aging (emission over-limit)

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the three-way catalytic converter.

A Visually check whether the appearance of the three-way catalytic converter has any dents.

Yes → Replace the three-way catalytic converter.

No

Step 3	Check for exhaust leakage.

A Start the engine and run it at idle speed.

B Check the pipeline in front of the rear oxygen sensor for exhaust leakage.

Yes → Repair or replace the exhaust pipe.

No

Step 4	Check the exhaust color.

A Start the engine and keep it running to the working temperature.

B Check the exhaust color when the engine is running at idle speed or the accelerator pedal is depressed quickly in neutral position.

C Check whether the exhaust is blue.

Yes → Fix the engine internal problems.

No

Step 5	Check the oxygen sensor.

A Check whether the front oxygen sensor and rear oxygen sensor work normally

No → Replace the oxygen sensor.

Yes

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.32 DTC: P050700, P017100 ...

DTC	Description
P050700	Idle speed control higher than target
P017100	Long-term lean fuel injection system
P017200	Long-term rich fuel injection system
P120A00	Cold start emission reduction fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the electronic throttle body.

A Check whether the inside of the electronic throttle body has carbon deposit, greasy dirt, etc.

Yes → Wash the electronic throttle.

No

Step 3	Check the intake system pipeline.

A Check the intake system pipeline for damage or leakage.

B Check the intake manifold for leakage.

Yes → Repair or replace the related pipeline.

No

Step 4	Check the pressure of the fuel system.

A Check if the pressure of the fuel system is normal.

No → Check and repair the fuel system.

Yes

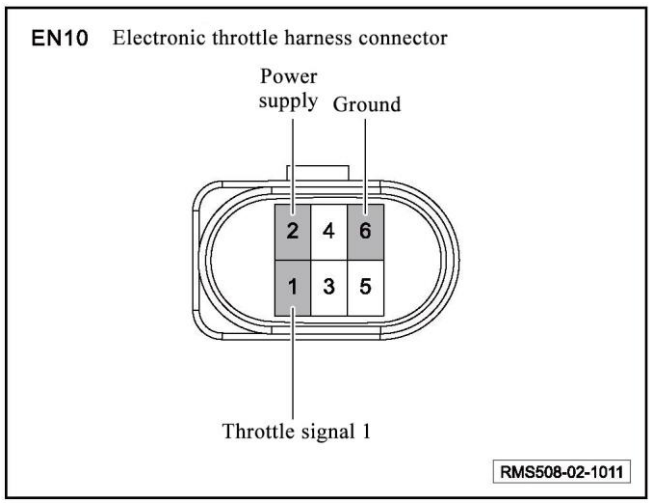
Step 5	Check the fuel injector.

A Check the fuel injector for leakage and blockage.

Yes → Replace the fuel rail component (fuel injector).

No

Step 6	Check whether the circuit between the electronic throttle position sensor 1 and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 1 of the electronic throttle harness connector EN10 and terminal 78 of the ECU assembly harness connector EN61.

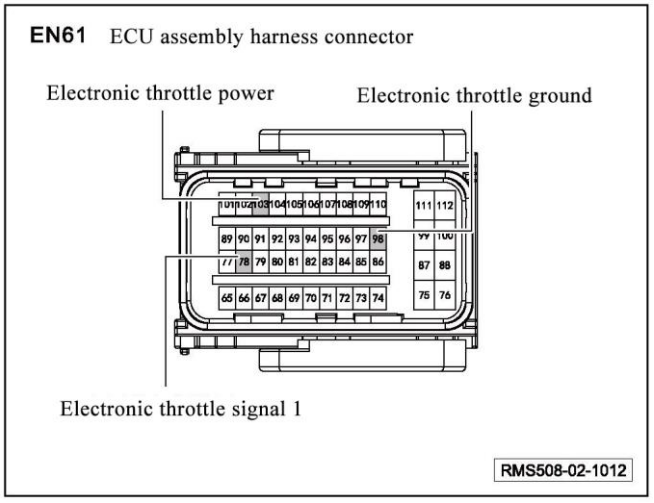
E Measure the resistance of the circuit between terminal 2 of the electronic throttle harness connector EN10 and terminal 103 of the ECU assembly harness connector EN61.

F Measure the resistance of the circuit between terminal 6 of the electronic throttle harness connector EN10 and terminal 98 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

G Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



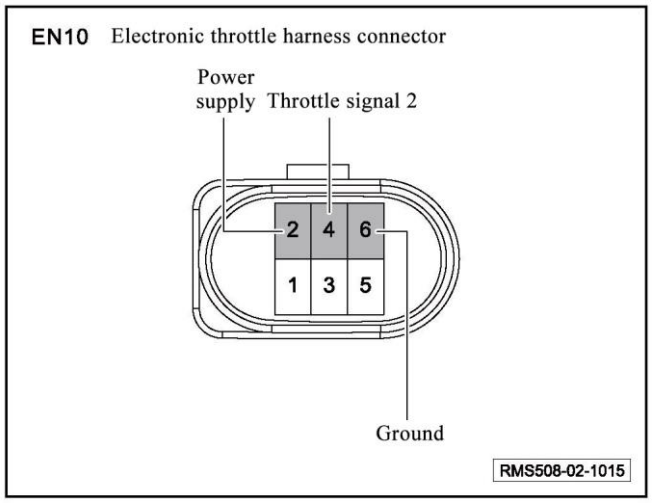
Yes

Step 7	Check whether the circuit between the electronic throttle position sensor 2 and the ECU assembly is open circuited.

A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector



EN61.

D Measure the resistance of the circuit between terminal 2 of the electronic throttle harness connector EN10 and terminal 103 of the ECU assembly harness connector EN61.

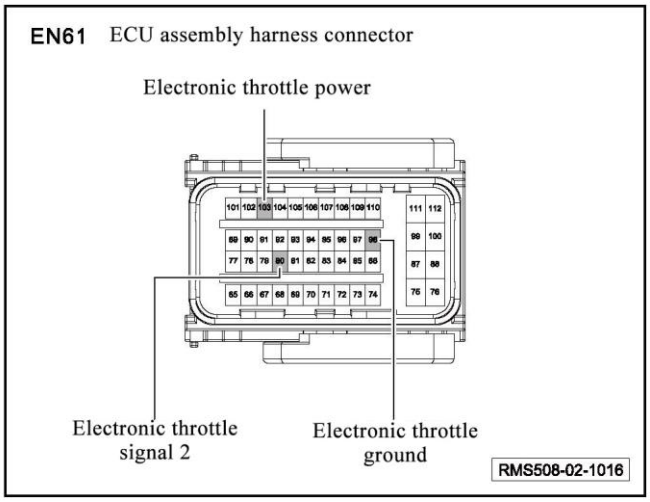
E Measure the resistance of the circuit between terminal 4 of the electronic throttle harness connector EN10 and terminal 80 of the ECU assembly harness connector EN61.

F Measure the resistance of the circuit between terminal 6 of the electronic throttle harness connector EN10 and terminal 98 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

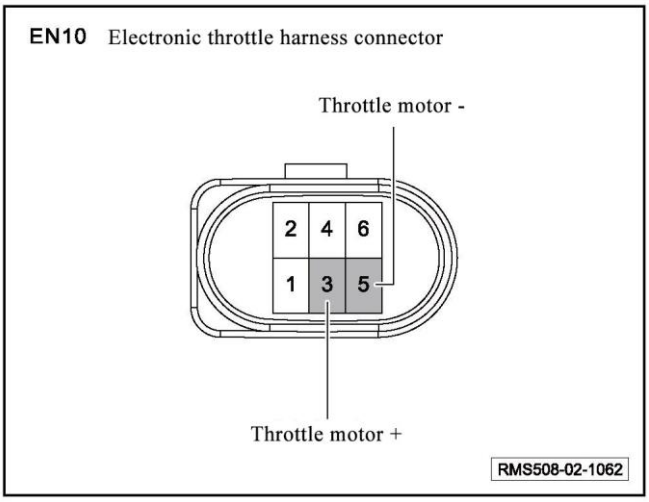
G Make sure that the measured value conforms to the standard value.

No	Replace or repair the harness or connector.



Yes

Step 8	Check the circuit between the electronic throttle drive motor and the ECU assembly.



A Turn the start switch to "OFF" position.

B Disconnect the electronic throttle harness connector EN10.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 3 of the electronic throttle harness connector EN10 and terminal 87 of the ECU assembly harness connector EN61.

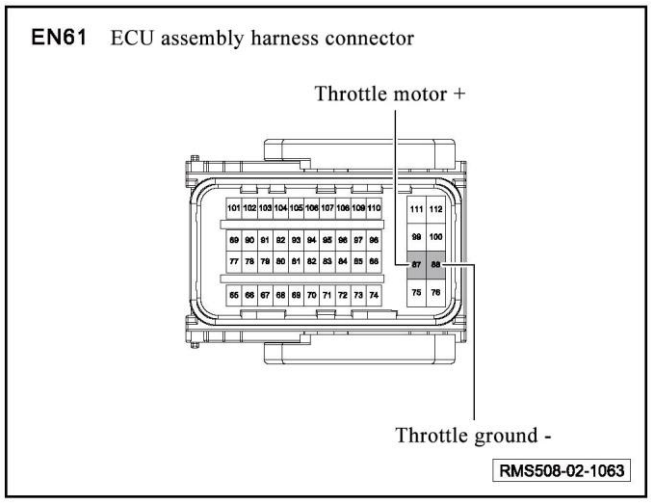
E Measure the resistance of the circuit between terminal 5 of the electronic throttle harness connector EN10 and terminal 88 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.



Yes

Step 9	Replace the electronic throttle body.

A Replace the electronic throttle body.
B Is the fault eliminated after replacing the electronic throttle body?

Yes → The system works normally.

No

Step 10	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

2.8.6.33 DTC: P044200, P045500

DTC	Description
P044200	Oil and gas leakage of fuel evaporation system
P045500	Serious oil and gas leakage of fuel evaporation system

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuel tank cover.

A Check whether the fuel tank cap is tightened or installed correctly.

No → Reinstall the fuel tank cap, and replace it if necessary.

Yes

Step 3	Check the carbon canister pipeline for leakage.

A Check the pipeline between the canister and the canister solenoid valve for leakage or blank plug.

B Check the pipeline between the canister solenoid valve and the intake manifold for leakage or blank plug.

C Check the pipeline between the canister and the fuel tank for leakage or blockage.

Yes → Repair or replace the pipeline.

No

Step 4	Check the canister solenoid valve.

A Check whether the canister solenoid valve works normally.

No → Replace the canister solenoid valve.

Yes

Step 5	Check the fuel tank leakage diagnosis module and connecting pipeline.

A Check the fuel tank leakage diagnosis module for damage and leakage.

B Check the fuel tank leakage diagnosis module and connecting pipe for leakage.

Yes → Repair or replace the fuel tank leakage diagnosis module and pipeline.

No

Step 6	Check the fuel tank pressure sensor.

A Check the fuel tank pressure sensor for damage or leakage.

Yes → Replace the fuel tank pressure sensor.

No

Step 7	Replace the canister assembly.

A Replace the canister assembly.

B Is the fault eliminated after replacing the canister assembly?

Yes → The system works normally.

No

Step 8	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes	The system works normally.

Next

Step 9	The diagnosis is over.

2.8.6.34 DTC: P123F00, P124000 ...

DTC	Description
P123F00	Linear oxygen sensor heater circuit low voltage
P124000	Linear oxygen sensor heater circuit high voltage
P124100	Linear oxygen sensor heater circuit open

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF39 of the front oxygen sensor.

A Check whether the fuse IF39 is blown.

No	Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse IF39.

A Check whether the fuse LF39 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.

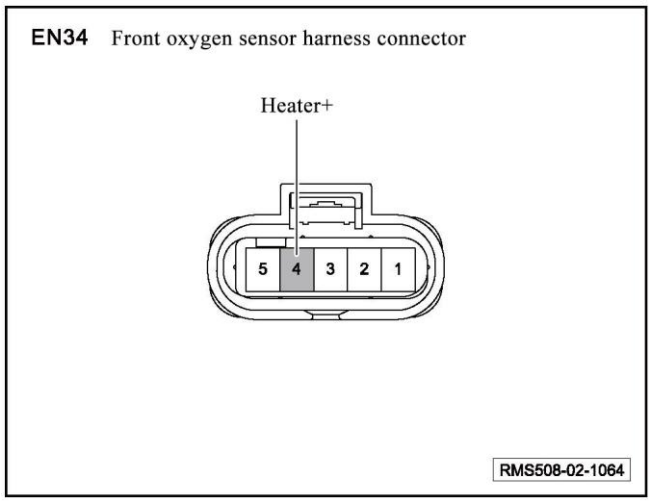
Rated value of fuse: LF39 7.5A

D Confirm whether the front oxygen sensor heater works normally.

Yes → The system works normally.

No

Step 4	Check the circuit of front oxygen sensor.



A Turn the start switch to "OFF" position.

B Disconnect the front oxygen sensor harness connector EN34.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 4 of the front oxygen sensor harness connector EN34 and the body ground.

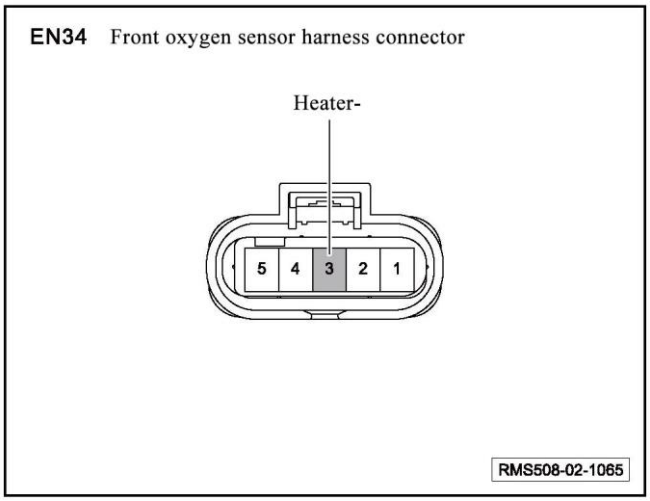
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit between the front oxygen sensor and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the front oxygen sensor harness connector EN34.

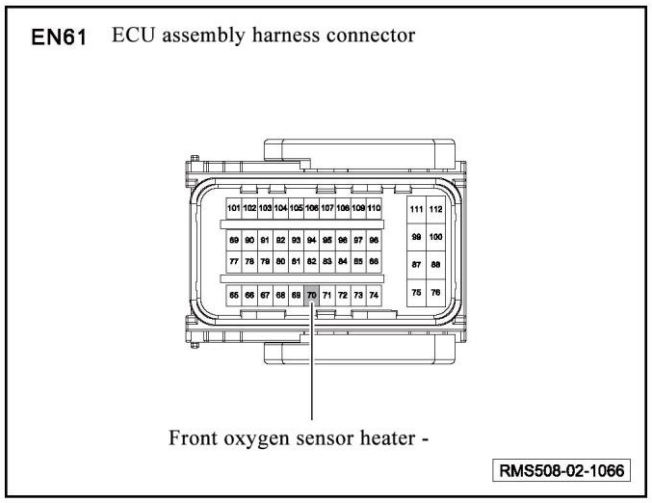
C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 3 of the front oxygen sensor harness connector EN34 and terminal 70 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

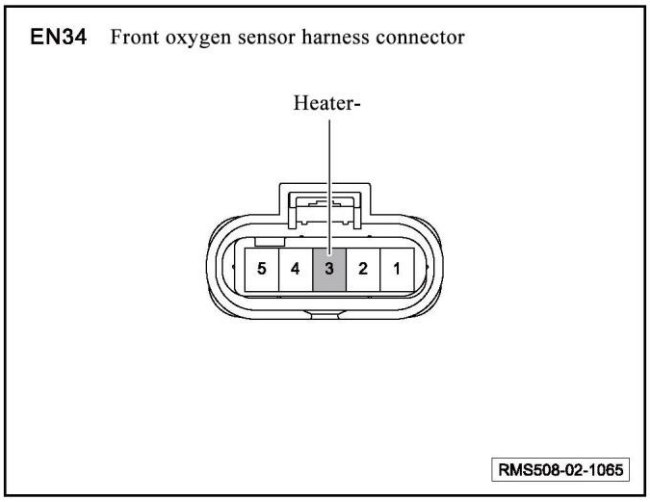
E Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



Yes

Step 6	Check whether the control circuit of the front oxygen sensor heater is short-circuited to ground.



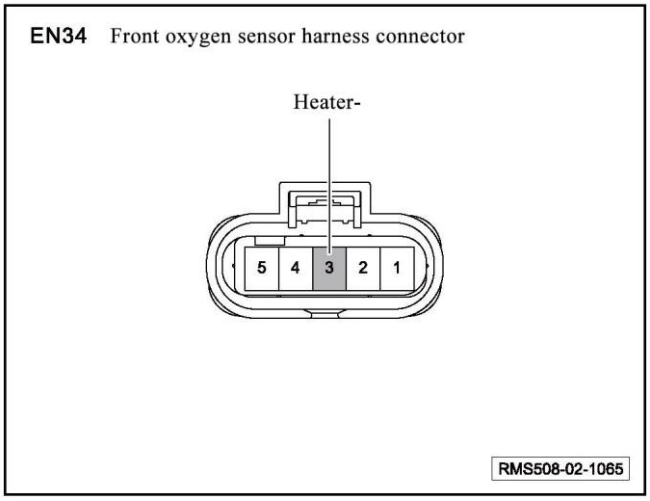
A Turn the start switch to "OFF" position.
B Disconnect the front oxygen sensor harness connector EN34.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance between terminal 3 of the front oxygen sensor harness connector EN34 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check whether the control circuit of the front oxygen sensor heater is short-circuited to power supply.

A Turn the start switch to "OFF" position.
B Disconnect the front oxygen sensor harness connector EN34.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 3 of the front oxygen sensor harness connector EN34 and the body ground.
Standard voltage value: 0V
F Make sure that the voltage conforms to the standard value.



No

Replace or repair the harness or connector.

Yes

Step 8	Replace the front oxygen sensor.

A Replace the front oxygen sensor.

B Is the fault eliminated after replacing the front oxygen sensor?

Yes → The system works normally.

No

Step 9	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

2.8.6.35 DTC: P040100, P040200

DTC	Description
P040100	Insufficient EGR flow
P040200	Excessive EGR flow

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the EGR control valve.

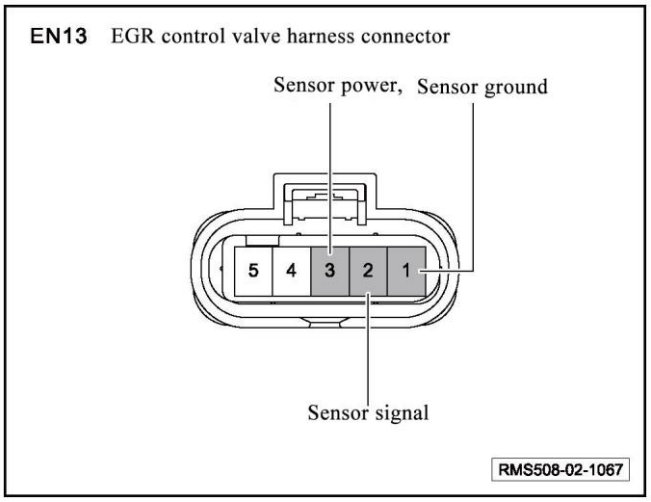
A Check the shell of the EGR control valve for leakage.

B Check the connection between the EGR control valve and the three-way catalytic converter assembly for leakage.

Yes → Repair or replace the faulty components.

No

Step 3	Check whether the circuit between the EGR control valve position sensor and the ECU assembly is open circuited.



A Turn the start switch to "OFF" position.

B Disconnect the EGR control valve harness connector EN13.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance of the circuit between terminal 1 of the EGR control valve harness connector EN13 and terminal 110 of the ECU assembly harness connector EN61.

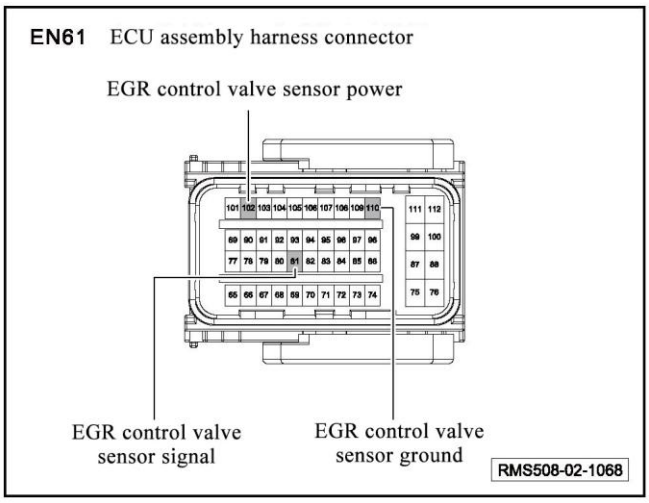
E Measure the resistance of the circuit between terminal 2 of the EGR control valve harness connector EN13 and terminal 81 of the ECU assembly harness connector EN61.

F Measure the resistance of the circuit between terminal 3 of the EGR control valve harness connector EN13 and terminal 102 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

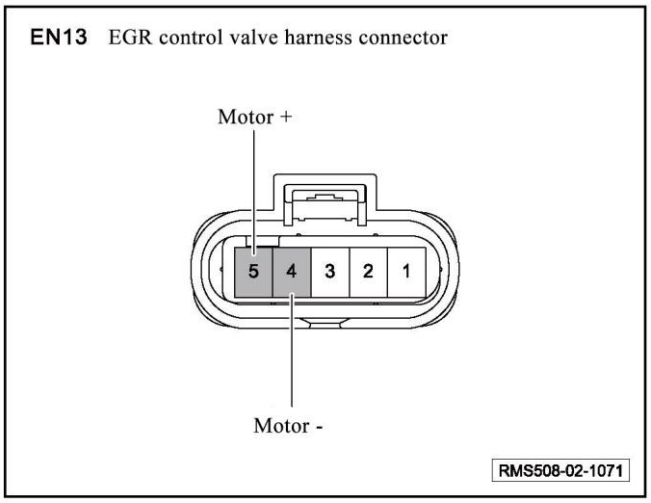
G Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



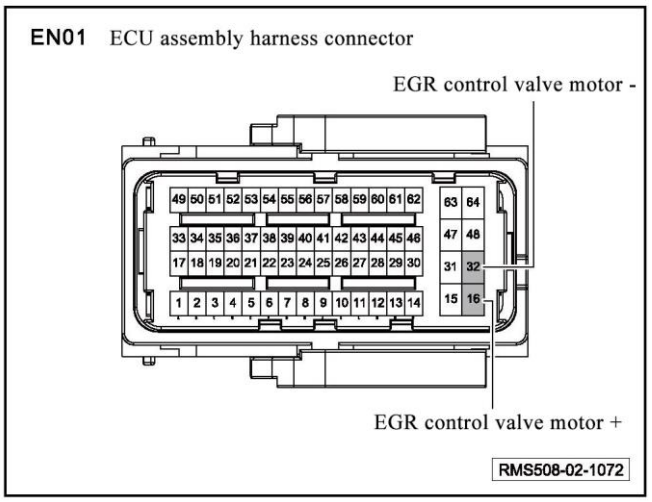
Yes

Step 4	Check the circuit between the EGR control valve drive motor and the ECU assembly.



A Turn the start switch to "OFF" position.
B Disconnect the EGR control valve harness connector EN13.
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance of the circuit between terminal 4 of the EGR control valve harness connector EN13 and terminal 32 of the ECU assembly harness connector EN01.
E Measure the resistance of the circuit between terminal 5 of the EGR control valve harness connector EN13 and terminal 16 of the ECU assembly harness connector EN01.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.



Yes

Step 5	Replace the EGR control valve.

A Replace the EGR control valve.
B Is the fault eliminated after replacing the EGR control valve?

Yes	The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.36 DTC: P040500, P040600

DTC	Description
P040500	EGR position sensor low voltage
P040600	EGR position sensor high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

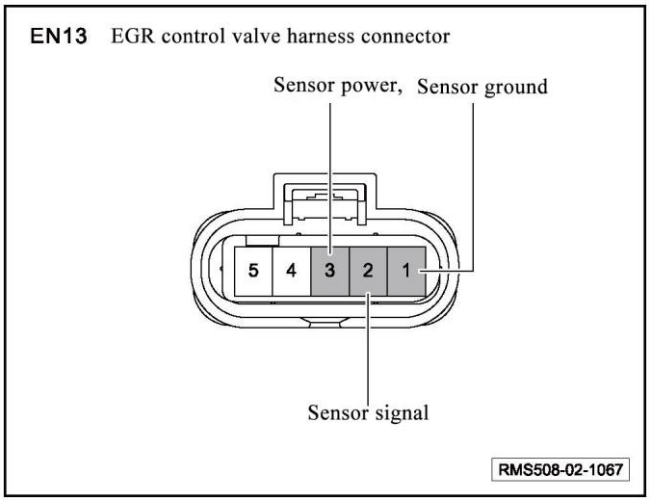
Step 2	Check the EGR control valve harness connector.

A Check the EGR control valve harness connector for corrosion, oxidation or looseness.

Yes → Replace or repair the harness or connector.

No

Step 3	Check whether the circuit between the EGR control valve position sensor and the ECU assembly is open circuited.



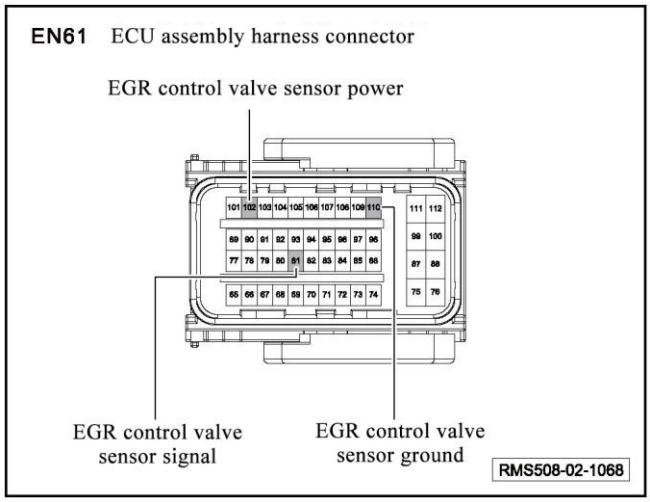
A Turn the start switch to "OFF" position.
B Disconnect the EGR control valve harness connector EN13.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 1 of the EGR control valve harness connector EN13 and terminal 110 of the ECU assembly harness connector EN61.
E Measure the resistance of the circuit between terminal 2 of the EGR control valve harness connector EN13 and terminal 81 of the ECU assembly harness connector EN61.
F Measure the resistance of the circuit between terminal 3 of the EGR control valve harness

connector EN13 and terminal 102 of the ECU assembly harness connector EN61.

Standard resistance value: <1Ω

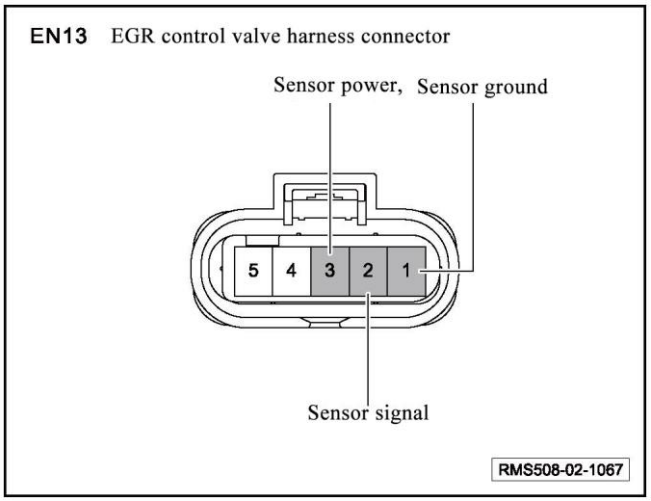
G Make sure that the measured value conforms to the standard value.

No	Replace or repair the harness or connector.



Yes

Step 4	Check whether the circuit between the EGR control valve position sensor and the ECU assembly is short circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the EGR control valve harness connector EN13.

C Disconnect ECU assembly harness connector EN61.

D Measure the resistance between terminal 1 of the EGR control valve harness connector EN13 and the body ground.

E Measure the resistance between terminal 2 of the EGR control valve harness connector EN13 and the body ground.

F Measure the resistance between terminal 3 of the EGR control valve harness connector EN13 and the body ground.

Standard resistance value: 10 kΩ or higher

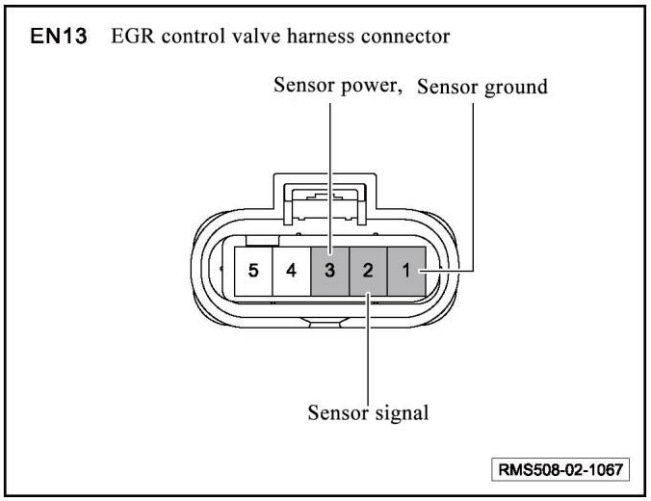
G Confirm if the resistance conforms to the standard value

No

	Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit between the EGR control valve position sensor and the ECU assembly is short circuited to power.



A Turn the start switch to "OFF" position.
B Disconnect the EGR control valve harness connector EN13.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the EGR control valve harness connector EN13 and the body ground.
F Measure the voltage between terminal 2 of the EGR control valve harness connector EN13 and the body ground.
G Measure the voltage between terminal 3 of the EGR control valve harness connector EN13 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Replace the EGR control valve.

A Replace the EGR control valve.
B Is the fault eliminated after replacing the EGR control valve?

Yes → The system works normally.

No

Step 7	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

2.8.6.37 DTC: P040C00, P040D00

DTC	**DTC definition**
P040C00	EGR temperature sensor low voltage
P040D00	EGR temperature sensor high voltage

1. Diagnosis steps

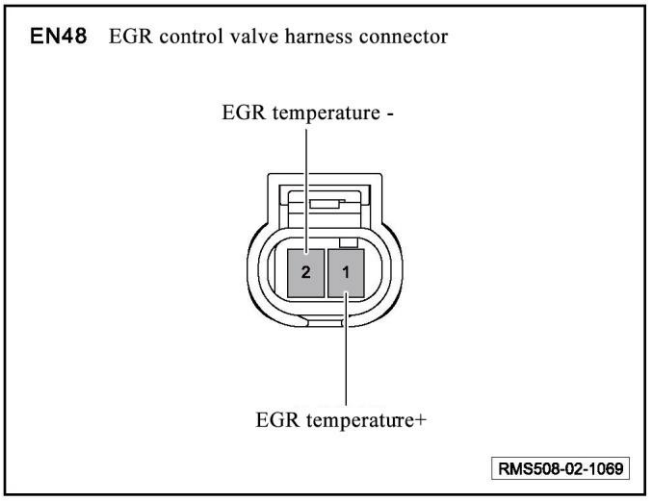
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

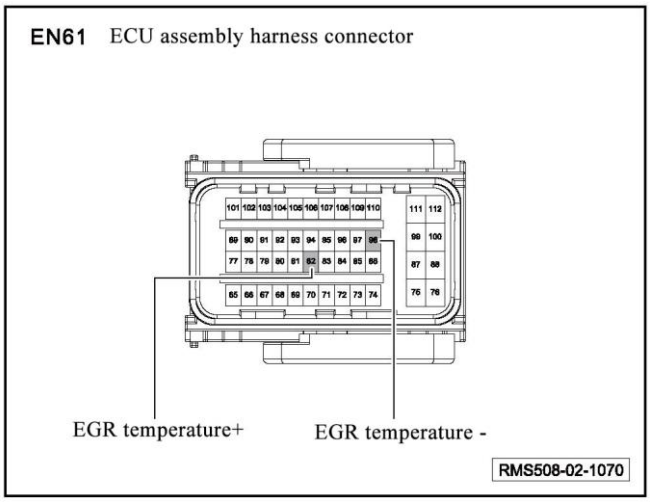
Yes

Step 2	Check whether the circuit between the EGR temperature sensor and the ECU assembly is open circuited.



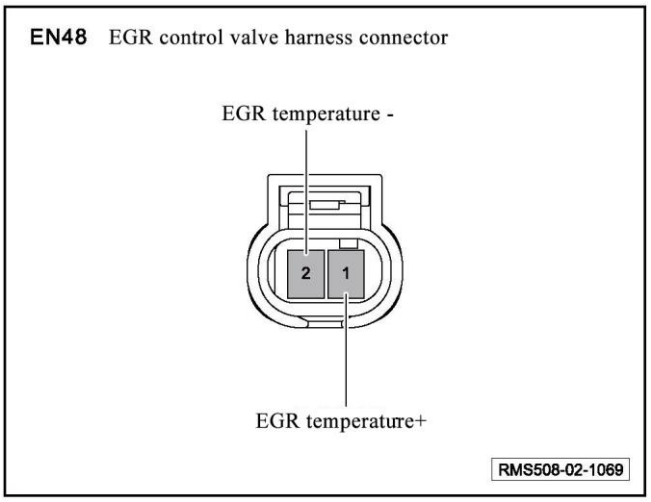
A Turn the start switch to "OFF" position.
B Disconnect EGR temperature sensor harness connector EN48.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance of the circuit between terminal 1 of the EGR temperature sensor harness connector EN48 and terminal 82 of the ECU assembly harness connector EN61.
E Measure the resistance of the circuit between terminal 2 of the EGR temperature sensor harness connector EN48 and terminal 98 of the ECU assembly harness connector EN61.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.


EN61 ECU assembly harness connector
EGR temperature+
EGR temperature -
RMS508-02-1070

Yes

Step 3	Check whether the control circuit of the EGR temperature sensor is short-circuited to ground.

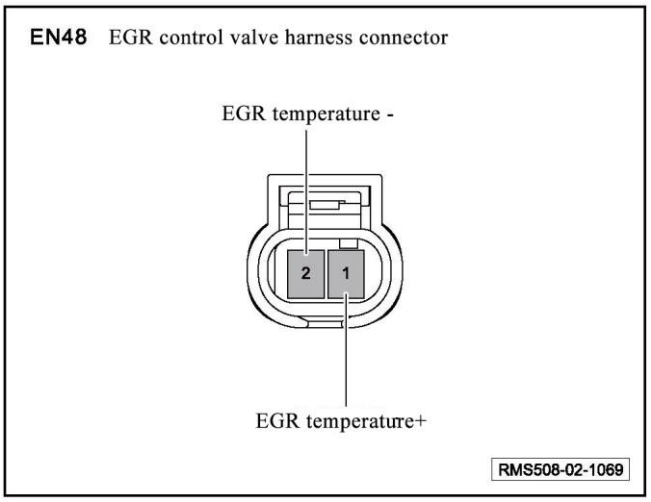


A Turn the start switch to "OFF" position.
B Disconnect EGR temperature sensor harness connector EN48.
C Disconnect ECU assembly harness connector EN61.
D Measure the resistance between terminal 1 of the EGR temperature sensor harness connector EN48 and the body ground.
E Measure the resistance between terminal 2 of the EGR temperature sensor harness connector EN48 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the EGR temperature sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect EGR temperature sensor harness connector EN48.
C Disconnect ECU assembly harness connector EN61.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the EGR temperature sensor harness connector EN48 and the body ground.
F Measure the voltage between terminal 2 of the EGR temperature sensor harness connector EN48 and the body ground.
Standard voltage value: 0V
G Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the EGR temperature sensor.

A Replace the EGR temperature sensor.
B Is the fault eliminated after replacing the EGR temperature sensor?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.38 DTC: P048700, P048900 ...

DTC	Description
P048700	EGR valve drive circuit open
P048900	EGR valve drive circuit short-circuited to ground
P049000	EGR valve drive circuit short-circuited to power supply

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

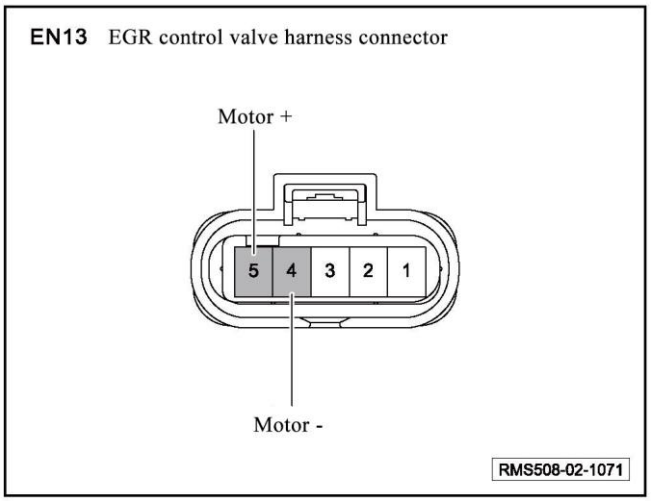
Step 2	Check the EGR control valve harness connector.

A Check the EGR control valve harness connector for corrosion, oxidation or looseness.

Yes → Replace or repair the harness or connector.

No

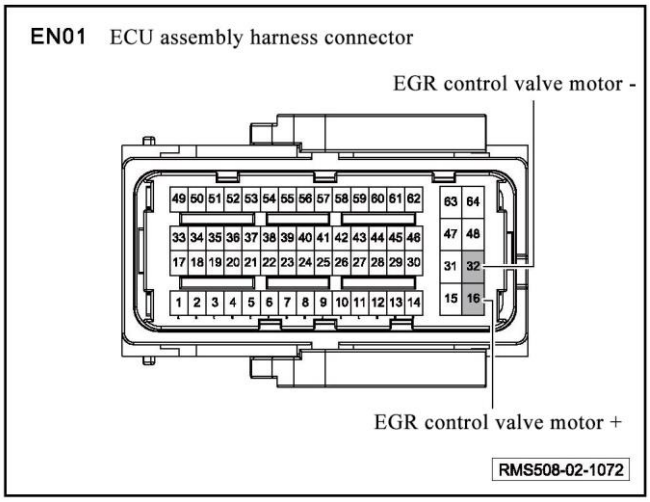
Step 3	Check the circuit between the EGR control valve drive motor and the ECU assembly.



A Turn the start switch to "OFF" position.
B Disconnect the EGR control valve harness connector EN13.
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance of the circuit between terminal 4 of the EGR control valve harness connector EN13 and terminal 32 of the ECU assembly harness connector EN01.
E Measure the resistance of the circuit between terminal 5 of the EGR control valve harness connector EN13 and terminal 16 of the ECU assembly harness connector EN01.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the

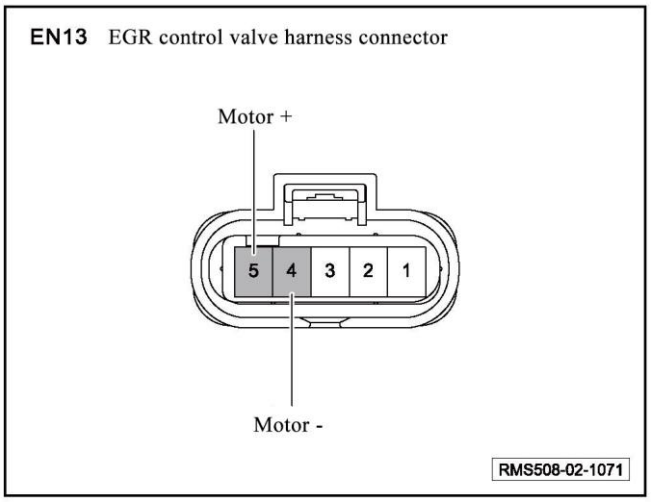
standard value

No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the circuit between the EGR control valve drive motor and the ECU assembly is short circuited to ground.



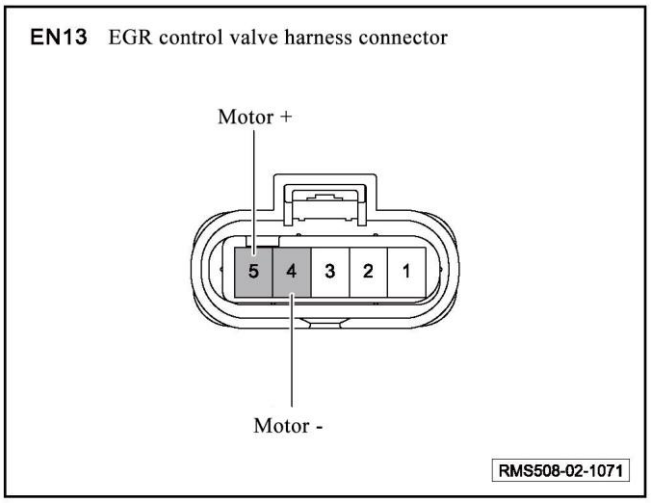
A Turn the start switch to "OFF" position.
B Disconnect the EGR control valve harness connector EN13.
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance between terminal 4 of the EGR control valve harness connector EN13 and the body ground.
E Measure the resistance between terminal 5 of the EGR control valve harness connector EN13 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit between the EGR control valve drive motor and the ECU assembly is short circuited to power.

A Turn the start switch to "OFF" position.
B Disconnect the EGR control valve harness connector EN13.
C Disconnect the ECU assembly harness connector EN01.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 4 of the



EGR control valve harness connector EN13 and the body ground.

F Measure the voltage between terminal 5 of the EGR control valve harness connector EN13 and the body ground.

Standard voltage value: 0V

G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the EGR control valve.

A Replace the EGR control valve.

B Is the fault eliminated after replacing the EGR control valve?

Yes → The system works normally.

No

Step 7	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

2.8.6.39 DTC: P045200, P045300

DTC	Description
P045200	Fuel tank pressure sensor signal low voltage
P045300	Fuel tank pressure sensor signal high voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Start the engine, let the engine run at idle speed for about 5 minutes, and conduct relevant simulated actuation test of fault symptom. If the engine cannot be started, do not continue to start it.

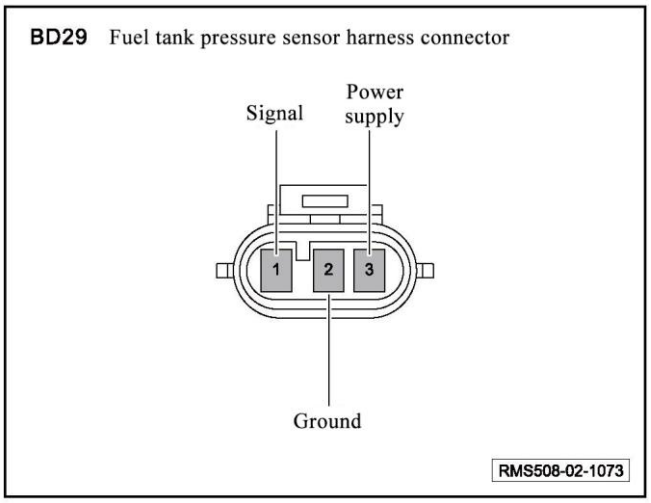
E Read the DTC again.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the fuel tank pressure sensor and the fuel pump controller.



A Turn the start switch to "OFF" position.

B Disconnect the fuel tank pressure sensor harness connector BD29.

C Disconnect the fuel pump controller harness connector BD50.

D Measure the resistance of the circuit between terminal 1 of the fuel tank pressure sensor harness connector BD29 and terminal 17 of the fuel pump controller harness connector BD50.

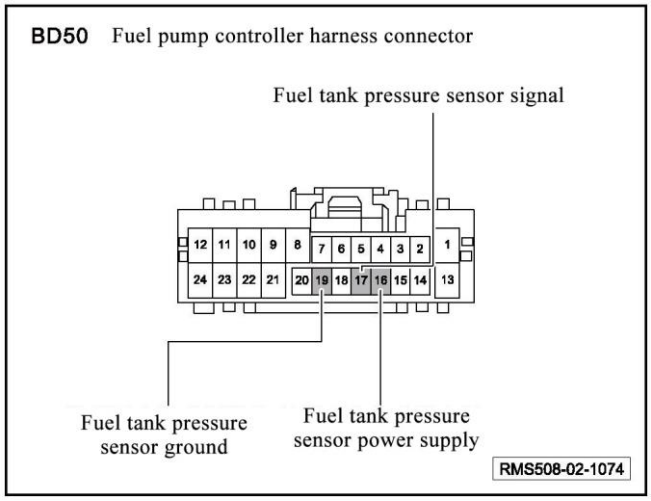
E Measure the resistance of the circuit between terminal 2 of the fuel tank pressure sensor harness connector BD29 and terminal 19 of the fuel pump controller harness connector BD50.

F Measure the resistance of the circuit between terminal 3 of the fuel tank pressure sensor harness connector BD29 and terminal 16 of the fuel pump controller harness connector BD50.

Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.



Yes

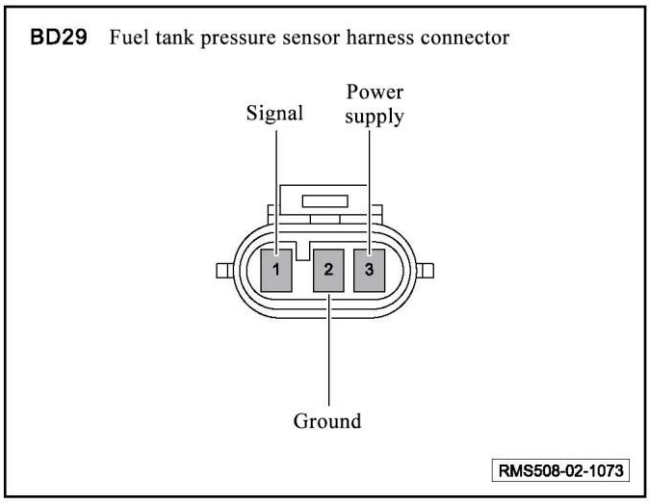
Step 3	Check whether the circuit between the fuel tank pressure sensor and the fuel pump controller is short circuited to ground.

A Turn the start switch to "OFF" position.

B Disconnect the fuel tank pressure sensor harness connector BD29.

C Disconnect the fuel pump controller harness connector BD50.

D Measure the resistance between terminal 1 of the fuel tank pressure sensor harness connector BD29 and the body ground.



Yes

E Measure the resistance between terminal 2 of the fuel tank pressure sensor harness connector BD29 and the body ground.

F Measure the resistance between terminal 3 of the fuel tank pressure sensor harness connector BD29 and the body ground.

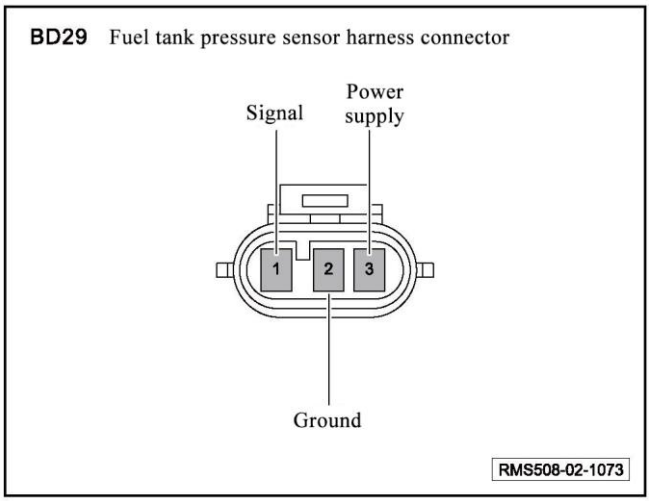
Standard resistance value: 10 kΩ or higher

G Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

Step 4	Check whether the circuit between the fuel tank pressure sensor and the fuel pump controller is short circuited to power.

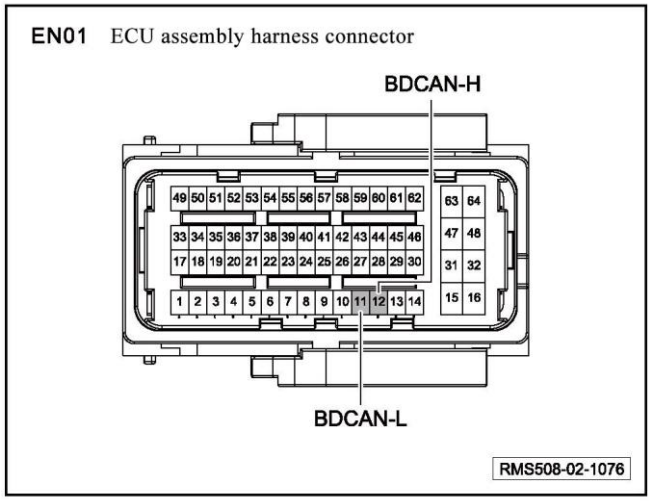


A Turn the start switch to "OFF" position.
B Disconnect the fuel tank pressure sensor harness connector BD29.
C Disconnect the fuel pump controller harness connector BD50.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the fuel tank pressure sensor harness connector BD29 and the body ground.
F Measure the voltage between terminal 2 of the fuel tank pressure sensor harness connector BD29 and the body ground.
G Measure the voltage between terminal 3 of the fuel tank pressure sensor harness connector BD29 and the body ground.
Standard voltage value: 0V
H Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

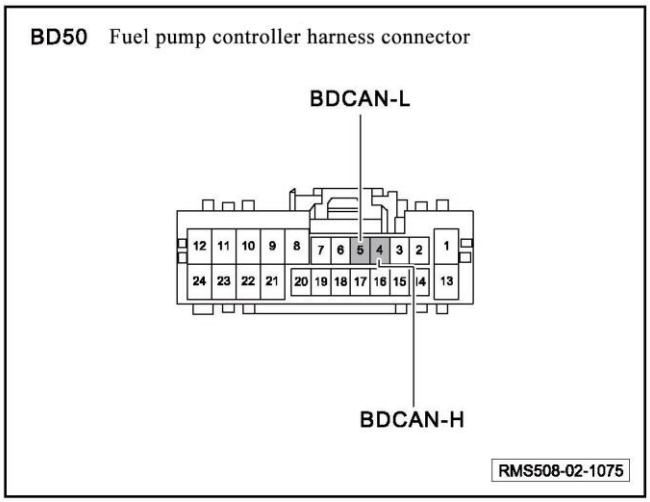
Yes

Step 5	Check the CAN data communication wire between the ECU assembly and the fuel pump controller.



A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Disconnect the fuel pump controller harness connector BD50.
D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 5 of the fuel pump controller harness connector BD50.
E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 4 of the fuel pump controller harness connector BD50.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 6	Replace the fuel tank pressure sensor.

A Replace the fuel tank pressure sensor.
B Is the fault eliminated after replacing the tank pressure sensor?

Yes — The system works normally.

No

Step 7	Replace the oil pump controller.

A Replace the oil pump controller.
B Is the fault eliminated after replacing the fuel pump controller?

Yes — The system works normally.

No

Step 8	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes — The system works normally.

Next

Step 9	The diagnosis is over.

2.8.6.40 DTC: U029387

DTC	Description
U029387	Lost communication with VCU

1. Diagnosis steps

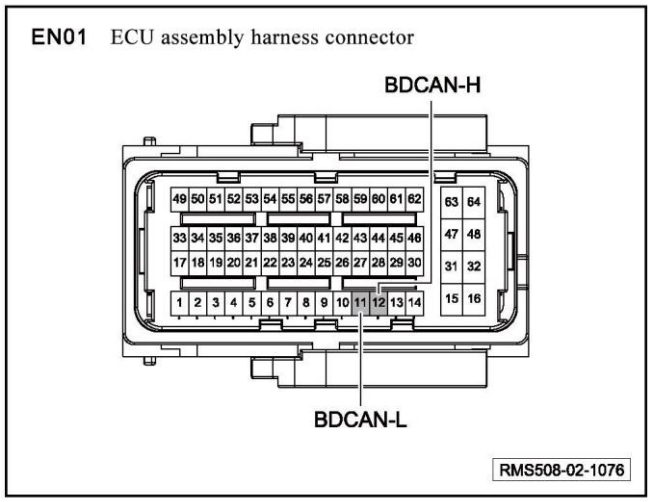
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

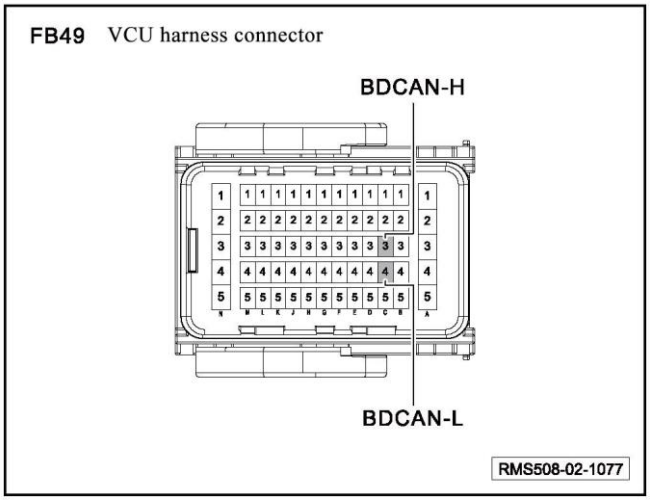
No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the VCU.



A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Disconnect the VCU harness connector FB49.
D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal C4 of the VCU harness connector FB49.
E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal C3 of the VCU harness connector FB49.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the standard value



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

2.8.6.41 DTC: U016487

DTC	Description
U016487	Lost communication with AC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

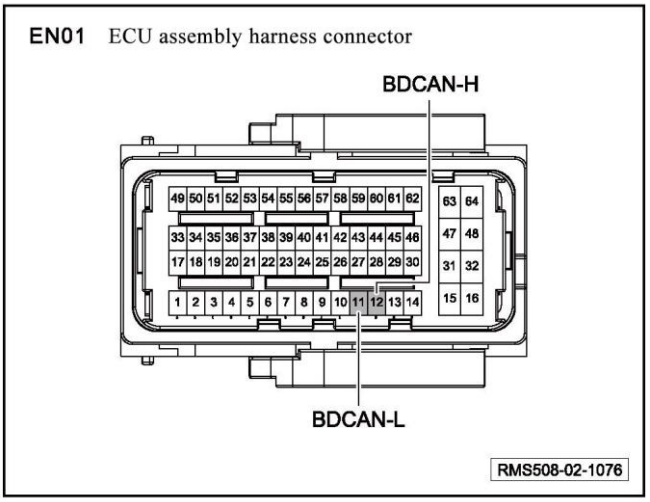
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the ECU assembly harness connector EN01.

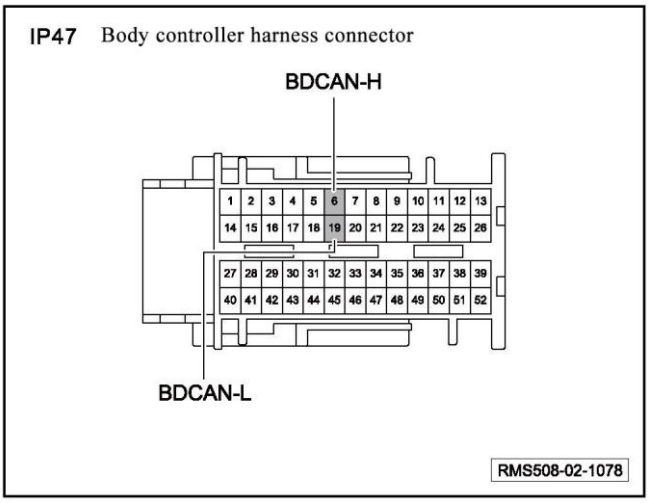
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 19 of the body controller harness connector IP47.

E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 6 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

2.8.6.42 DTC: U012287

DTC	Description
U012287	Lost communication with ESP

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

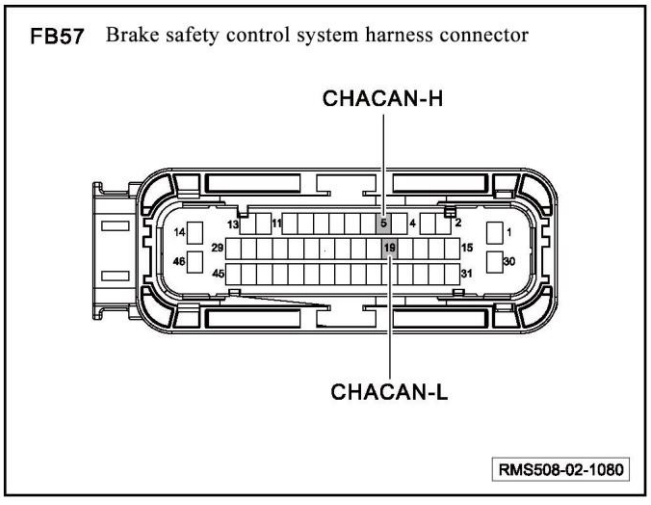
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.

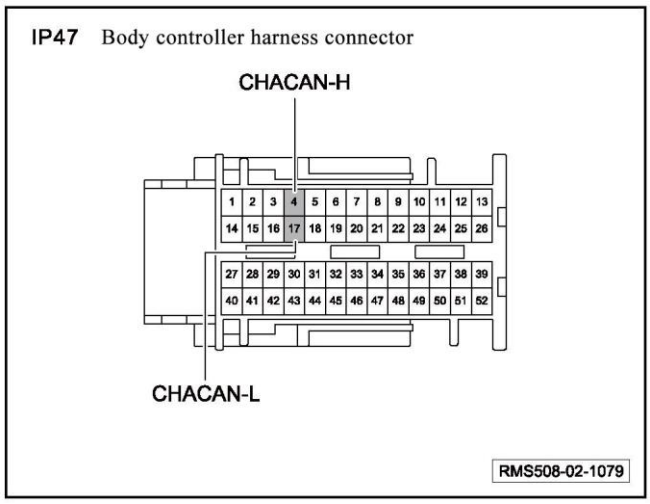
E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value

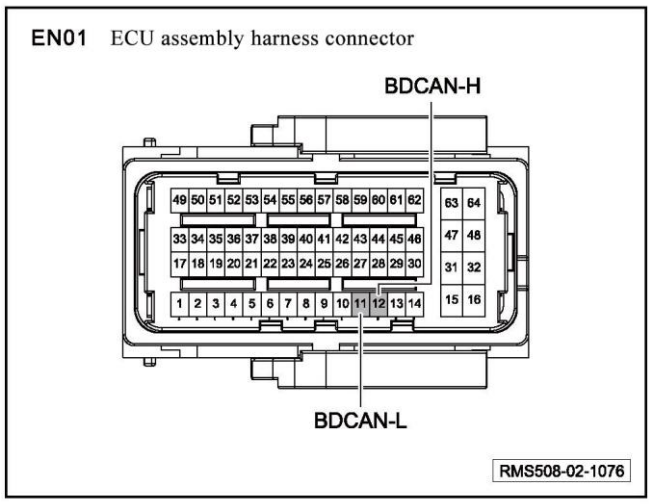
No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the ECU assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the ECU assembly harness connector EN01.

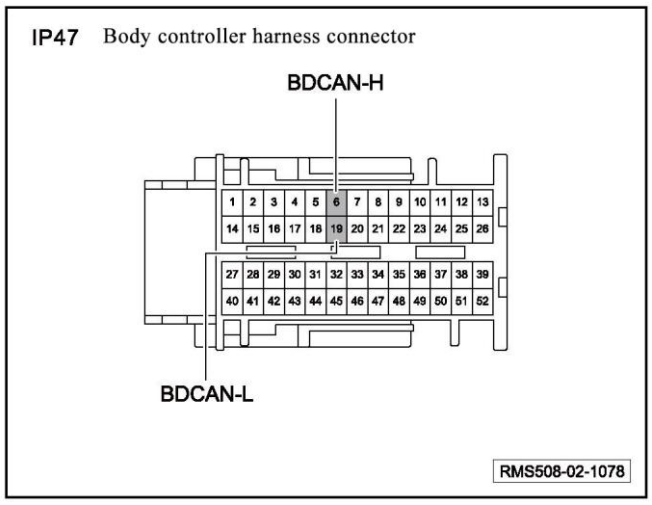
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 19 of the body controller harness connector IP47.

E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 6 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.43 DTC: U031187

DTC	Description
U031187	Lost communication with GCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

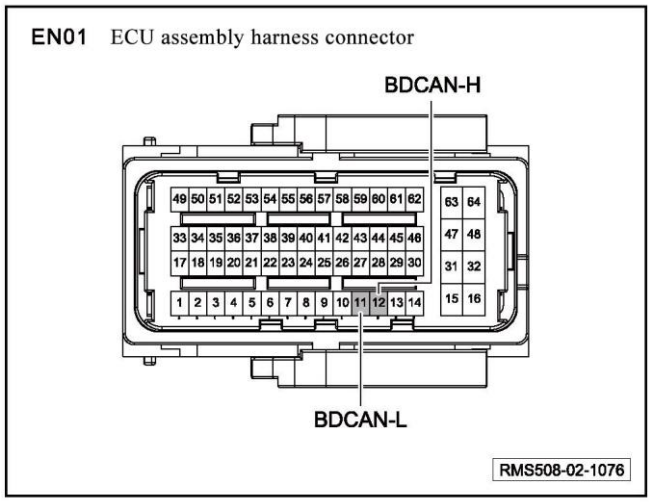
D Read the DTC again.

E Check whether the same DTC is displayed.

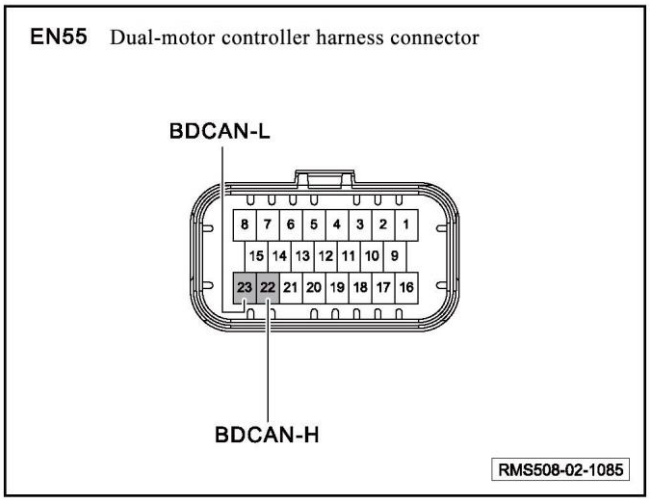
No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the dual motor controller.



A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Disconnect dual-motor harness connector EN55.
D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 23 of the dual motor controller harness connector EN55.
E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 22 of the dual motor controller harness connector EN55.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the standard value



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.
B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

2.8.6.44 DTC: U015587

DTC	Description
U015587	Lost communication with IC

1. Diagnosis steps

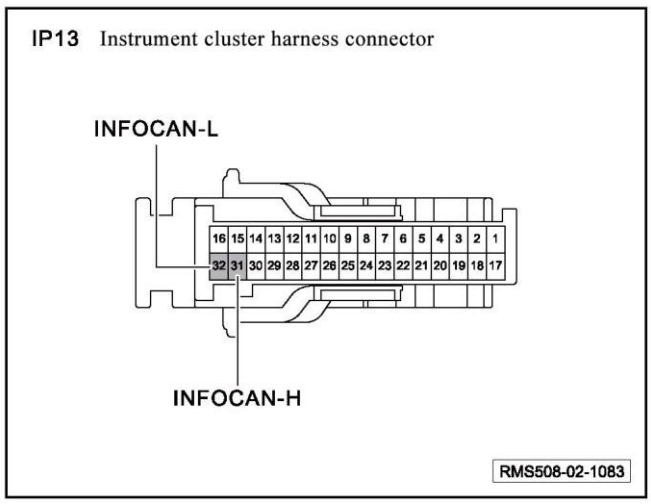
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

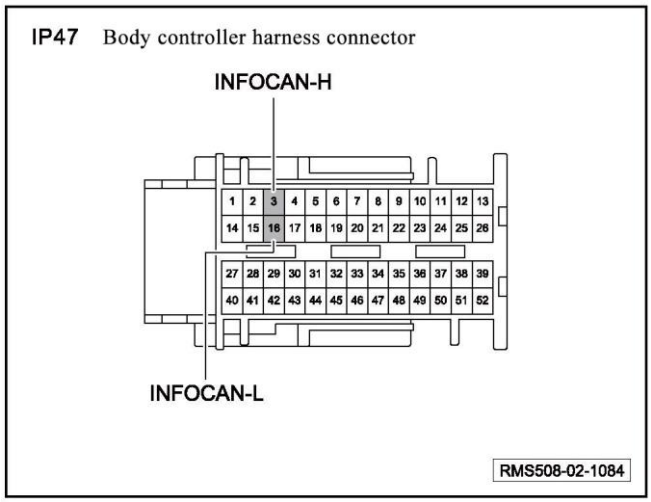
Yes

Step 2	Check the CAN data communication wire between the instrument cluster and the body controller.



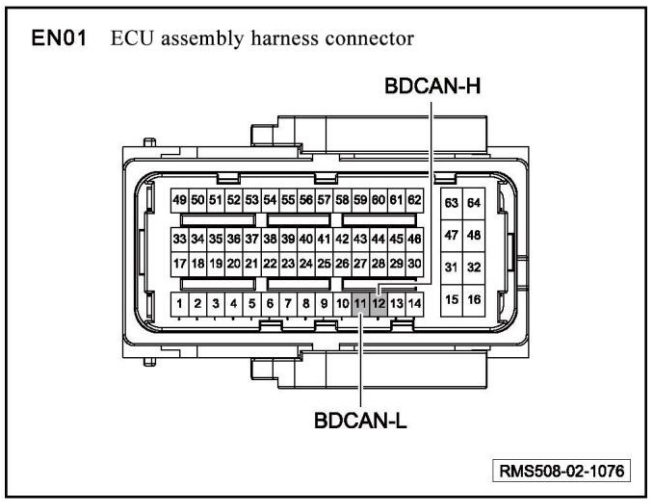
A Turn the start switch to "OFF" position.
B Disconnect the instrument cluster harness connector IP13.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 31 of the combination instrument harness connector IP13 and terminal 3 of the body controller harness connector IP47.
E Measure the resistance between terminal 32 of the instrument cluster harness connector IP13 and terminal 16 of the body controller harness connector IP47.
Standard resistance value: <1Ω
F Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the ECU assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the ECU assembly harness connector EN01.

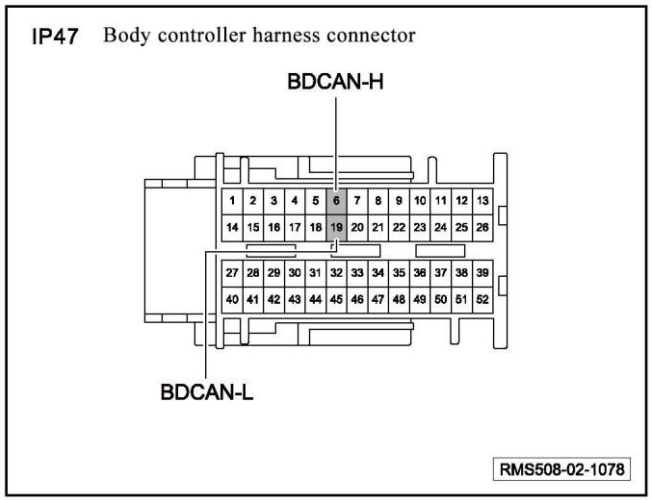
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 19 of the body controller harness connector IP47.

E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 6 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

No

Step 6	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

2.8.6.45 DTC: U010987

DTC	Description
U010987	Lost communication with PCM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

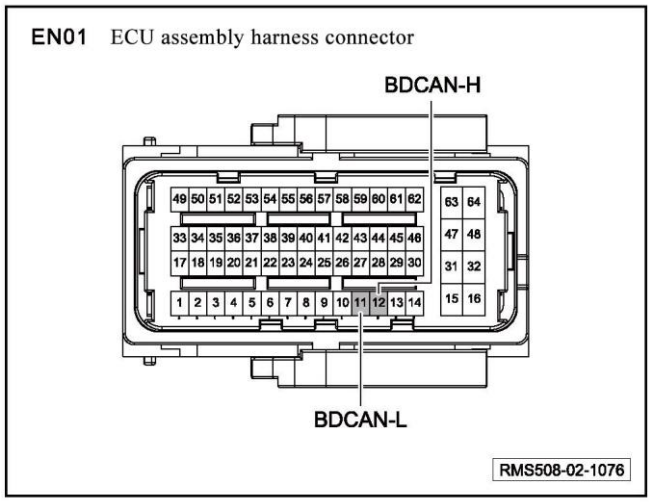
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the fuel pump controller.



A Turn the start switch to "OFF" position.

B Disconnect the ECU assembly harness connector EN01.

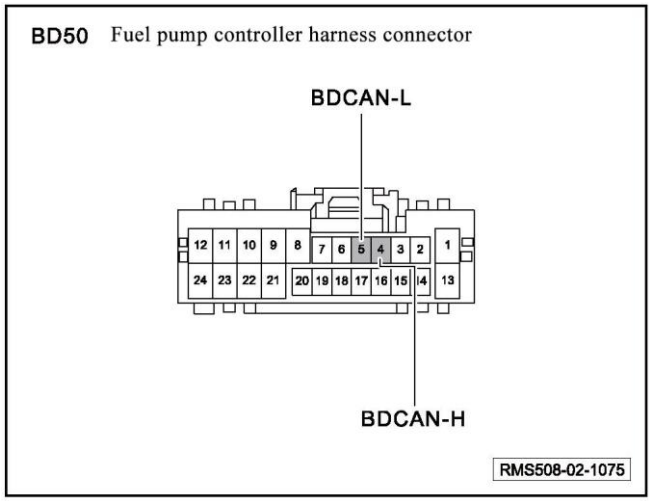
C Disconnect the fuel pump controller harness connector BD50.

D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 5 of the fuel pump controller harness connector BD50.

E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 4 of the fuel pump controller harness connector BD50.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the oil pump controller.

A Check whether the power supply ground wire of the oil pump controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the oil pump controller.

A Replace the oil pump controller.

B Is the fault eliminated after replacing the fuel pump controller?

Yes → The system works normally.

No

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

2.8.6.46 DTC: U007588

DTC	Description
U007588	BUS OFF

1. Diagnosis steps

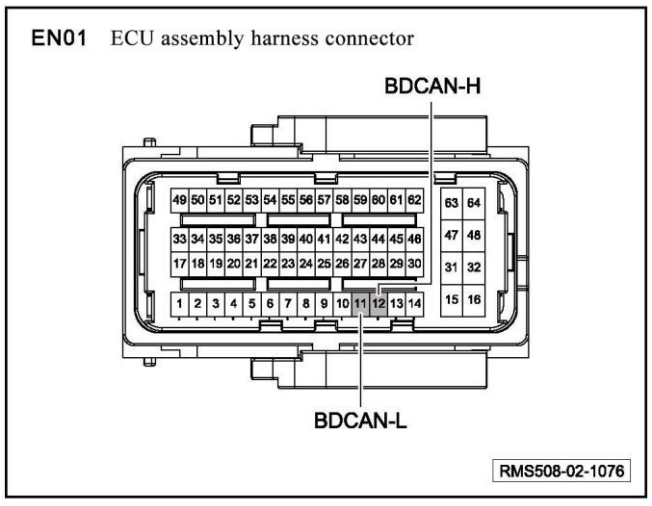
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Measure the resistance between terminal 11 and terminal 12 of the ECU assembly harness connector EN01.
Standard resistance value: about 120Ω
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

Yes → Repair or replace the harness.

Yes

Step 4	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

2.8.7 Removal and installation

2.8.7.1 Removal and installation of PCJ control valve

Disassembly procedures

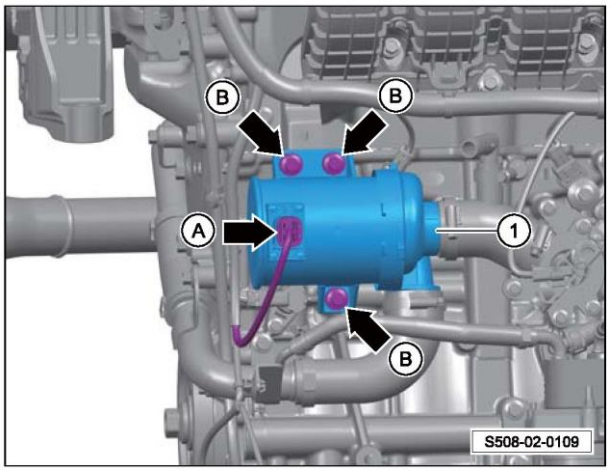
Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

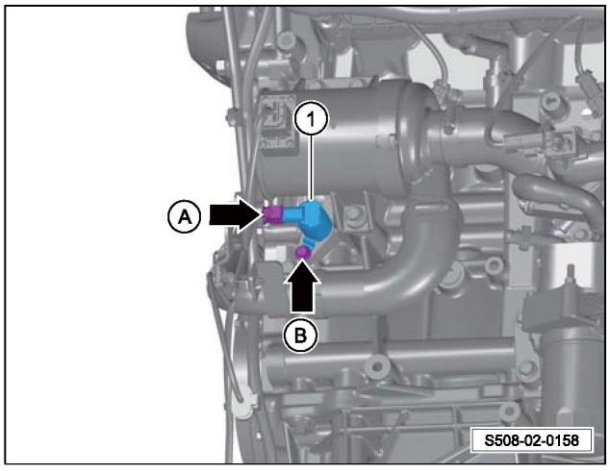


4 Remove the PCJ control valve

a. Disconnect the connector of the engine electronic pump ① (see arrow A).

b. Unscrew the fixing bolt (see the arrow), and remove the engine electronic pump ①.

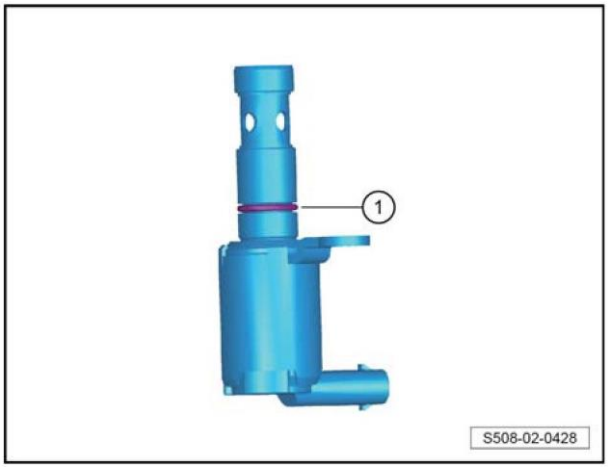
- Tightening torque of bolt (see arrow **B**): **25N·m**



c. Disconnect the connector of the PCJ control valve (see arrow A).

d. Unscrew the fixing bolt (see arrow B), and remove the PCJ control valve ①.

- Tightening torque of bolt (see arrow **B**): **10 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Clear the greasy dirt and foreign matters from the PCJ control valve and detection end.
- Replace the sealing ring ① with a new one.

2.8.7.2 Removal and installation of central electromagnet

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

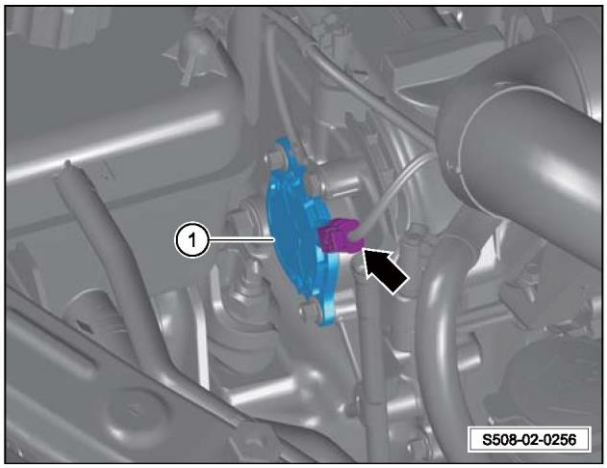
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

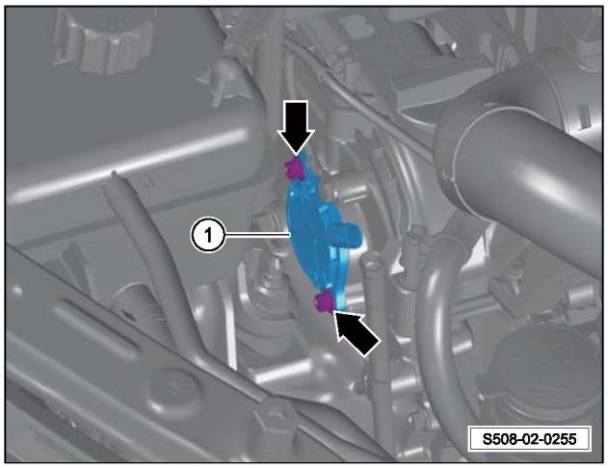
5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



7 Removal of central electromagnet

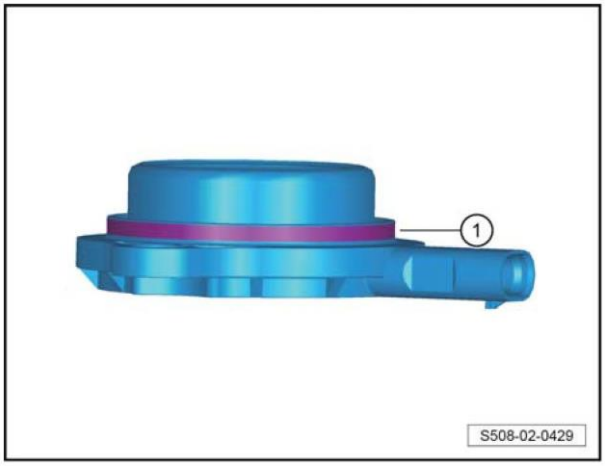
a. Disconnect the connector of the central electromagnet ① (see the arrow).



b. Unscrew the fixing bolts (see the arrow) and take out the central electromagnet ①.

- Tightening torque of bolt: 10±1 N·m

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace with a new O-ring ① before installing the central electromagnet.

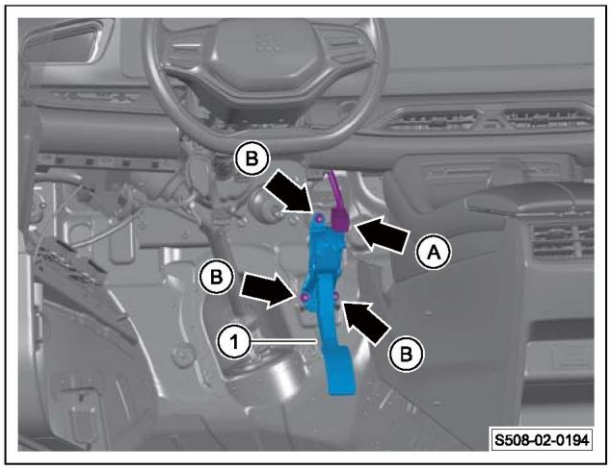
– Check whether the new O-ring ① is complete.

2.8.7.3 Removal and installation of electronic accelerator pedal assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the electronic accelerator pedal assembly

a. Disconnect the connector (see arrow A) of the electronic accelerator pedal assembly.

b. Unscrew the fixing nuts (see arrow B) and take out the electronic accelerator pedal assembly ①.

- Tightening torque of nut (see arrow B): 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.8.7.4 Removal and installation of electronic control unit (ECU) assembly

Disassembly procedures

Note:

Carefully remove and install the ECU to avoid collision and moisture.

During removal and installation, do not touch connector pins with your hands or forcefully remove the housing. Otherwise, the internal elements can be damaged.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

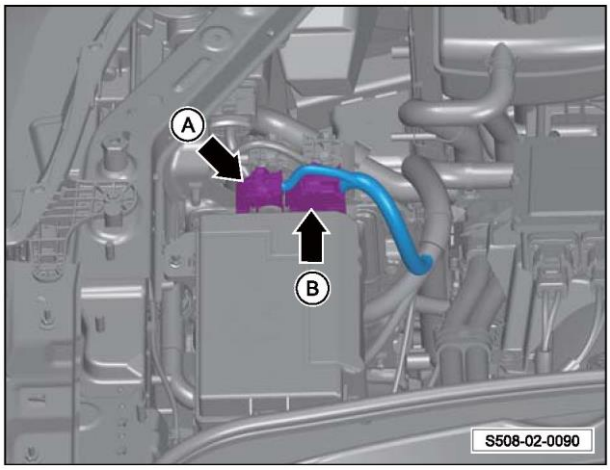
4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

5 Remove the engine compartment trim panel assembly

II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

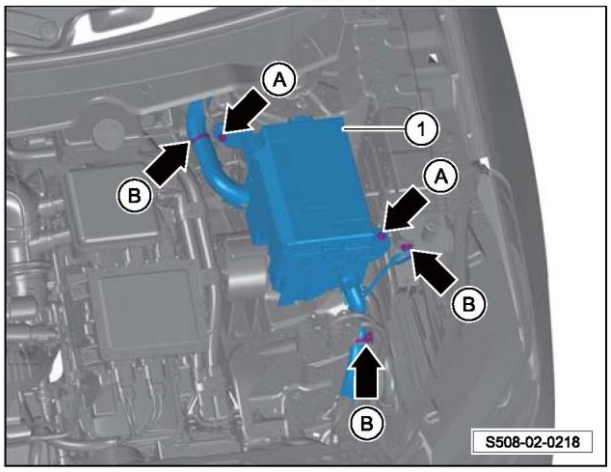
6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

7 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

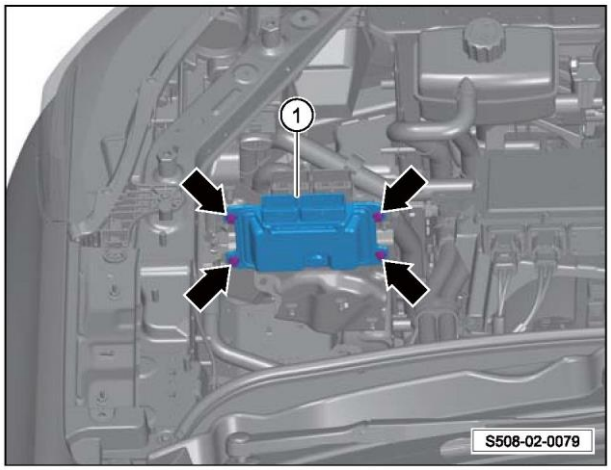


8 Remove electronic control unit (ECU) assembly

a. Disconnect the connector of the ECU assembly (see arrows A and B).



b. Unscrew the fixing bolt (see arrow A), disengage the fixing clip (see arrow B), and remove the fuse box assembly ①.



c. Unscrew the fixing bolt (see the arrow), and take out the ECU assembly ①.

- Tightening torque of bolt: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After replacing the ECU assembly, use a diagnostic scanner for after-sales matching for the ECU. Refer to 1.4.2.6 After-sales matching after module replacement

2.9 Cooling system

2.9.1 Specification

2.9.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Water reservoir assembly	Hexagon head flange bolt M6×16	8±1
Engine coolant pump assembly	Bolt	25
Condenser assembly	Hexagon head flange bolt M6×16	6±1
Radiator upper mounting bracket and water tank upper crossmember	Hexagon head flange bolt M6×1.0×12	10±1
Engine coolant temperature sensor	M12×1.5	23

2.9.2 Description and operation

2.9.2.1 Overview and operation

Overview of cooling system

When the engine is working, the mixture burning in the cylinder combustion chamber will generate high temperature that will be transferred through the cylinder block. If the engine is not cooled, it will not be able to work. Therefore, a coolant channel is set in the cylinder block for heat exchange with the outside through the circulation of coolant. In this way, the working temperature of the engine can be kept within a certain range, so that the engine can work effectively under all conditions. The cooling system includes radiator, expansion tank assembly, cooling fan assembly, thermostat component, and water pump assembly. The cooling system can work normally only if the above components function normally.

The fan is driven by radiator fan motor in the mode of controller stepless speed regulation. The cooling fan is directly controlled by the body controller. When the body controller receives the fan request instruction of the ECU through CAN bus, the body controller carries out stepless speed adjustment of the fan. When the engine coolant temperature reaches more than 93°C, the body controller makes the cooling fan running at a low speed, and the speed of the cooling fan increases as the engine coolant temperature increases. When the engine coolant temperature reaches 105°C, the speed of the cooling fan is the highest. The speed of the cooling fan decreases as the temperature gradually decreases. When the temperature decreases to 93°C, the fan is shut down.

Coolant temperature sensor

With NTC thermistors of rapid response characteristics as the core temperature sensing element, the coolant temperature sensor consists of 2 thermistors, and their resistances decrease with the increasing of coolant temperature but not linearly.

The coolant temperature sensor is installed on the main water pipe of the cylinder head. ECU figures out the optimal control scheme based on the signals provided by the coolant temperature sensor and also transfers the temperature information to instruments to indicate the current engine working temperature.

Notes for operation of the cooling system

Even when the engine is not running, the cooling fan assembly under the engine compartment may also start. Therefore, keep your hands, clothes and tools away from the cooling fan assembly blades under the engine compartment.

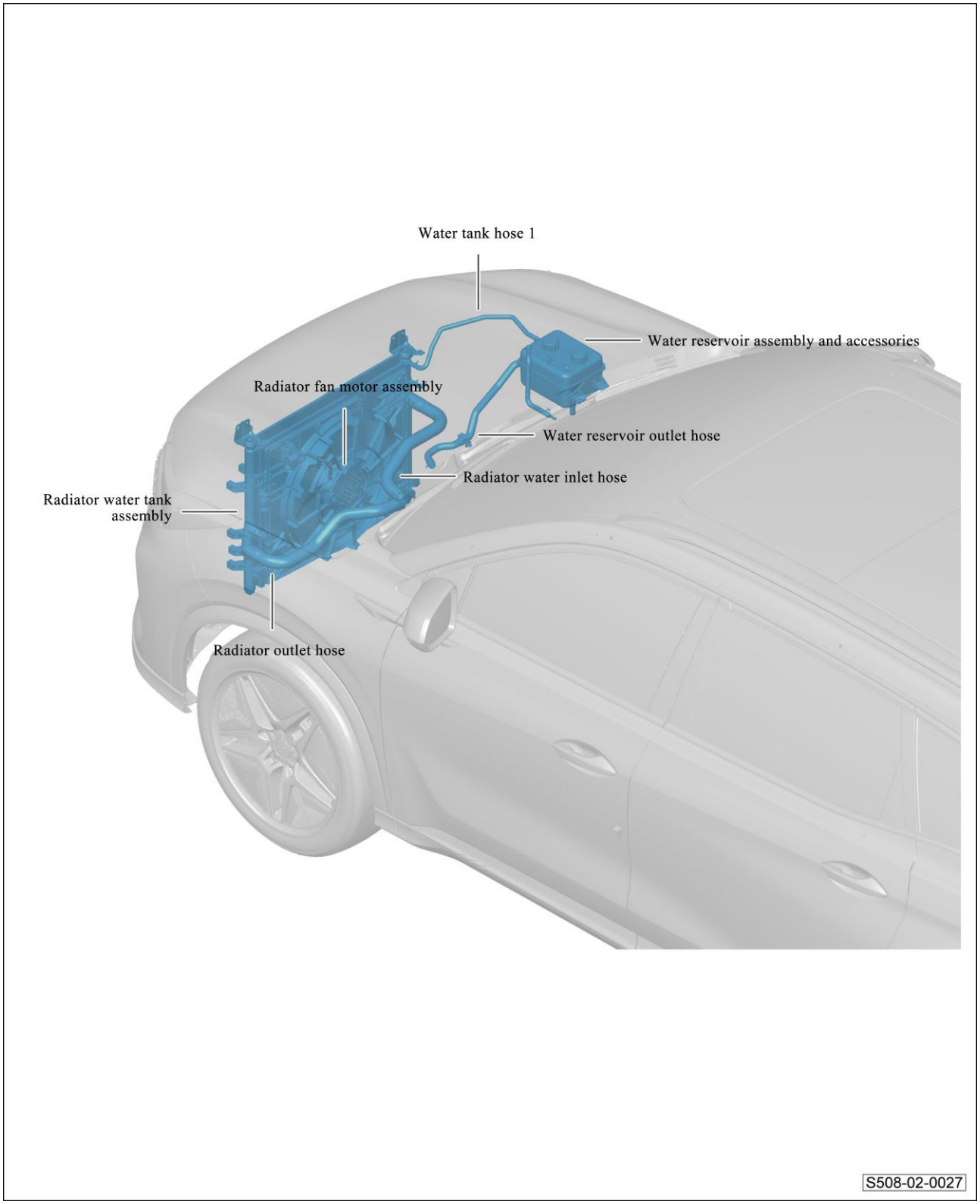
If the fan blades are bent or damaged to any degree, do not repair or reuse the damaged components. Replace the cooling fan assembly. Damaged fan blades cannot guarantee normal balance and may fail and fly off in continuous use, which is very dangerous.

Do not open the expansion tank cover when the vehicle is still warm. Wait until the engine cools down to normal temperature. Otherwise, the hot and high pressure coolant or steam may erupt and cause personal injury.

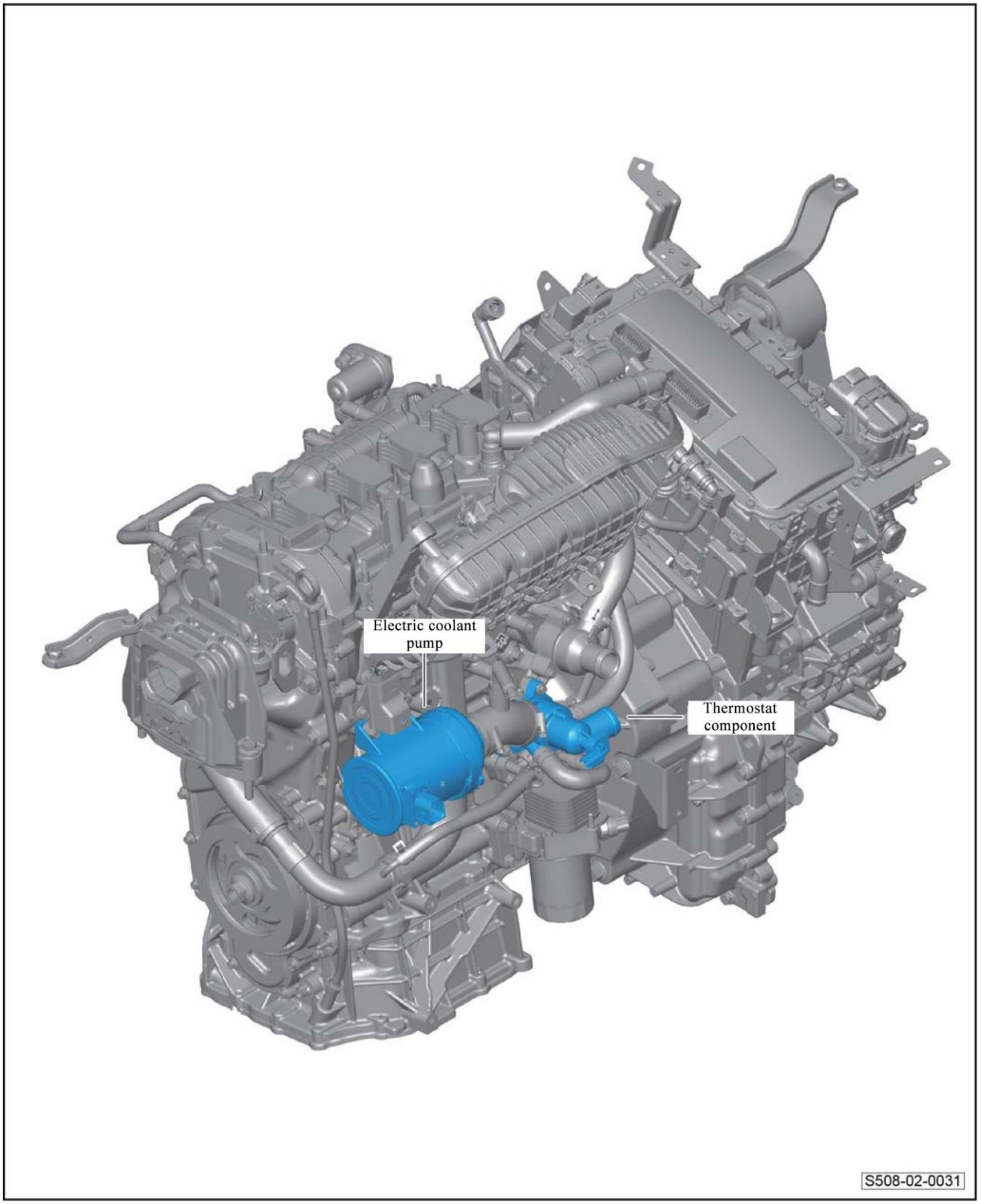
2.9.3 Component position

2.9.3.1 Component position

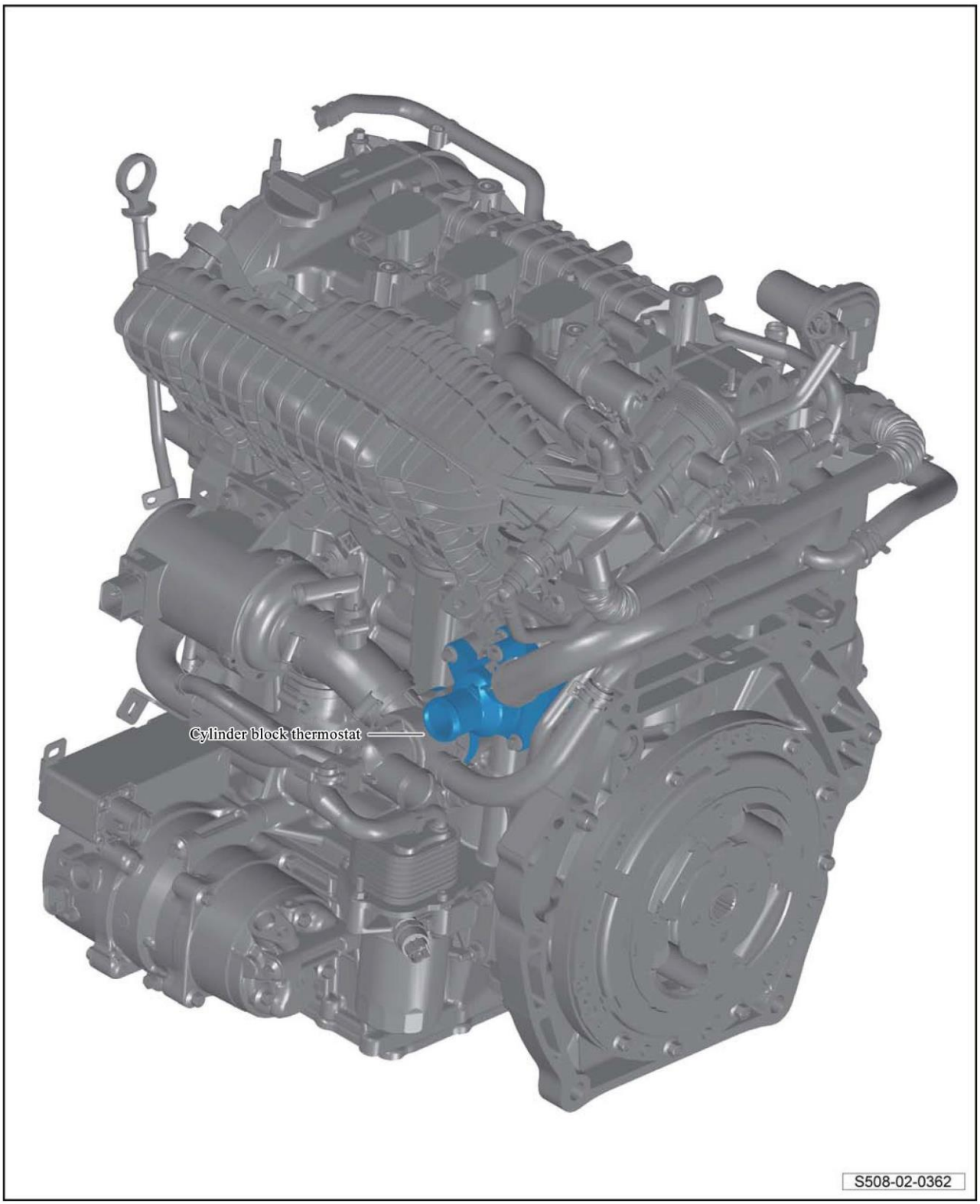
Component location diagram 1



Component location diagram 2



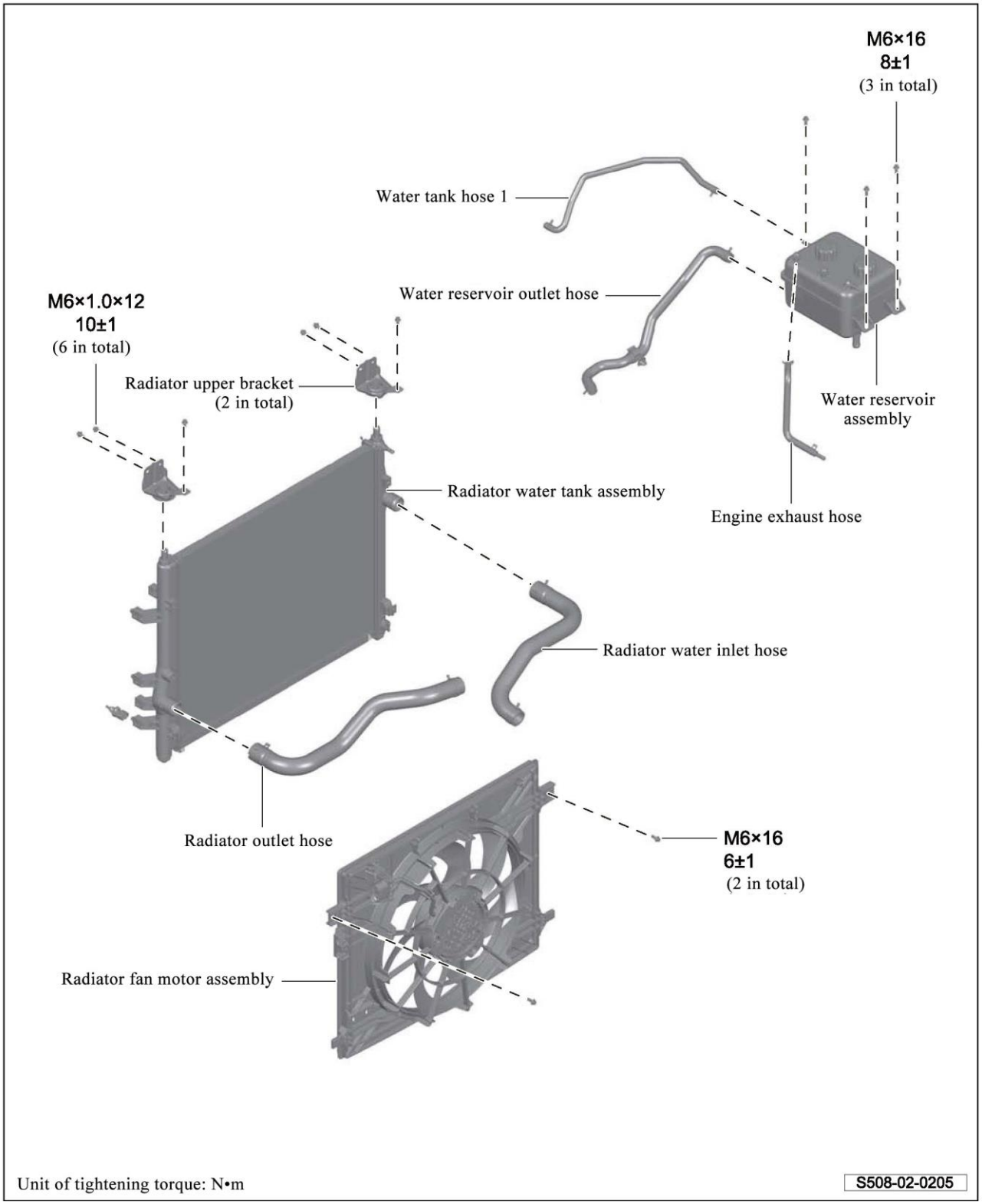
Component location diagram 3



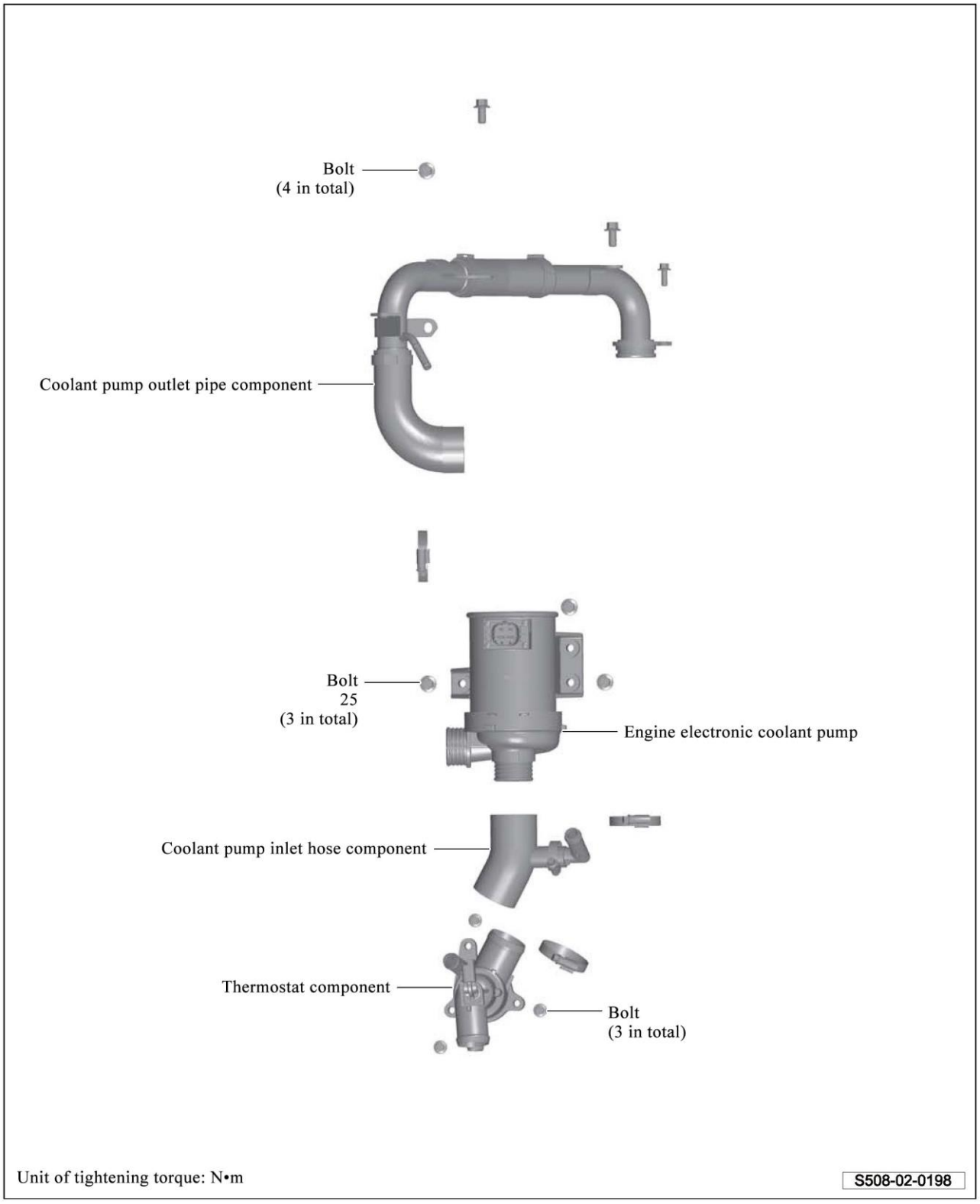
2.9.4 Exploded view

2.9.4.1 Exploded view of cooling system

Exploded view 1 of cooling system

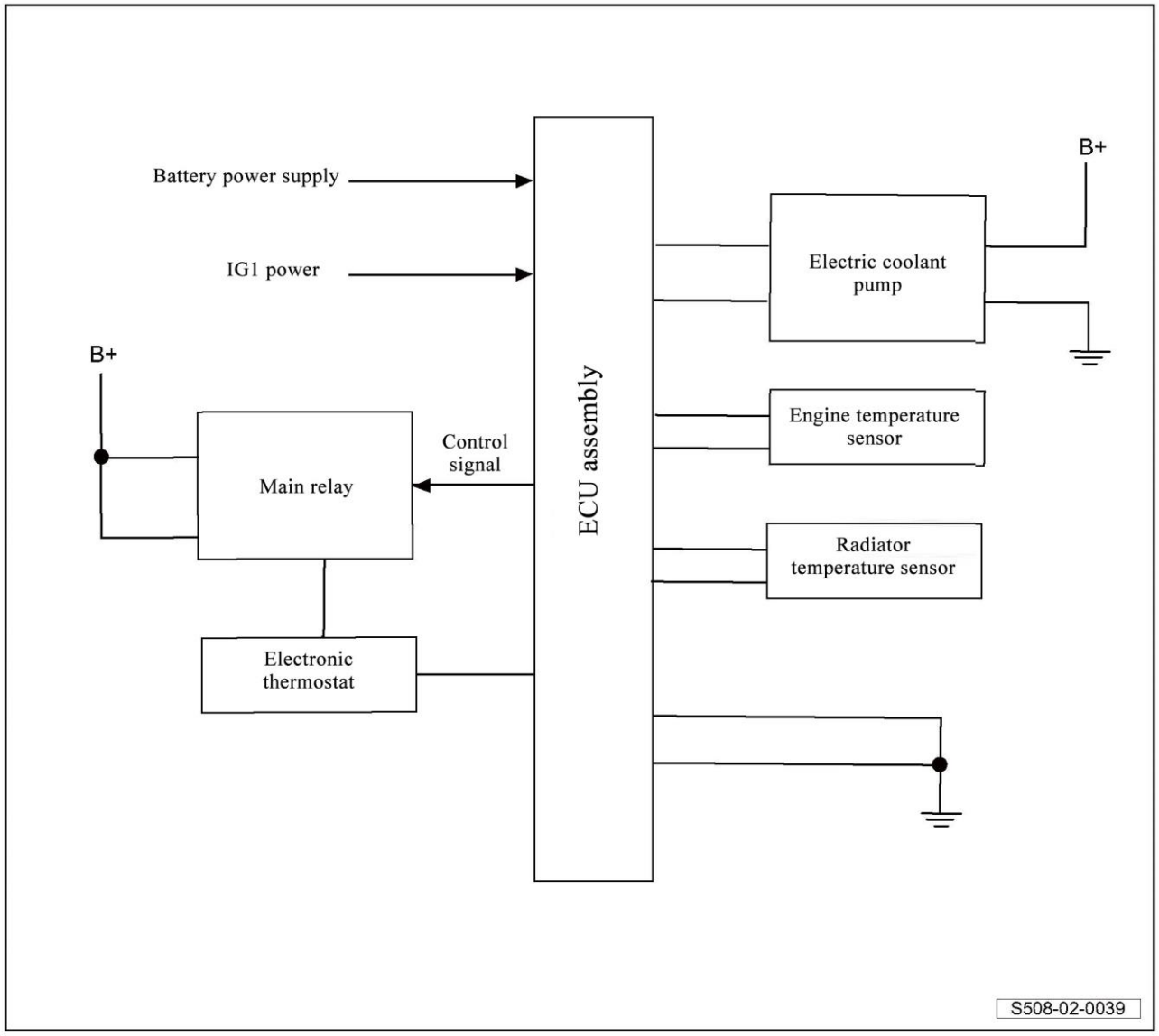


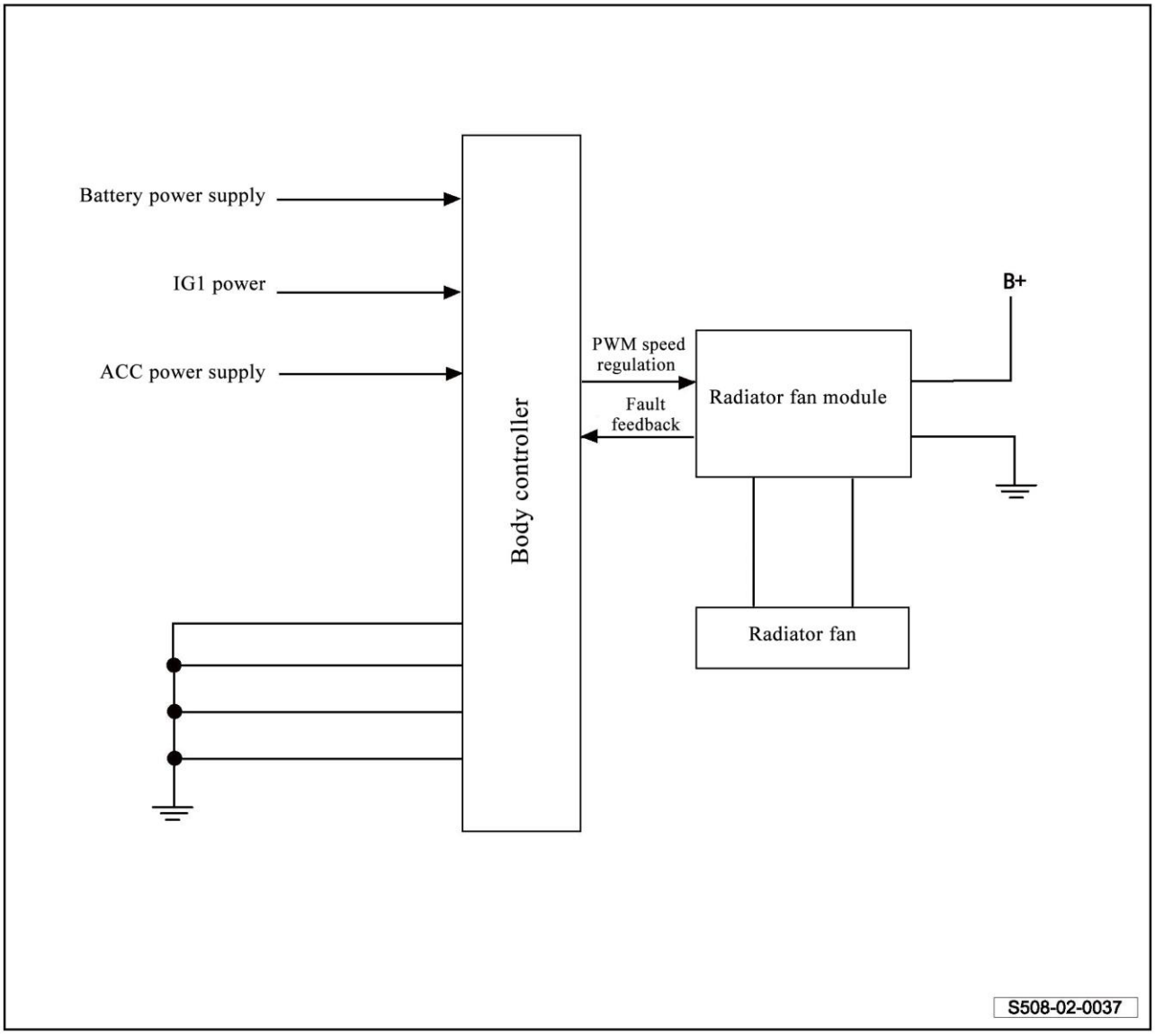
Exploded view 2 of cooling system



2.9.5 Electrical schematic diagram

2.9.5.1 Electrical schematic diagram




Battery power supply
IG1 power
ACC power supply
Body controller
PWM speed regulation
Fault feedback
Radiator fan module
B+
Radiator fan
S508-02-0037

2.9.6 Diagnosis information and steps

2.9.6.1 Diagnostic instructions

Be sure to be familiar with the system functions and operations before starting system diagnostics, which will help you determine the cause of fault, and more importantly, help determine whether the symptoms described by the customer are normal.

2.9.6.2 Visual inspection

- Check whether there is any after-sales added device that may affect the operation of cooling system.
- Check the system components easily accessible or visible to confirm whether they are obviously damaged or leaked externally.

2.9.6.3 Engine coolant temperature too high

Diagnosis steps

Step 1	Check the coolant level.

A Check whether the coolant level is normal.

No → Fill the coolant to the normal level. Inspect the tightness of cooling system and repair the leaking part.

Yes

Step 2	Check the radiator fan.

A Check whether the radiator fan works normally.

No → Repair the circuit and replace the radiator fan if necessary.

Yes

Step 3	Check the radiator.

A Check whether the radiator is externally blocked by too many sundries or the cooling fins are deformed and damaged.

B Check whether the inside of radiator is blocked.

Yes → Remove the foreign matter, or replace the radiator with damaged cooling fin. Wash or replace the radiator.

No

Step 4	Check the coolant temperature sensor.

A Check whether the coolant temperature sensor is normal.

No → Repair the circuit and replace the coolant temperature sensor if necessary.

Yes

Step 5	Check the thermostat assembly.

Check whether the thermostat assembly is stuck, or the opening stroke is insufficient.

Yes → Replace the thermostat assembly.

No

Step 6	Check the electric coolant pump assembly.

A Check whether the electric coolant pump assembly works properly

No → Replace the electric coolant pump assembly;

Yes

Step 7	Check the water passage of cylinder block and cylinder head.

A Check whether the water channel inside the cylinder block and cylinder head is excessively dirty or clogged with foreign matter.

Yes → Wash the engine coolant channel and replace the coolant.

No

Step 8	Check the fault symptom after correct maintenance operation.

A Check whether the fault is eliminated.

No → Troubleshoot from other symptoms

Trouble

Step 9	Replace the cylinder 1 ignition coil.

2.9.7 Removal and installation

2.9.7.1 Replacement of engine coolant

Discharging procedures

Tip:

Wait until the coolant completely cools down before drain engine coolant. Then discharge the coolant.

1 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

2 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

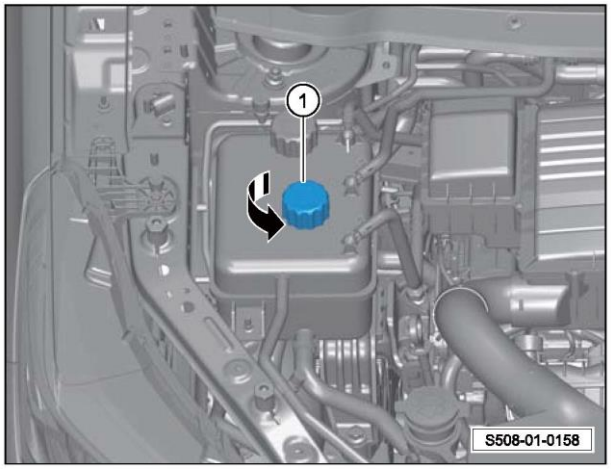
3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

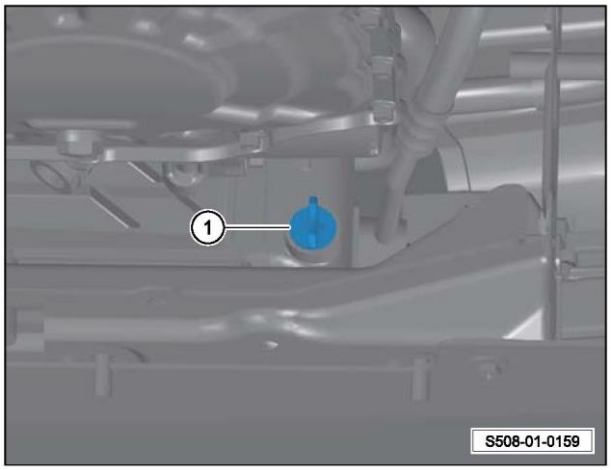
5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Discharge engine coolant.

a. Rotate valve panel roof ① to be parallel with the water pipe, and open valve panel roof ①.



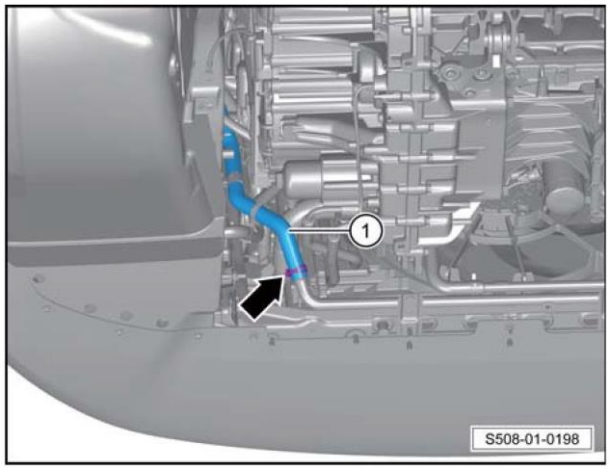
b. Unscrew the water reservoir cap ① in direction of the arrow.



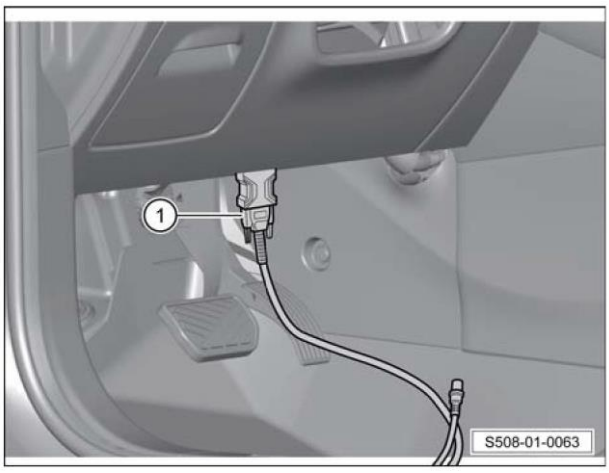
c. Lift the vehicle.

d. Place the coolant collection container at the bottom of the car.

e. Unscrew the drain screw plug ① anti-clockwise to discharge the coolant.

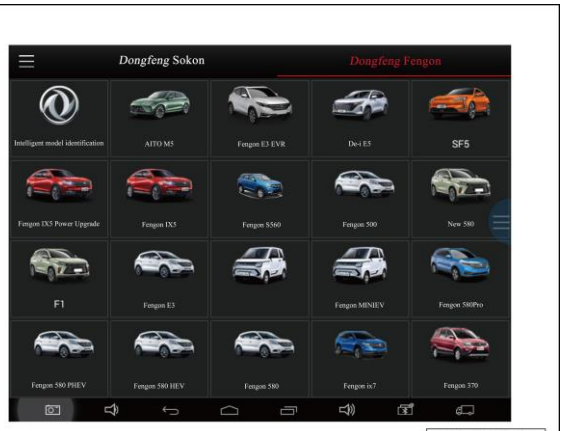


f. Loosen the clamp of the low-temperature radiator water inlet hose assembly ① (see the arrow), and discharge the coolant.



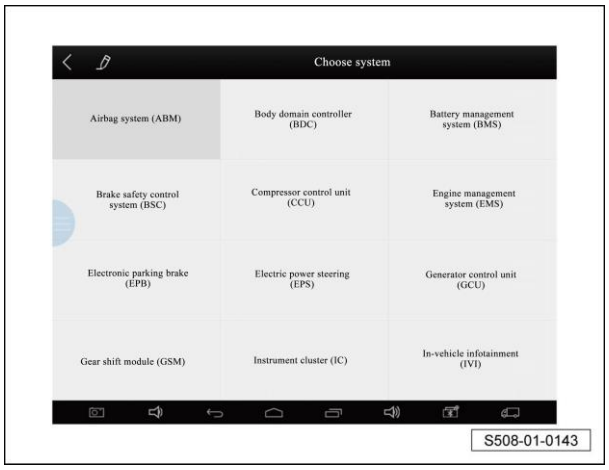
g. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

h. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

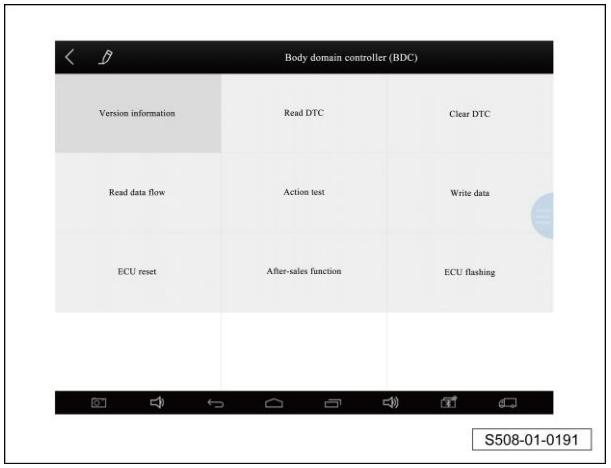


i. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

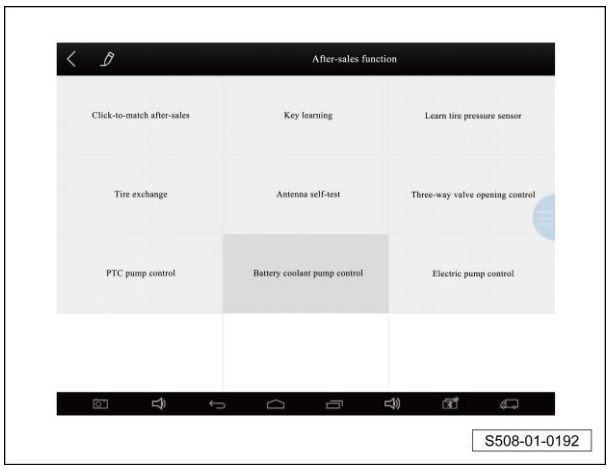
j. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.



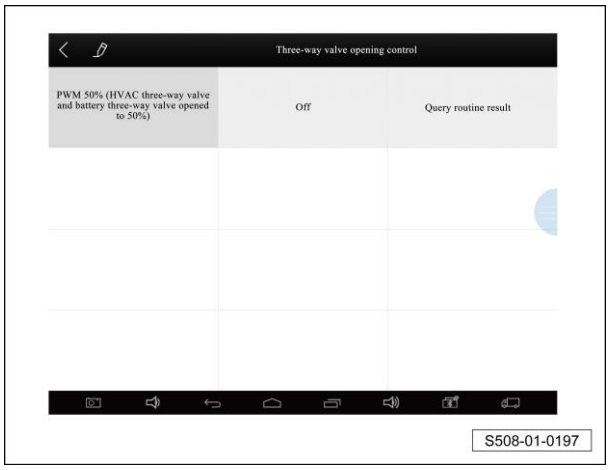
k. Select "body domain controller (BDC)" on the "System Selection" sub-function interface and click to enter.



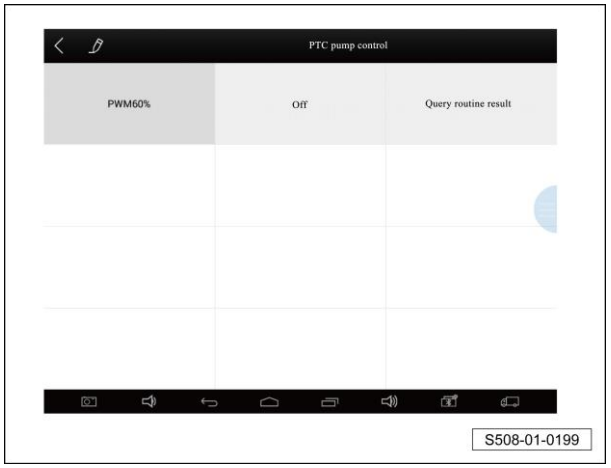
l. Select "After-sales Function" on the "body domain controller (BDC)" sub-function interface and click to enter.



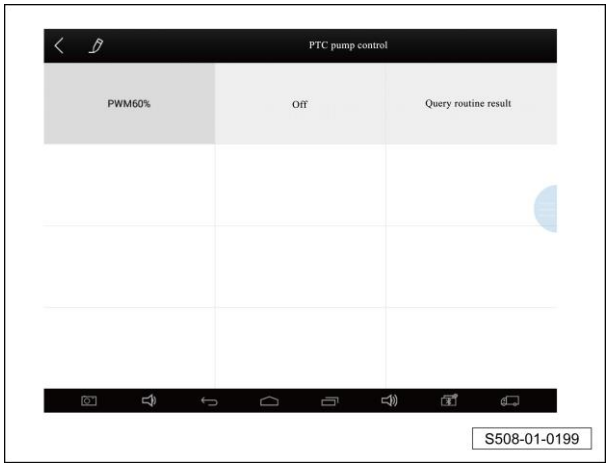
m. Select "Three-way Valve Opening Control" on the "After-sales Function" sub-function interface, and click to enter.



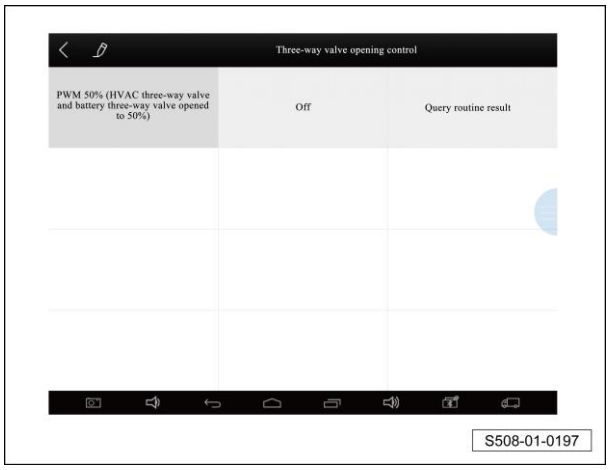
n. Select “PWM 50%” on the "Three-way Valve Opening Control" sub-function interface to open the three-way valve.



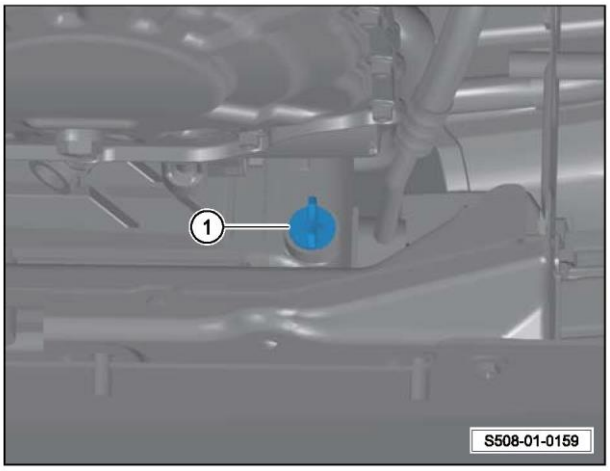
o. Select “PWM 60%” on the "PTC Pump Control" sub-function interface to run the PTC pump.



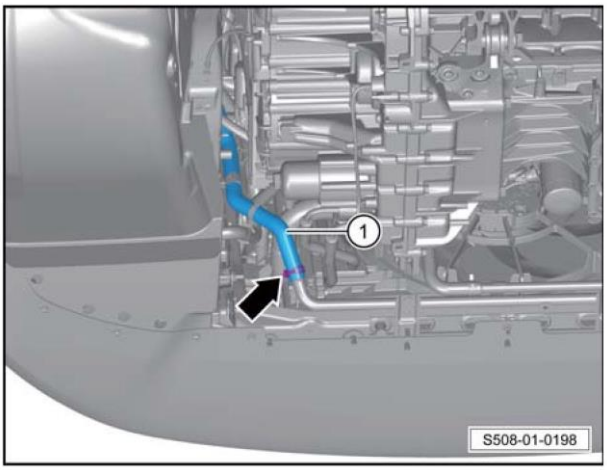
p. After the engine coolant is discharged, select "Off" on the "PTC Pump Control" sub-function interface to put the PTC pump out of operation.



q. Select “Off” on the "Three-way Valve Opening Control" sub-function interface to close the three-way valve.

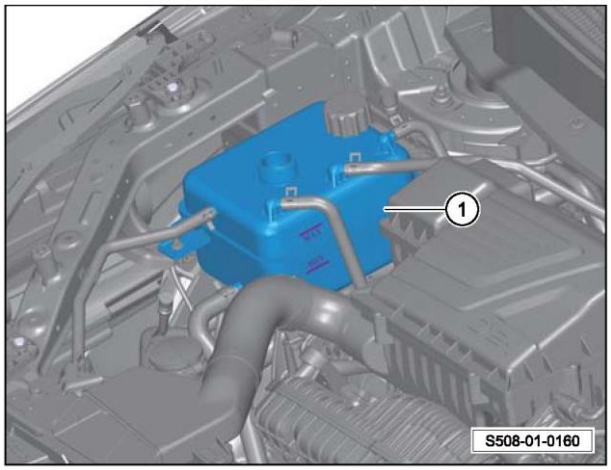


r. After the engine coolant is completely discharged, install the drain screw plug ①.



s. Connect the clamp of the low-temperature radiator water inlet hose assembly ① (see the arrow), and install the fixing clamp to the original position.

Filling procedure



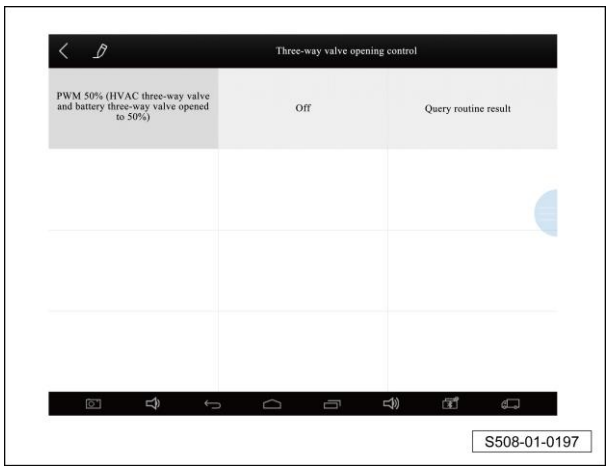
Coolant filling

a. Slowly fill the coolant until it reaches the "MAX" mark on the water reservoir.

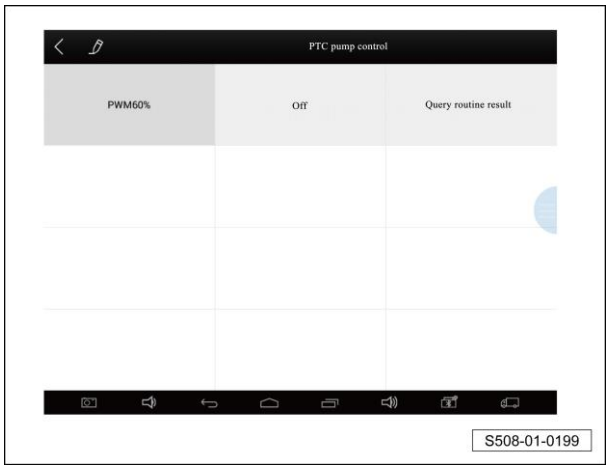
Description

- Do not dilute the coolant at will.
- The coolant cannot be reused or mixed with other types of coolant. Also, it cannot be substituted with different colors of coolant.
- Coolant: FD-40, filling amount: 9.6L.
- The coolant can prevent frost, corrosion and scaling, as well as raising the boiling point. Therefore, the coolant must be refilled according to the standards.
- It is prohibited to use the coolant with phosphates or nitrates as preservative.
- In southern places with tropical climate, use the coolants of high boiling point.
- The proportion of additive and water in the coolant should be at least 50%. Under the standard atmospheric pressure (101 kPa), the coolant boiling point is no less than 107°Cand the freezing point is no more than 35°C.
- The coolant must be recycled according to related national regulations.

b. Install water filling cover.

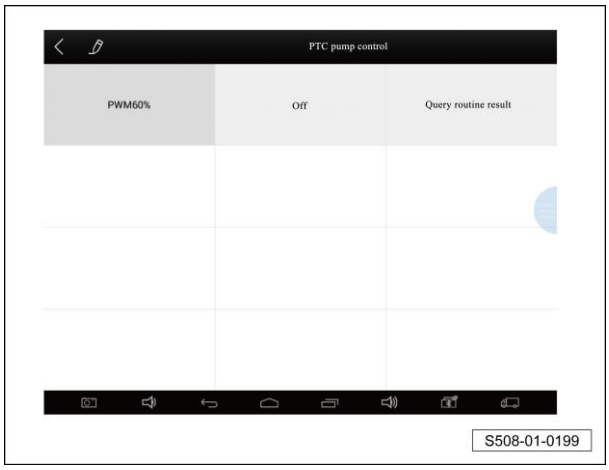


c. Connect the diagnostic scanner, select “PWM 50%” on the "Three-way Valve Opening Control" sub-function interface to open the three-way valve.

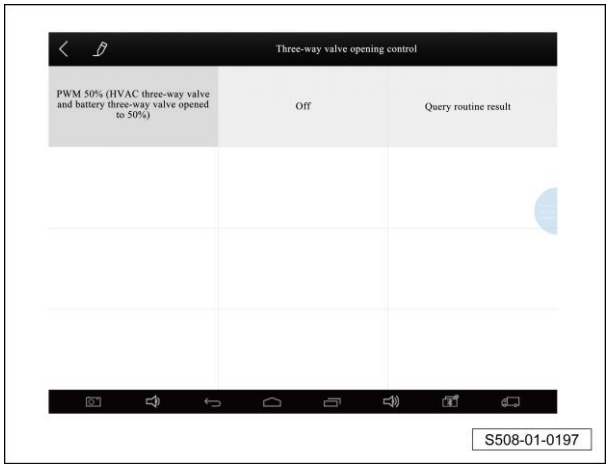


d. Select “PWM 60%” on the "PTC Pump Control" sub-function interface to run the PTC pump.

e. Observe the coolant level, and fill coolant if necessary to between the -MAX- and -MIN-.



f. Observe the reflux pipe of the water reservoir, when there are no bubbles in the coolant from the reflux pipe, select "Off" on the "PTC Pump Control" sub-function interface to put the PTC pump out of operation.



g. Select “Off” on the "Three-way Valve Opening Control" sub-function interface to close the three-way valve.

h. Rotate valve panel roof ① to be vertical to the water pipe, and close valve panel roof ①.

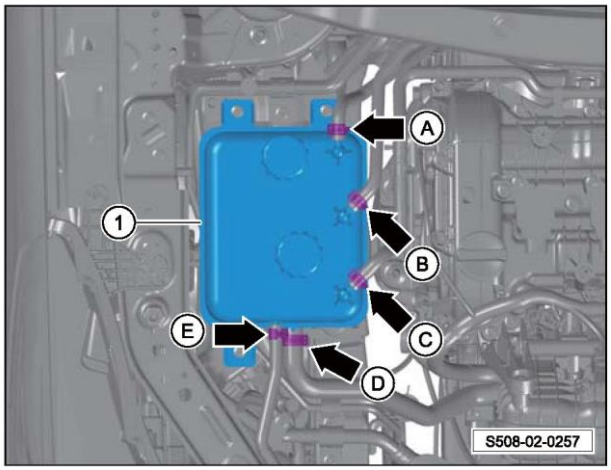
2.9.7.2 Removal and installation of water reservoir assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

3 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant



4 Removal of water reservoir assembly

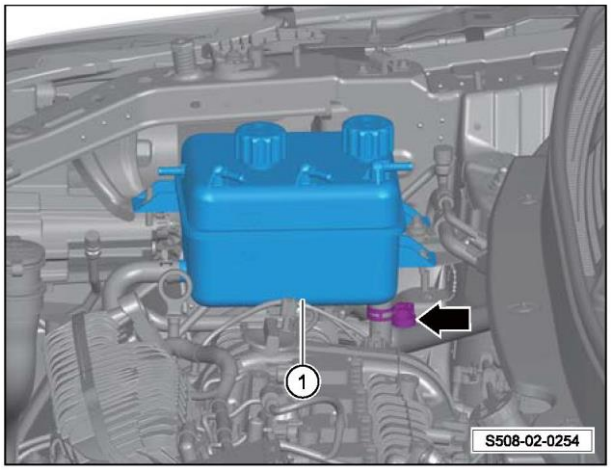
a. Loosen the fixing clamp (see arrow A), and disengage the battery compensation reservoir inlet hose from the water reservoir assembly ①.

b. Loosen the fixing clamp (see arrow B), and disengage the HVAC water pipe assembly from the water reservoir assembly ①.

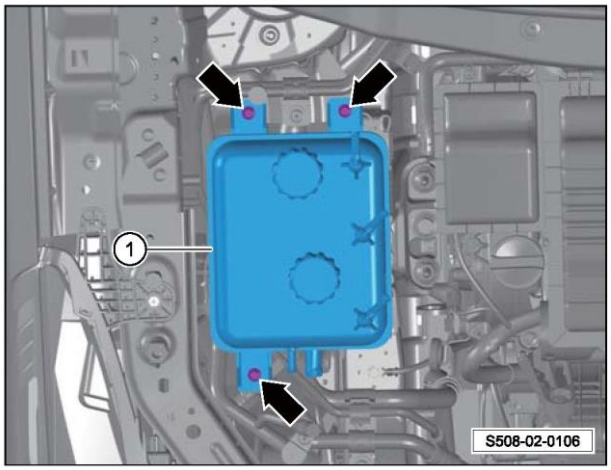
c. Loosen the fixing clamp (see arrow C) and disengage the engine outlet hose from the water reservoir assembly ①.

d. Loosen the fixing clamp (see arrow D) and disengage the water reservoir water outlet hose from the water reservoir assembly ①.

e. Loosen the fixing clamp (see arrow E) and disengage the water tank hose 1 from the water reservoir assembly ①.



f. Loosen the fixing clamp (see the arrow), and disengage the plate heat exchanger outlet hose from the water reservoir assembly ①.



g. Unscrew the fixing bolts (see the arrows) and take out water reservoir assembly ①.

- Tightening torque of bolt: **8±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change
- After installation, add coolant to the power battery cooling system. Refer to 5.4.5.1 Replacement of power battery coolant

2.9.7.3 Removal and installation of electronic thermostat component

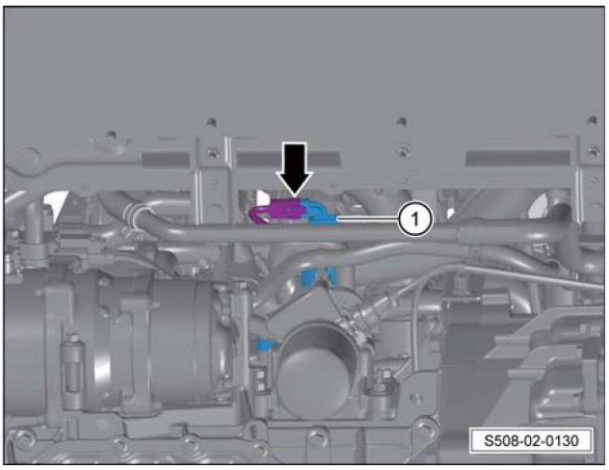
Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

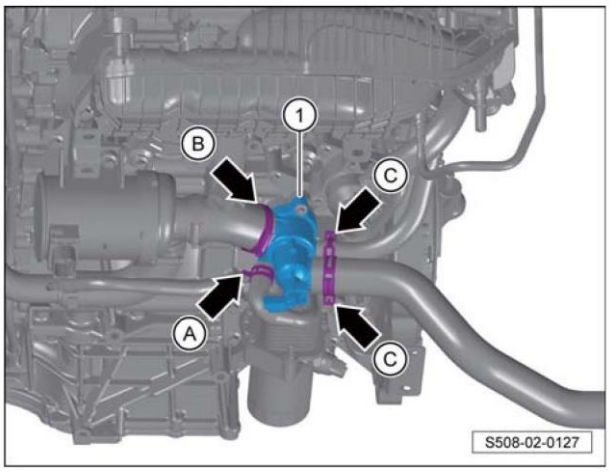
1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



3 Removal of electronic thermostat component

a. Disconnect the connector of the electronic thermostat component ① (see the arrow).



b. Loosen the fixing clamp (see arrow A), and disengage the electronic thermostat component ① from the oil cooler water pipe.

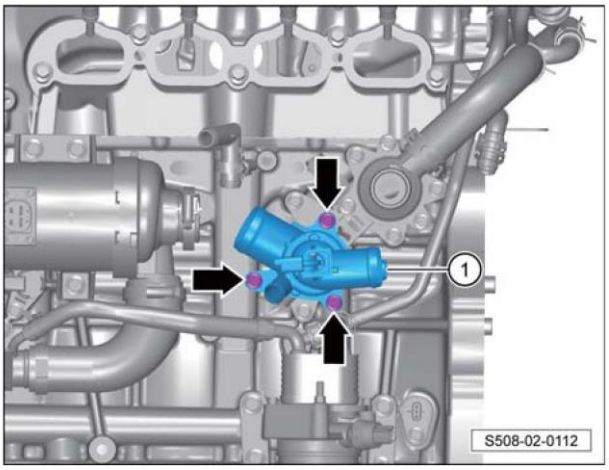
c. Loosen the fixing clamp (see arrow B), and disengage the electronic thermostat component ① from the water pump inlet pipe.

d. Loosen the fixing clamp (see arrow C), and disengage the electronic thermostat component ① from the HVAC return water hose.

e. Loosen the fixing clamp (see arrow D), and disengage the electronic thermostat component ① from the radiator water outlet hose.

Tip:

Before disengaging the water pipes of the electronic thermostat component, place an appropriate container below to collect coolant.



f. Unscrew the fixing bolt (see the arrow), and remove the electronic thermostat component ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

Inspection of thermostat

- The thermostat shall have a mark indicating the opening temperature. If the mark on the thermostat used is inconsistent with this engine, replace the thermostat.
- Check the opening and full-open temperatures of the thermostats.

	Initial open temperature	Fully open lift
Electronic thermostat	97±2°C	≥8mm (113°C)
Cylinder block thermostat	70±2°C	≥7mm (85°C)

2.9.7.4 Removal and installation of cylinder block thermostat

Disassembly procedures

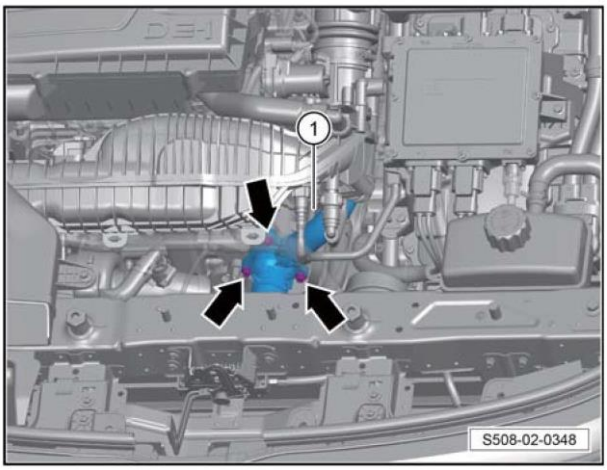
Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

3 Remove the electronic thermostat component. Refer to 2.9.7.3 Removal and installation of electronic thermostat component

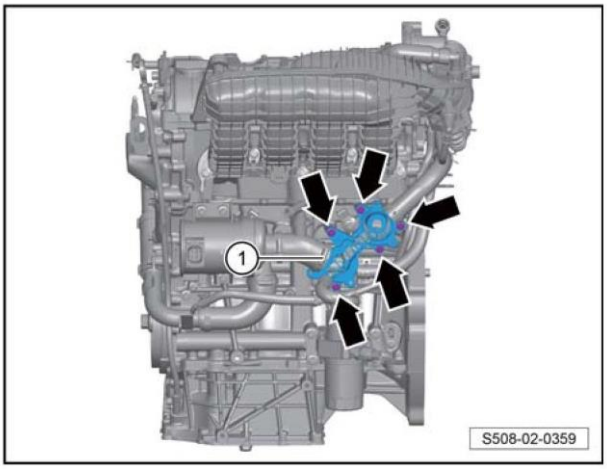


4 Removal of cylinder block thermostat

a. Unscrew the fixing bolt (see the arrow), and remove the cylinder block thermostat shell ①.

Tip:

Before removing the cylinder block thermostat shell, place an appropriate container below to collect coolant.



b. Unscrew the fixing bolt (see the arrow), and remove the cylinder block thermostat ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

Inspection of thermostat

– The thermostat shall have a mark indicating the opening temperature. If the mark on the thermostat used is inconsistent with this engine, replace the thermostat.

– Check the opening and full-open temperatures of the thermostats.

	Initial open temperature	Fully open lift
Main thermostat	97±2°C	≥8mm (113°C)
Cylinder block thermostat	70±2°C	≥7mm (85°C)

2.9.7.5 Removal and installation of engine electric coolant pump

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

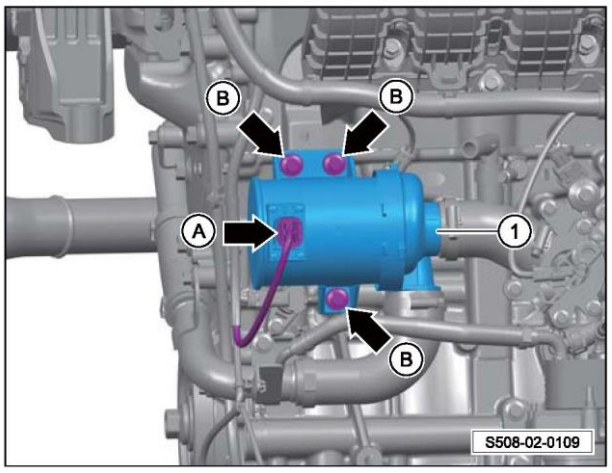
2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

6 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

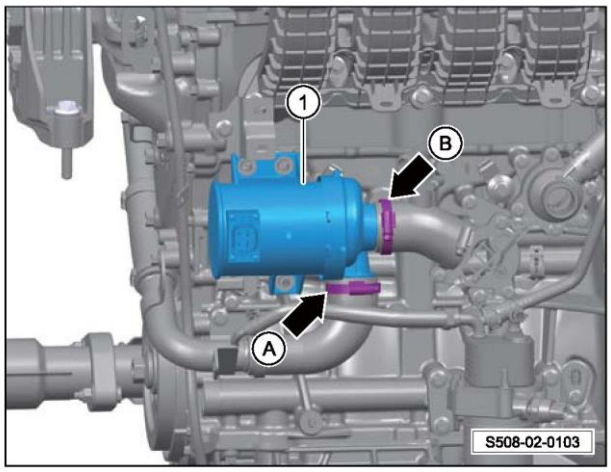


7 Removal of engine electric coolant pump

a. Disengage the connector of the engine electric coolant pump ① (see arrow A).

b. Unscrew the fixing bolt of the engine electric coolant pump ② (see arrow B).

• Tightening torque of bolt (see arrow **B**): **25N·m**



c. Loosen the fixing clamp (see arrow A), and disconnect the coolant pump outlet pipe from the engine electric coolant pump ①.

d. Loosen the fixing clamp (see arrow B), and disconnect the coolant pump inlet pipe from the engine electric coolant pump ①.

e. Remove the engine electric coolant pump ①.

Tip:

Before removing the engine electric water pump, place the coolant collection container at the bottom of the vehicle.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.6 Removal and installation of radiator water tank assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

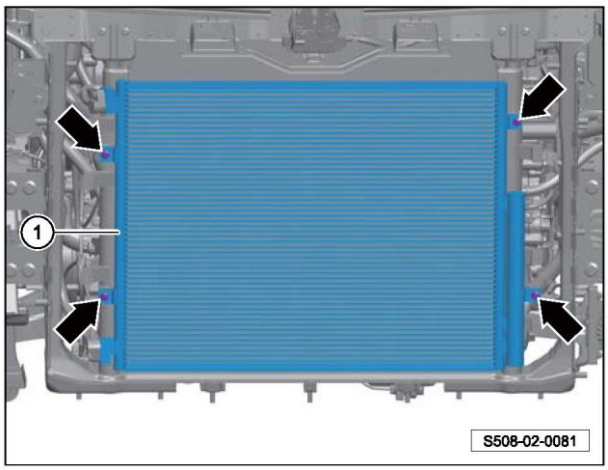
4 Remove the radiator fan motor assembly. Refer to 2.9.7.7 Removal and installation of radiator fan motor assembly

5 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

6 Remove the frame front crossmember assembly. Refer to 9.4.3.13 Removal and installation of frame front crossmember assembly

7 Remove the low temperature radiator. Refer to 5.7.5.2 Removal and installation of low temperature radiator

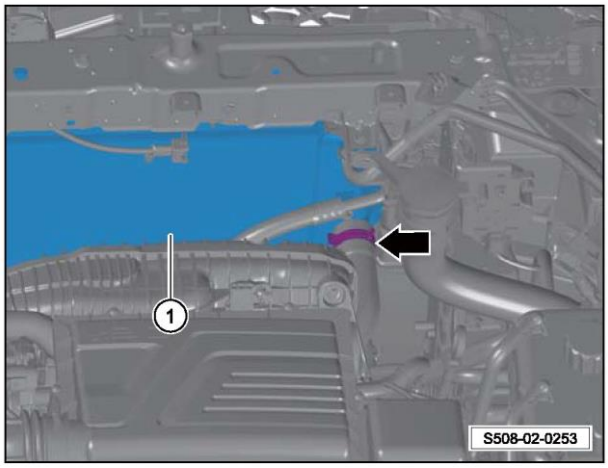
8 Remove the oil cooler assembly. Refer to 4.2.8.3 Removal and installation of oil cooler assembly



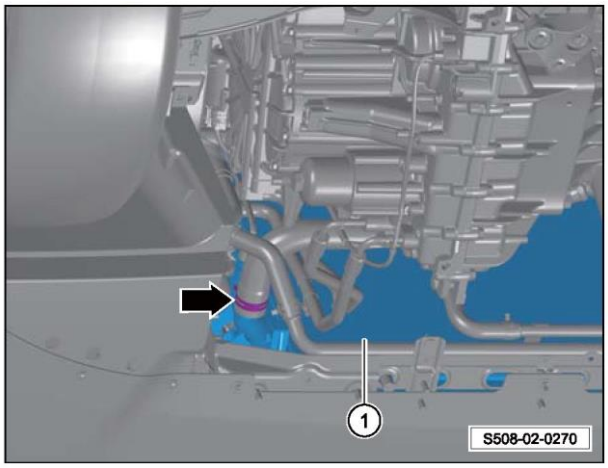
9 Remove the radiator water tank assembly

a. Unscrew the fixing bolts (see the arrows) and move away the condenser assembly ①.

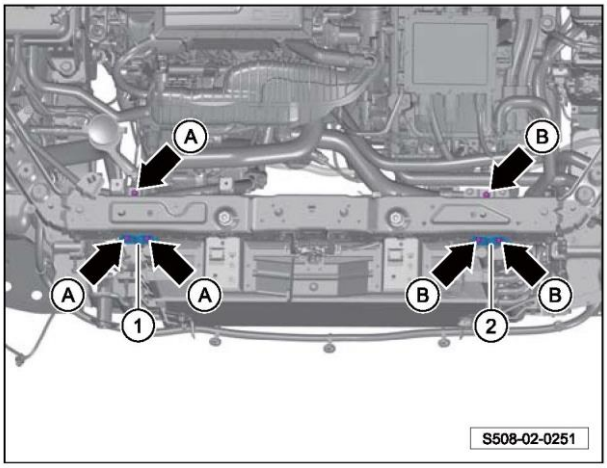
• Tightening torque of bolt: 6±1 N·m



b. Loosen the fixing clamp (see the arrow), and disengage the radiator water inlet hose from the radiator water tank assembly ①.



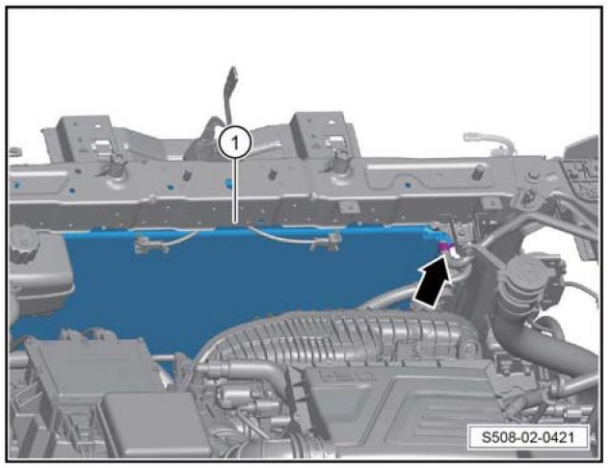
c. Loosen the fixing clamp (see the arrow), and disengage the radiator water outlet hose from the radiator water tank assembly ①.



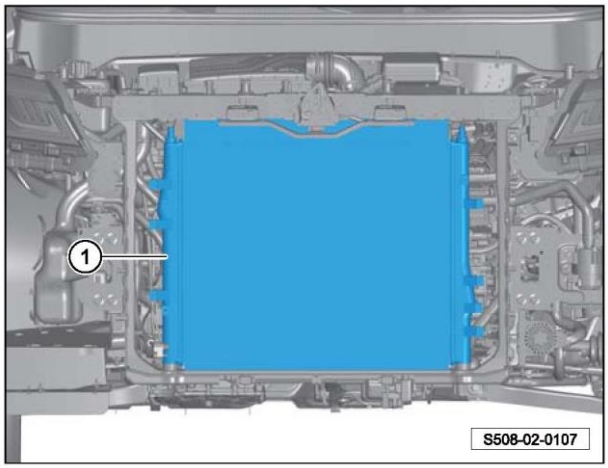
d. Unscrew the fixing bolt (see arrow A), and remove the radiator upper bracket 1 ①.

e. Unscrew the fixing bolt (see arrow B) and remove the radiator upper bracket 2 ①.

- Tightening torque of bolt (see arrow A): 10±1 N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m



f. Loosen the fixing clamp (see the arrow), and disengage the radiator water tank assembly ① from the 1# water tank hose.



g. Remove the radiator water tank assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.7 Removal and installation of radiator fan motor assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

7 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

8 Remove the engine compartment fully-wrapped cover support plate component (right). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

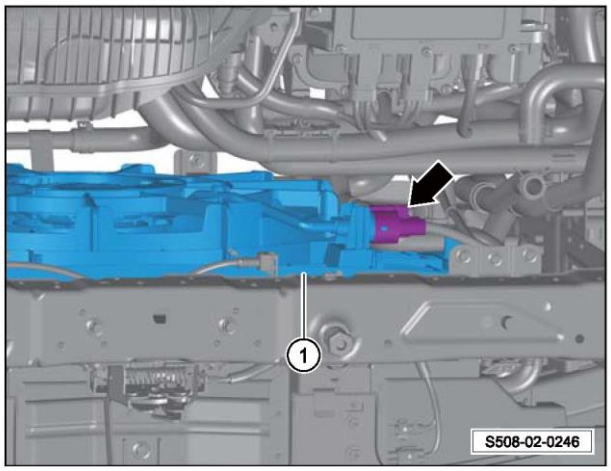
9 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

10 Remove the water reservoir assembly. Refer to 5.7.5.6 Removal and installation of auxiliary water reservoir assembly

11 Remove the high-pitch electric horn. Refer to 8.14.5.1 Removal and installation of high-pitch electric horn

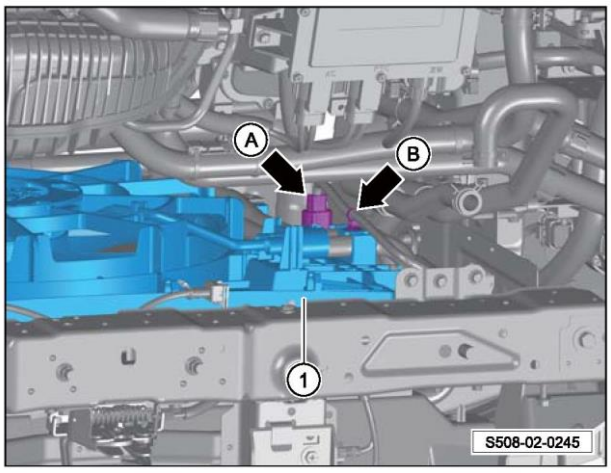
12 Remove the low-pitch electric horn. Refer to 8.14.5.2 Removal and installation of low-pitch electric horn

13 Remove the air filter intake pipe assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly



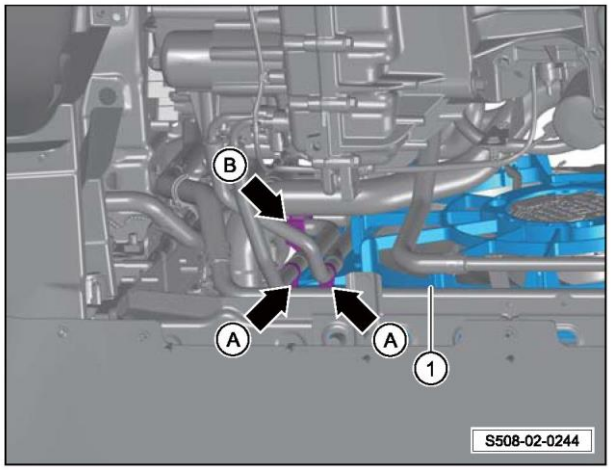
14 Remove the radiator fan motor assembly

a. Disconnect the connector of the radiator cooling fan assembly ① (see the arrow).



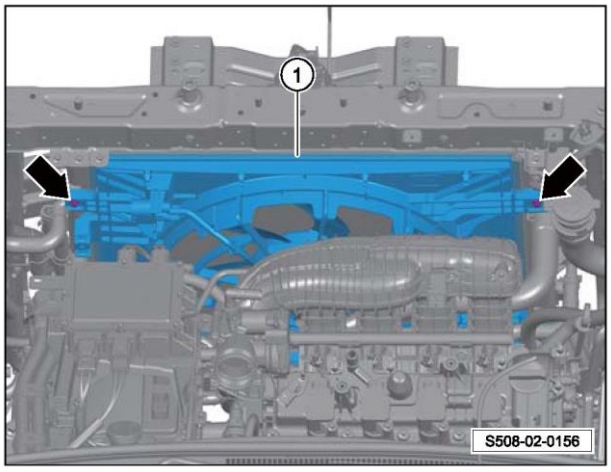
b. Disconnect the connector of the radiator water tank coolant temperature sensor (see arrow A).

c. Disengage the fixing clip between the engine compartment harness and the radiator fan motor assembly ① (see arrow B).



d. Disengage the fixing clip between the oil cooling pipe assembly and the radiator fan motor assembly ① (see arrow A).

e. Disengage the fixing pipe clamp between the oil cooling pipe assembly and the radiator fan motor assembly ① in the position of (arrow B).



e. Unscrew the fixing bolts (see the arrows) and remove the radiator fan motor assembly ①.

- Tightening torque of bolt: 6±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the electric drive cooling system. Refer to 1.4.3.48 Replacement of electric drive coolant.

2.9.7.8 Removal and installation of radiator

water outlet hose

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

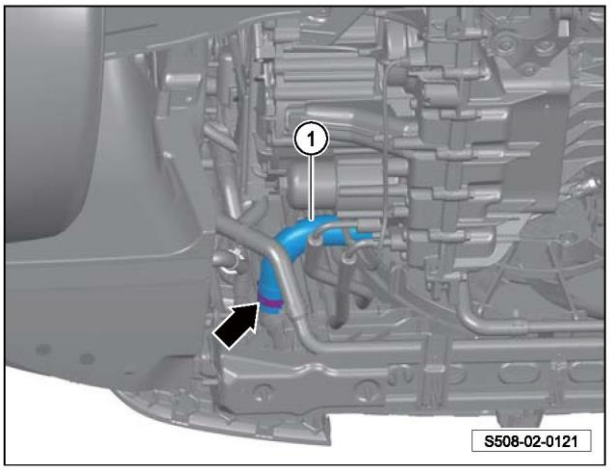
2 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

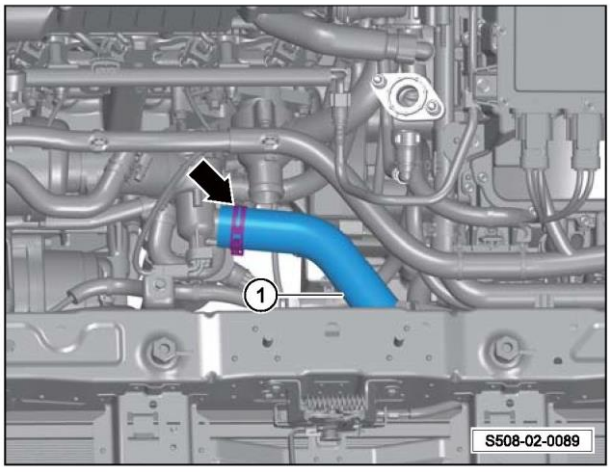
5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

6 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



3 Remove the radiator water outlet hose

a. Loosen the fixing clamp (see the arrow) and disengage the radiator water outlet hose ① from the radiator water tank assembly.



b. Loosen the fixing clamp (see the arrow) and disengage the radiator water outlet hose ① from the thermostat component.

c. Remove the radiator water outlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

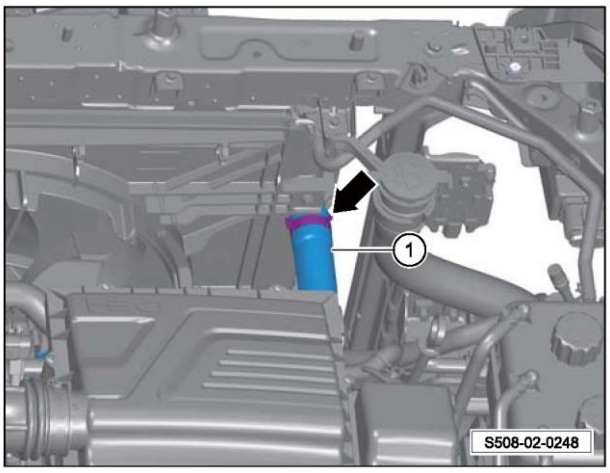
– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.9 Removal and installation of radiator water inlet hose

Disassembly procedures

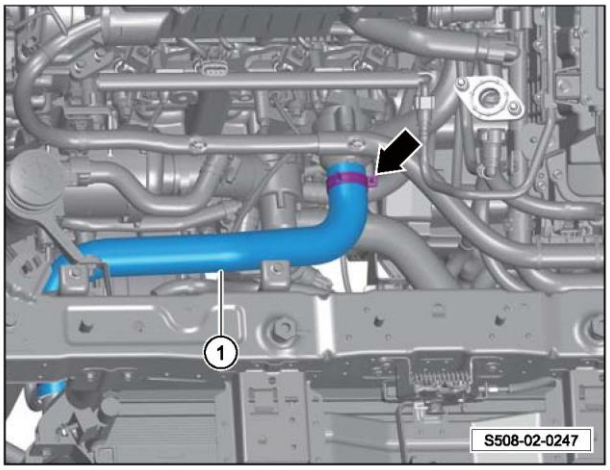
1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



3 Remove the radiator water inlet hose

a. Loosen the fixing clamp (see the arrow) and disengage the radiator water inlet hose ① from the water tank radiator assembly.



b. Loosen the fixing clamp (see the arrow), and disengage the radiator water inlet hose ① from the cylinder block thermostat component.

c. Remove the radiator water inlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.10 Removal and installation of 1# water tank hose

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

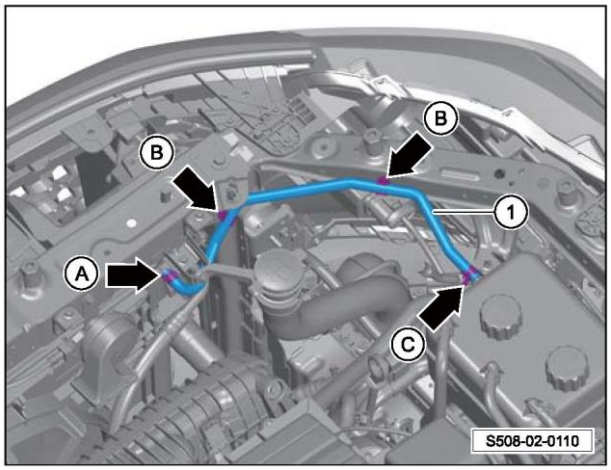
3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel

assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

6 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



7 Removal of 1# water tank hose

a. Loosen the fixing clamp (see arrow A) and disengage the water tank hose 1 ① from the water tank radiator assembly.

b. Disengage the fixing pipe clamp of 1# water tank hose ① (see arrow B).

c. Loosen the fixing clamp (see arrow C) and disengage the water tank hose 1 ① from the water reservoir assembly.

d. Remove 1# water tank hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

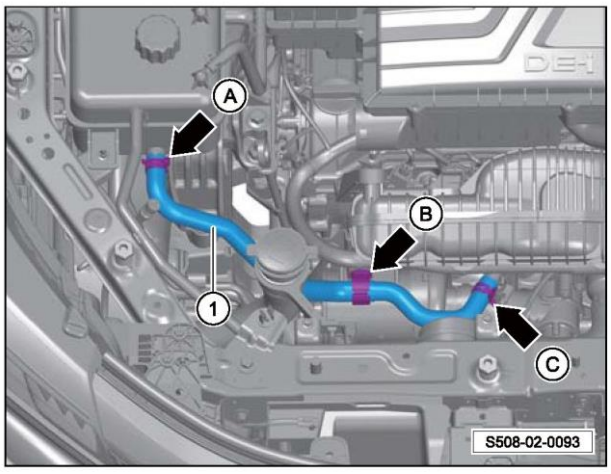
– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.11 Removal and installation of water reservoir outlet hose

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



3 Removal of water reservoir outlet hose

a. Loosen the fixing clamp (see arrow A) and disengage the water outlet hose ① from the water reservoir assembly.

c. Disengage the fixing clip of the water reservoir outlet hose ① (see arrow B).

b. Loosen the fixing clamp (see arrow C), and disengage the water reservoir outlet hose ① from the water pump inlet pipe.

c. Remove the water reservoir outlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40

Engine coolant change

2.9.7.12 Removal and installation of engine outlet hose

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

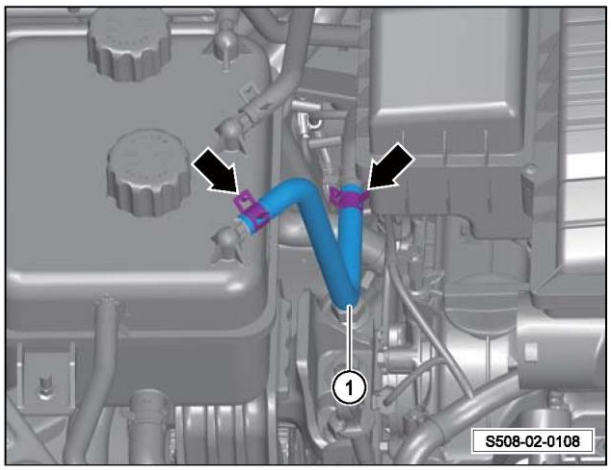
2 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

6 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



7 Remove the engine outlet hose

a. Loosen the fixing clamp (see the arrow), and remove the water reservoir outlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.13 Removal and installation of engine coolant temperature sensor

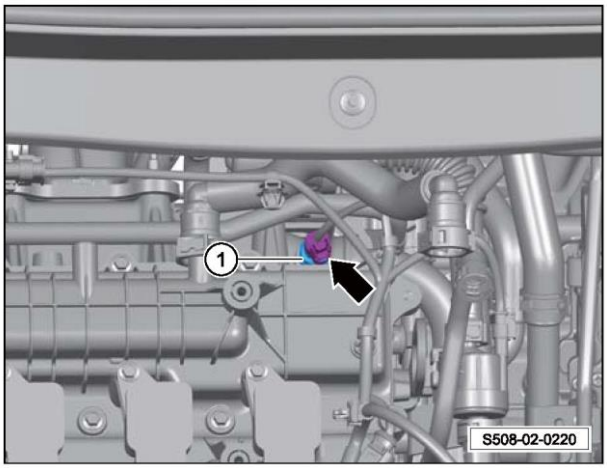
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

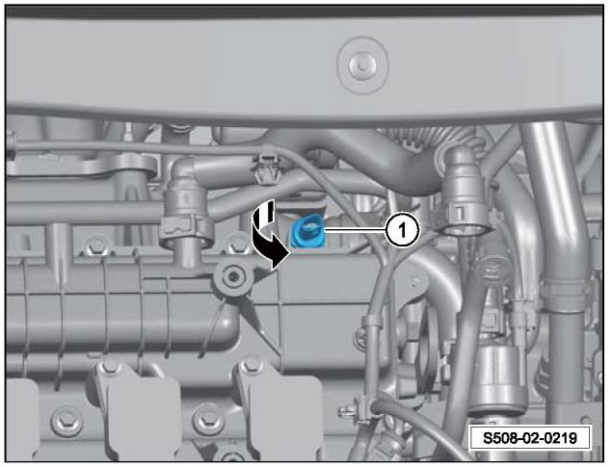
3 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter

4 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



5 Remove the engine coolant temperature sensor

a. Disconnect the connector of the engine coolant temperature sensor ① (see the arrow).



b. Remove the engine coolant temperature sensor ① in direction of (the arrow).

Tip:

Before unscrewing the engine coolant temperature sensor, place a suitable container below to collect the coolant.

- Tightening torque of engine coolant temperature sensor: **23N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

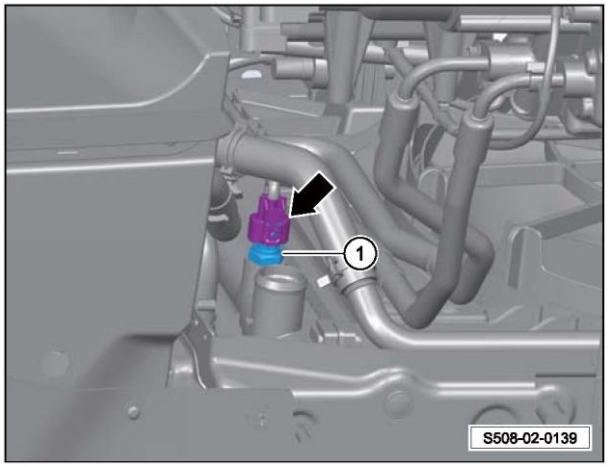
2.9.7.14 Removal and installation of radiator water tank coolant temperature sensor

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

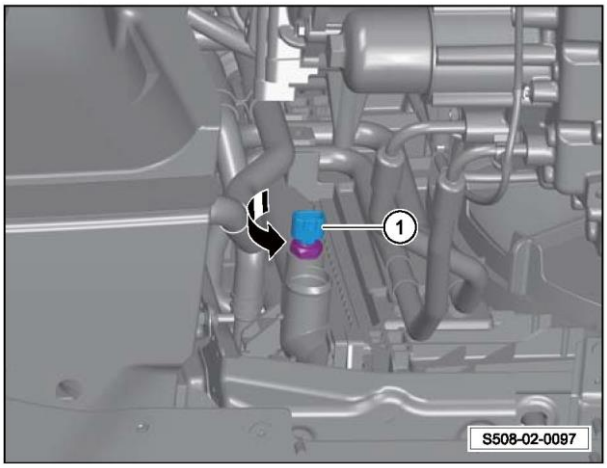
3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



4 Removal of radiator water tank coolant temperature sensor

a. Lift the vehicle.

b. Disconnect the connector of the radiator water tank coolant temperature sensor ① (see the arrow).



c. Remove the radiator water tank coolant temperature sensor ① in direction of (the arrow).

Tip:

Before unscrewing the radiator water tank coolant temperature sensor, place a suitable container below to collect the coolant.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.15 Removal and installation of coolant pump outlet pipe component

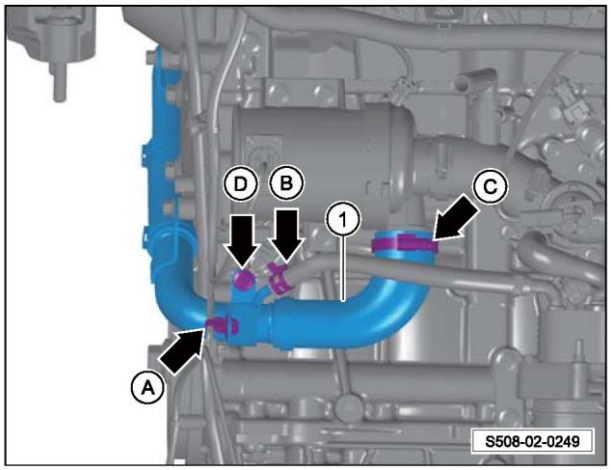
Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



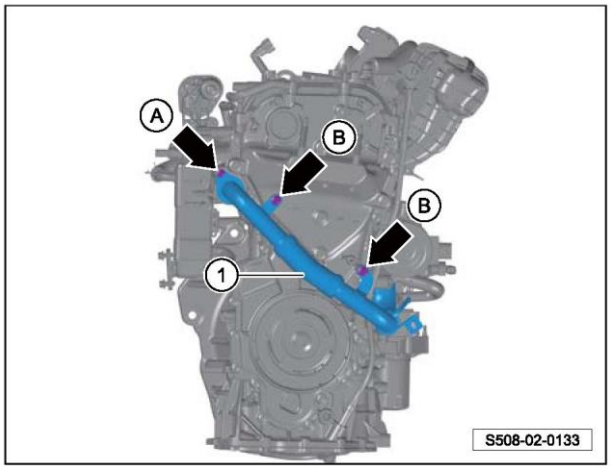
3 Removal of coolant pump outlet pipe component

a. Disengage the fixing clip of engine harness and coolant pump outlet pipe component (see arrow A).

b. Loosen the fixing clamp (see arrow B), and disengage the coolant pump outlet pipe component ① from the oil cooler.

c. Loosen the fixing clamp (see arrow C), and disengage the coolant pump outlet pipe component ① from the electric coolant pump.

d. Unscrew the fixing bolt of the coolant pump outlet pipe component ① (see arrow D).



d. Unscrew the fixing bolt (see arrows A and B), and remove the coolant pump outlet pipe component ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.9.7.16 Removal and installation of coolant pump inlet pipe component

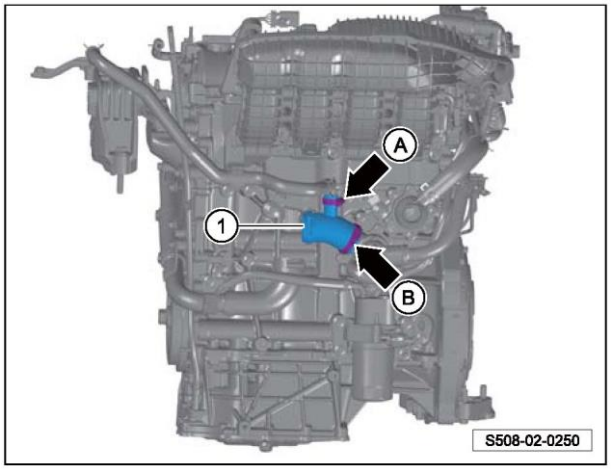
Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



3 Remove the engine electric coolant pump. Refer to 2.9.7.5 Removal and installation of engine electric coolant pump

4 Removal of coolant pump inlet pipe component

a. Loosen the fixing clamp (see arrow A), and disengage the coolant pump inlet pipe component ① from the water reservoir outlet hose.

b. Loosen the fixing clamp (see arrow B), and disengage the coolant pump inlet pipe component ① from the electronic thermostat component.

c. Remove the coolant pump inlet pipe component ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

2.10 Engine assembly mechanism

2.10.1 Specification

2.10.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Engine ground harness	Hexagon head bolt c/w plain washer cluster	10±1
Connection between compressor exhaust pipe assembly and compressor assembly	Hexagon flange bolt M8×25	8±1
Connection between compressor suction pipe assembly and compressor assembly	Hexagon flange bolt M8×25	8±1
Ground harness of integrated dual motor controller	Hexagon head bolt c/w plain washer cluster	10±1
Engine harness bracket	Hexagon head flange bolt M8×1.0×12	10±1
Ground harness of hybrid transmission	Hexagon head bolt c/w plain washer cluster	10±1
Connection between power suspension assembly (right) and engine	Hexagon head flange bolt M12×1.25×60	90±5
	All-metal hexagon flange locking nut M12×1.5	90±5
Connection between power suspension assembly (right) and body	Hexagon head flange bolt c/w plain washer cluster M10×1.25×65	60±3
	All-metal hexagon flange locking nut M10×1.25	60±3
Connection between power suspension assembly (left) and body	Hexagon head flange bolt c/w plain washer cluster M10×1.25×35	60±3
	All-metal hexagon flange locking nut M10×1.25	60±3
Connection between power suspension assembly (left) and hybrid transmission	Hexagon head flange bolt M12×1.25×60	90±5
	All-metal hexagon flange locking nut M12×1.25	90±5
HV electrical box bracket	Cross recessed hexagon flange screw	10±1
Engine harness bracket	Hexagon head flange bolt M6×10×12	10±1
Connecting bolt of hybrid transmission and engine	Hexagon head flange bolt M12×1.25	100±5
Motor electronic control connection window	Inner hexagon bolt	2±0.1
Motor electronic control three-phase copper bar	Hexagon head flange bolt	11±2
Connection between MCU/GCU (integrated dual motor controller)	Hexagon flange bolt	

and transmission		50±3

2.10.2 Removal and installation

2.10.2.1 Removal and installation of powertrain

Disassembly procedures

Tip:

Remove the engine and transmission.

During installation process, restore all the harnesses that were cut off during the removal process.

Plug up the disconnected pipes and take sealing measures to prevent foreign matters from entering the pipes.

1 Release the fuel system pressure. Refer to 2.3.9.1 Releasing fuel system pressure.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

5 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

6 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

7 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

8 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

9 Remove the air filter. Refer to 2.6.7.1 Removal and installation of air filter

10 Remove the air filter intake pipe assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly

11 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly

12 Remove the ECU assembly. Refer to 2.8.7.4 Removal and installation of ECU assembly

13 Remove the VCU. Refer to 5.2.7.1 Removal and installation of VCU

14 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

15 Remove the subframe welding assembly. Refer to 3.2.6.9 Removal and installation of front subframe

welding assembly

16 Remove the water reservoir assembly. Refer to 2.9.7.2 Removal and installation of water reservoir assembly

17 Remove the front left/right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

18 Remove the front left drive shaft assembly. Refer to 3.6.4.2 Removal and installation of left drive shaft assembly

19 Remove the front right drive shaft assembly. Refer to 3.6.4.3 Removal and installation of right drive shaft assembly

20 Remove the three-way catalytic converter assembly. Refer to 2.5.8.3 Removal and installation of three-way catalytic converter assembly

21 Remove the battery pack HV harness assembly. Refer to 5.6.6.5 Removal and installation of battery pack HV harness assembly

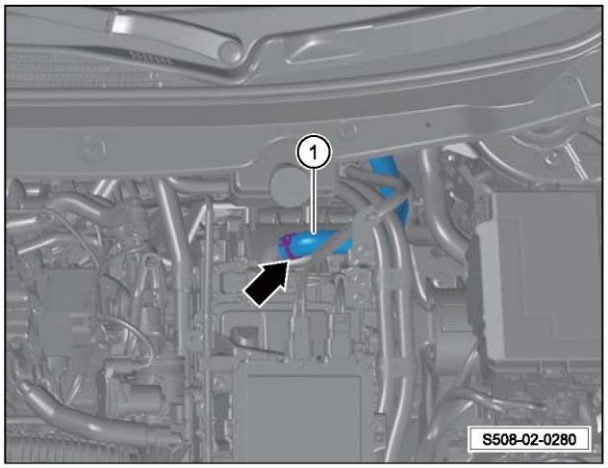
22 Remove the radiator water outlet hose. Refer to 2.9.7.8 Removal and installation of radiator water outlet hose

23 Remove the radiator water inlet hose. Refer to 2.9.7.9 Removal and installation of radiator water inlet hose

24 Remove the front left hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

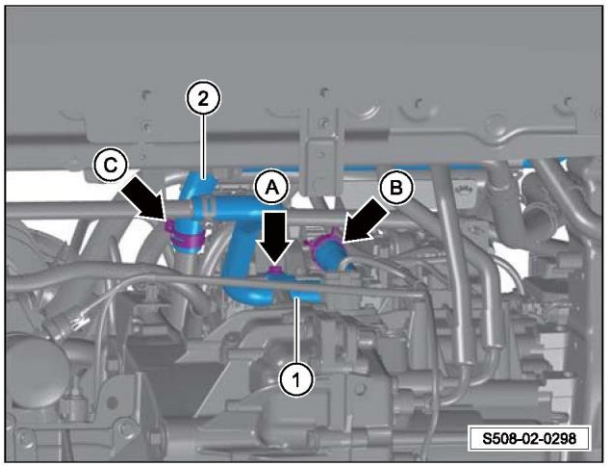
25 Remove the front right hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

26 Remove the water reservoir assembly. Refer to 5.7.5.6 Removal and installation of auxiliary water reservoir assembly



27 Remove the powertrain.

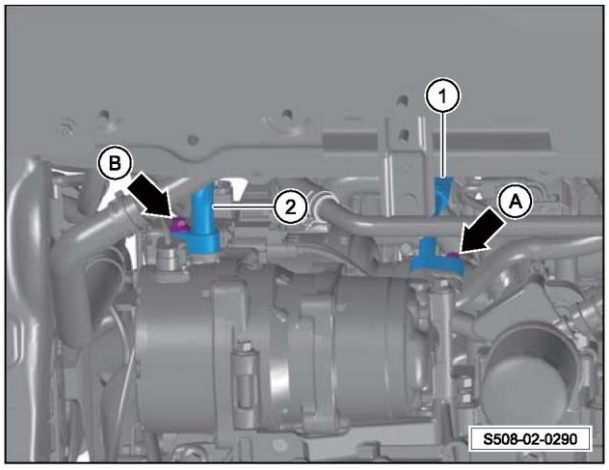
a. Loosen the fixing clamp (see the arrow), and disengage the low-temperature water pipe component ① from the integrated dual motor controller.



b. Unscrew the fixing bolt of the motor controller water outlet hose bracket (see arrow A).

c. Disengage the fixing clamp (see arrow B), and disengage the motor controller water outlet hose ① from the integrated dual motor controller.

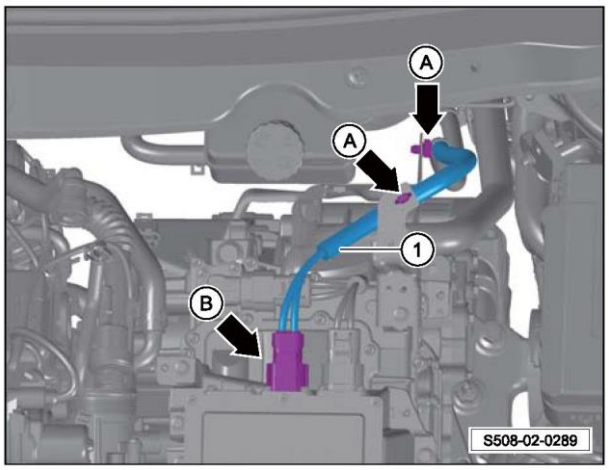
d. Disengage the fixing clamp (see arrow C), and disengage the coolant pump outlet hose ② from the PTC circulating pump inlet pipe assembly.



e. Unscrew the fixing bolt (see arrow A) and disengage the compressor exhaust pipe assembly ① from the compressor assembly.

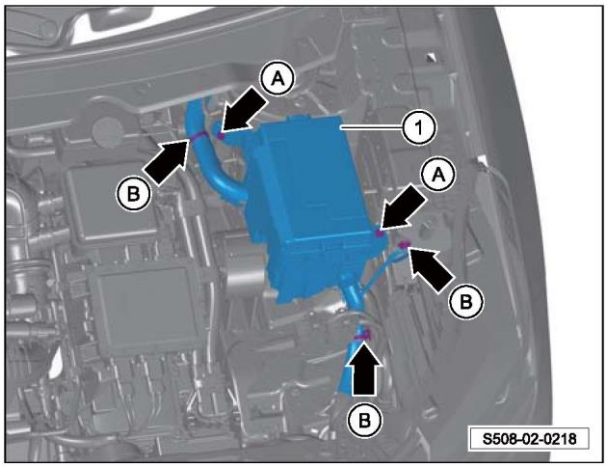
f. Unscrew the fixing bolt (see arrow B), and disengage the compressor suction pipe assembly ② from the compressor assembly.

- Tightening torque of bolt (see arrow **A**): **8±1 N·m**
- Tightening torque of bolt (see arrow B): 8±1 N·m



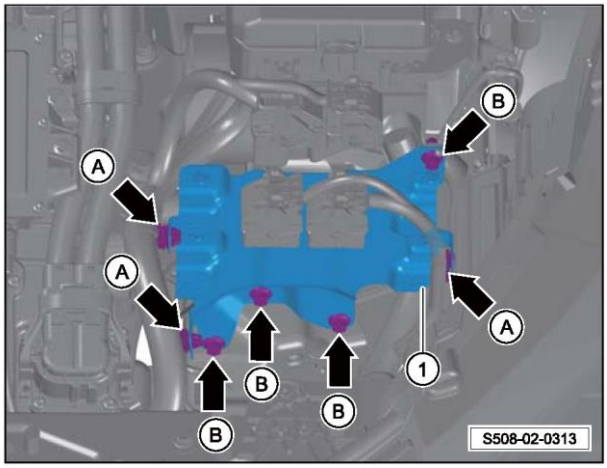
g. Disengage the fixing clip (see arrow A) of HV charger harness ①.

h. Disconnect the connector (see arrow B), and disengage the HV charger harness ① from the HV electrical box.

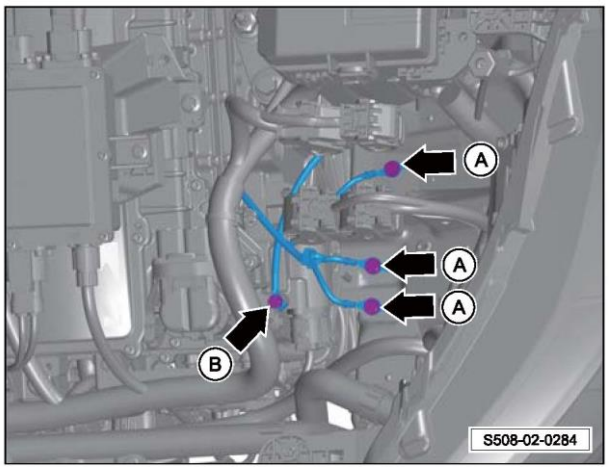


i. Unscrew the fixing bolt (see arrow A), disengage the harness fixing clip (see arrow B), and move the harness in fuse box assembly area ① aside.

- Tightening torque of bolt (see arrow A): 10±1 N·m



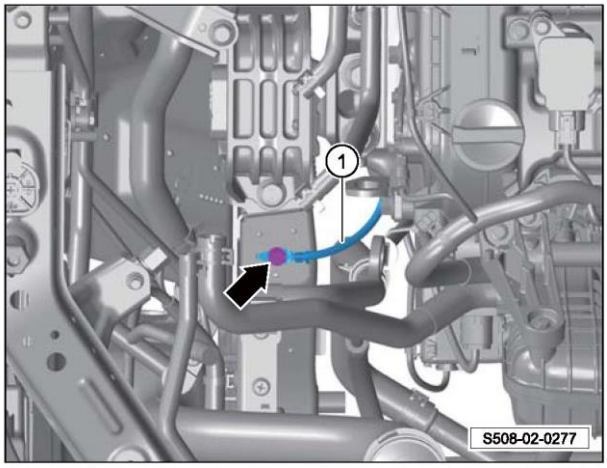
j. Disengage the harness fixing clip (see arrow A), unscrew the fixing bolt (see arrow B), and remove the ECU bracket ①.



k. Unscrew the fixing bolt (see arrow A) and disengage the ground harness from the engine harness.

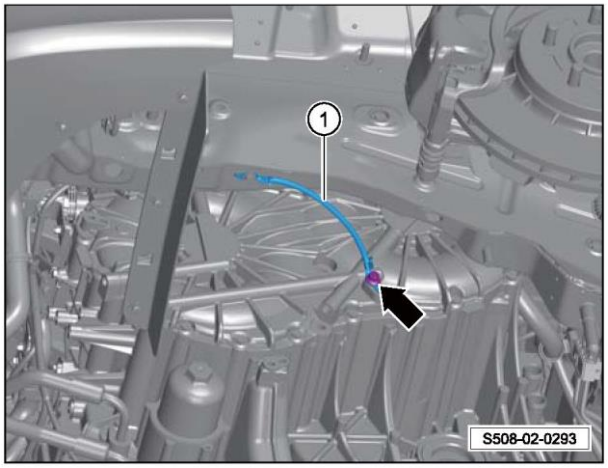
l. Unscrew the fixing bolt (see arrow B) and disengage the ground harness from the integrated dual motor controller.

- Tightening torque of bolt (see arrow A): 10±1 N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m



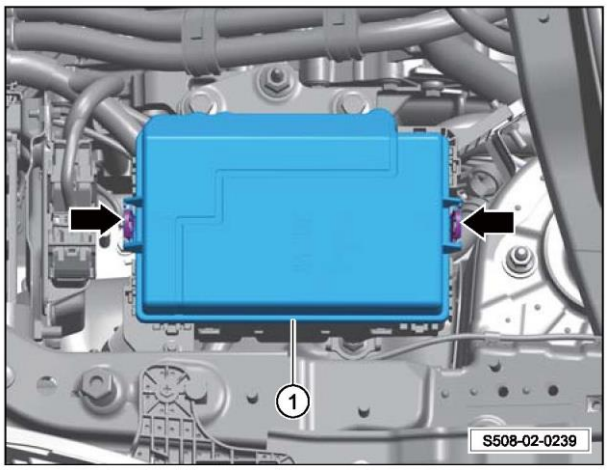
m. Unscrew the fixing bolt (see the arrow), and disengage the engine side ground harness ①.

- Tightening torque of bolt: 10±1 N·m

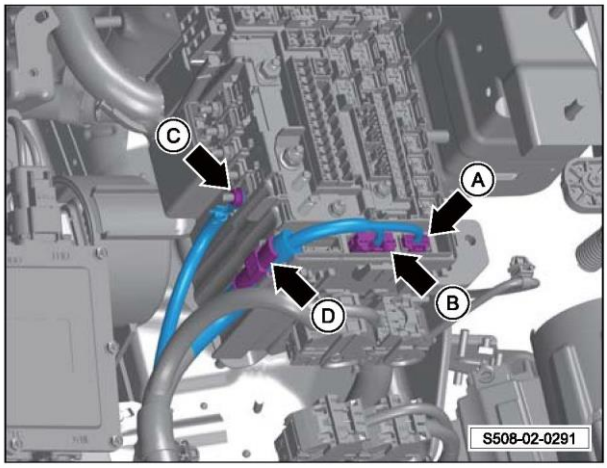


n. Unscrew the fixing bolt (see the arrow), and disengage the transmission side ground harness ①.

- Tightening torque of bolt: 10±1 N·m



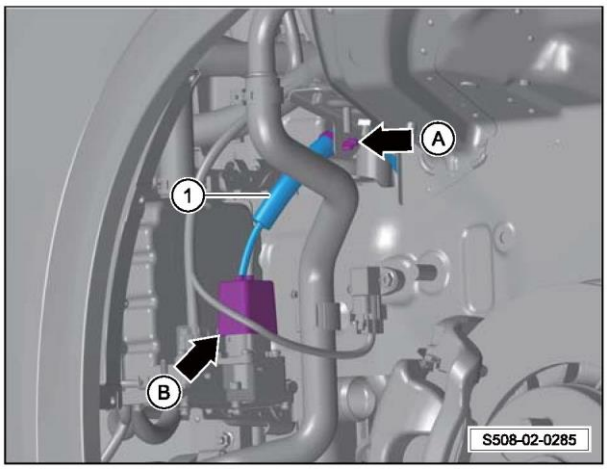
o. Press the fixing clip (see the arrow) and take out the front engine compartment fuse box cover ①.



p. Disconnect the connector of the engine harness and the engine compartment harness (see arrows A and B).

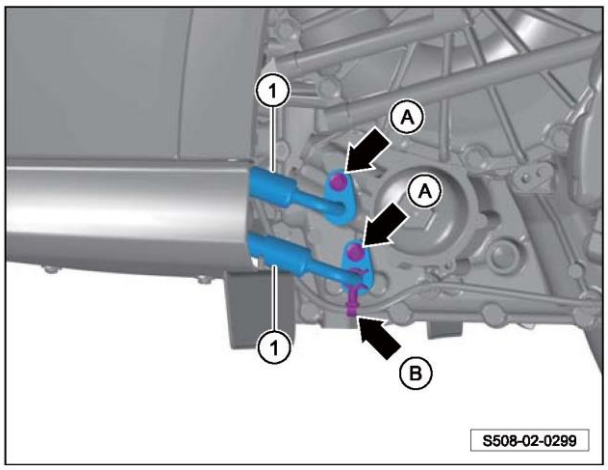
q. Unscrew the fixing nut (see arrow C), and disengage the engine positive harness from the engine compartment harness.

r. Disengage the fixing clips (see arrows D) of the engine harness.



s. Disengage the fixing clip of the A/C HV harness ① (see arrow A).

t. Disconnect the connector (see arrow B), and disengage the A/C HV harness ① from the PTC heater assembly.



u. Unscrew the fixing bolt (see arrow A), and disengage the oil cooling pipe assembly ① from the hybrid transmission.

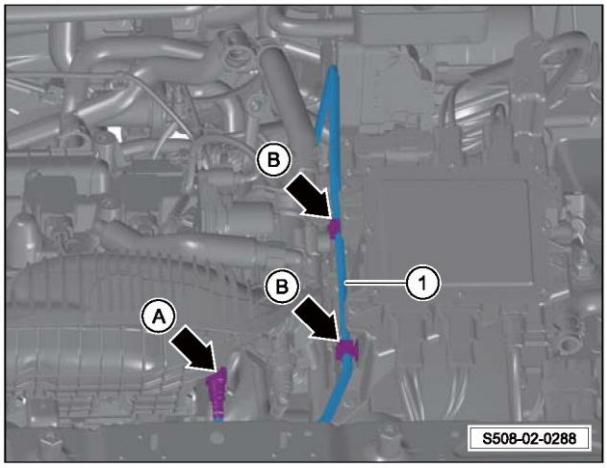
v. Disengage the harness clip (see arrow B), and remove the oil cooling pipe assembly ①.

- Tightening torque of bolt (see arrow **A**): **8±1 N·m**

Notes

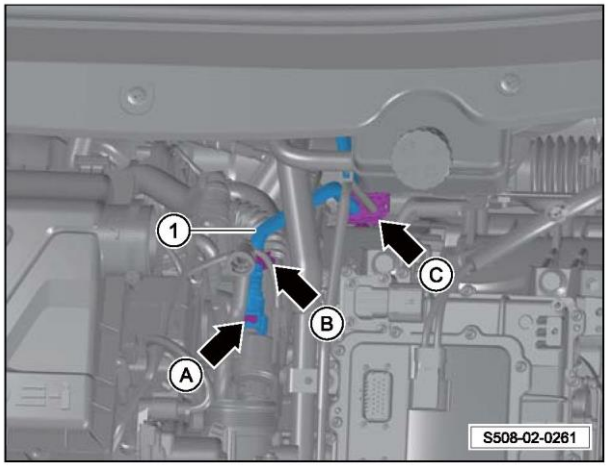
Collect the residual ATF with a container during removal.

Replace with a new sealing ring in each removal of oil cooling pipe assembly to hybrid transmission.



w. Press the quick connector (see arrow A) and disengage 3# oil inlet pipe ① from the fuel distributor component.

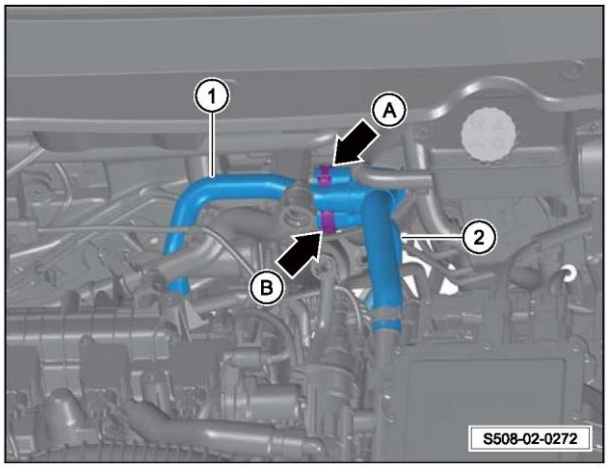
x. Disengage the fixing pipe clamp of 3# oil inlet pipe ① (see arrow B).



y. Press the quick connector (see arrow A) and disengage the canister desorption pipe 3 ① from the canister solenoid valve.

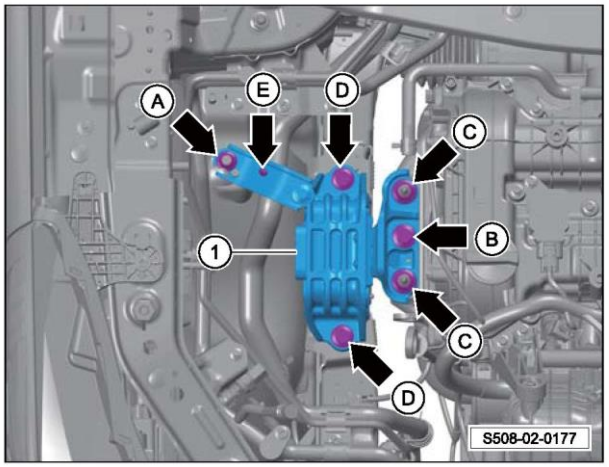
z. Disengage the fixing pipe clamp of the engine harness and the 3# canister desorption pipe ① (see arrow B).

aa. Disengage the fixing clamp of the 3# canister desorption pipe (see arrow C).



ab. Loosen the fixing clamp (see arrow A) and disengage the PTC circulating water pump inlet pipe assembly ① from the HVAC circulating three-way valve assembly.

ac. Loosen the fixing clamp (see arrow B), and disengage the three-way valve outlet hose ② from the HVAC circulating three-way valve assembly.



ad. Place a movable flat workbench below the power assembly and lower the vehicle to the workbench to support the power assembly firmly.

ae. Unscrew the fixing nut of the power suspension assembly (right) ① and the body (see arrow A).

af Unscrew the fixing bolt of the power suspension assembly (right) ① and the engine (see arrow B).

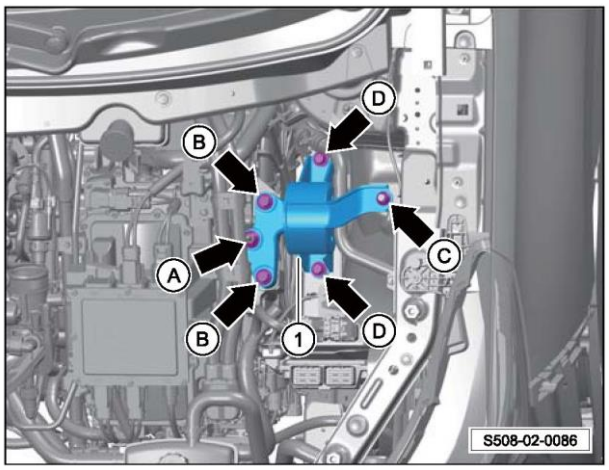
ag. Unscrew the fixing nut of the power suspension assembly (right) ① and the engine (see arrow C).

ah. Unscrew the fixing bolt of the power suspension assembly (right) ① and the frame longitudinal beam (see arrow D).

ai. Disengage the fixing clip of the HVAC three-way valve inlet pipe assembly (see arrow E).

ag. Remove the power suspension assembly (right) ①.

- Tightening torque of nut (see arrow **A**): **60±3 N·m**
- Tightening torque of bolt (see arrow **B**): **90±5 N·m**
- Tightening torque of nut (see arrow **C**): **90±5 N·m**
- Tightening torque of bolt (see arrow D): 60±3 N·m

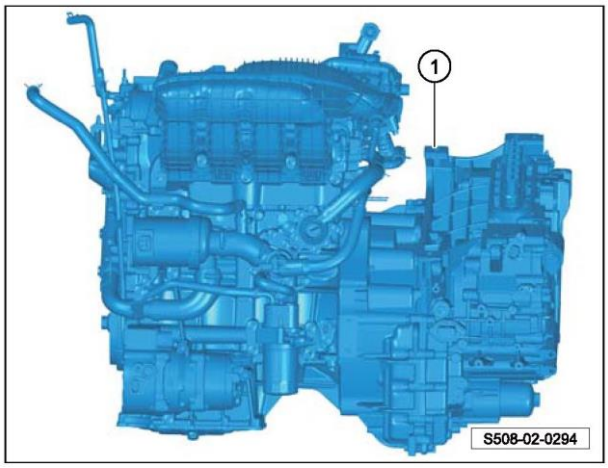


ak. Unscrew the fixing nut (see arrow A) and bolt (see arrow B) of the power suspension assembly (left) ① and the hybrid transmission.

al. Unscrew the fixing nut of the power suspension assembly (left) ① and the body (see arrow C).

am. Unscrew the fixing bolt of the power suspension assembly (left) ① and the frame longitudinal beam (see arrow D). Remove the power suspension assembly (left) ①.

- Tightening torque of nut (see arrow **A**): **90±5 N·m**
- Tightening torque of bolt (see arrow **B**): **90±5 N·m**
- Tightening torque of bolt (see arrows C): 60±3 Nm
- Tightening torque of nut (see arrow D): 60±3 N·m



ap. Remove the engine with transmission assembly and accessories ①.

Tip:

When removing the engine and manual transmission, lift the lifter slowly and check carefully whether the engine and manual transmission are completely disconnected with the body harness, pipe, etc.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add engine oil and fluid for all components according to the specifications.

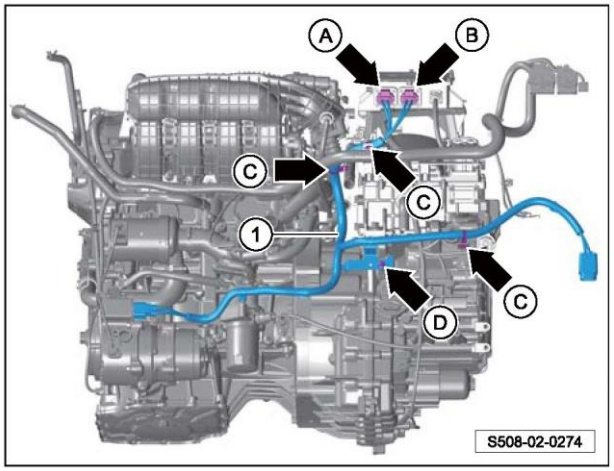
– After installation, calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle

2.10.2.2 Separation of engine and hybrid transmission

Disassembly procedures

1 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

2 Remove the GCU HV harness. Refer to 5.6.6.6 Removal and installation of GCU HV harness



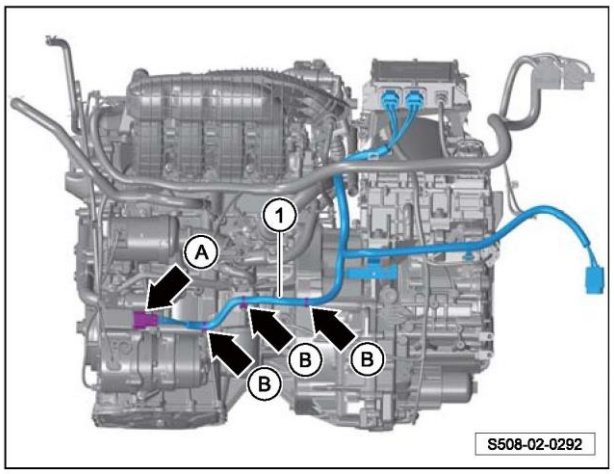
3 Separation of engine and hybrid transmission

a. Disconnect the connector of the A/C HV harness ① and the integrated dual motor controller (see arrows A and B).

b. Disengage the fixing clip of the A/C HV harness ① (see arrow C).

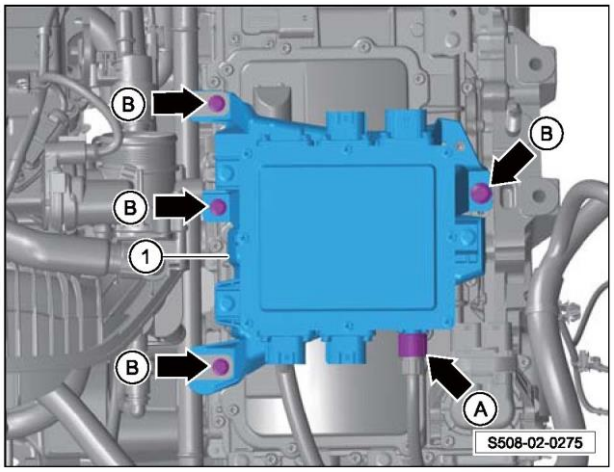
c. Unscrew the fixing bolt of the A/C HV harness bracket (see arrow D).

- Tightening torque of bolt (see arrow **D**): **10±1 N·m**



d. Disconnect the connector of the A/C HV harness ① and the compressor (see arrow A).

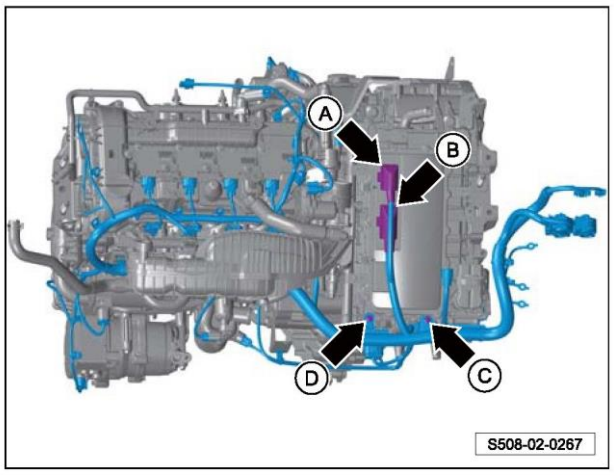
e. Disengage the fixing clip (see arrow B), and remove the A/C HV harness ①.



f. Disengage the connector of the engine harness and the HV electrical box (see arrow A).

g. Unscrew the fixing bolt (see arrow B), and remove the HV electrical box bracket ①.

- Tightening torque of bolt (see arrow B): 10±1 N·m

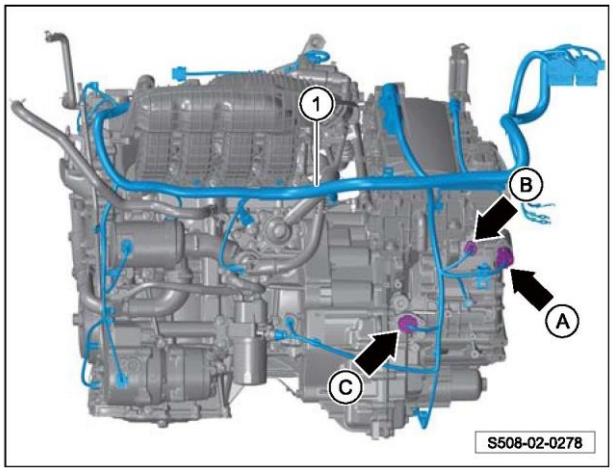


h. Disconnect the connector of the engine harness and the integrated dual motor controller (see arrows A and B).

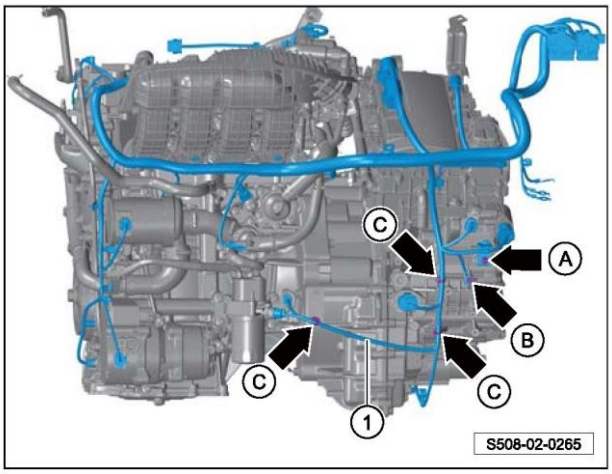
i. Unscrew the fixing bolt (see arrow C) of engine harness bracket 3.

g. Unscrew the fixing bolt of the engine harness bracket 4 (see arrow D).

- Tightening torque of bolt (see arrow C): 10±1 N·m
- Tightening torque of bolt (see arrow **D**): **10±1 N·m**



k. Disconnect the connector of the engine harness ① and the hybrid transmission (see arrows A, B and C).

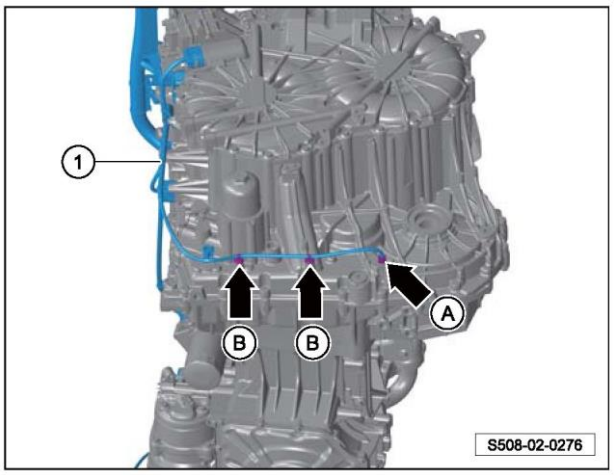


l. Unscrew the fixing bolt of the engine harness ① bracket 2 (see arrow A).

m. Unscrew the ground fixing bolt (see arrow B) of the engine harness ①.

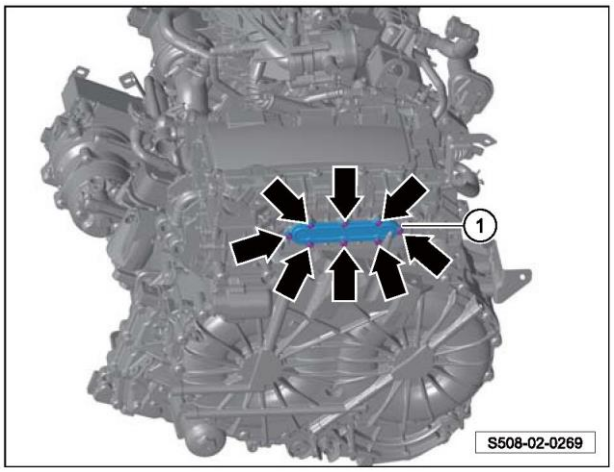
n. Disengage the fixing clip of the engine harness ① and the hybrid transmission (see arrow C).

- Tightening torque of bolt (see arrow A): 10±1 N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m



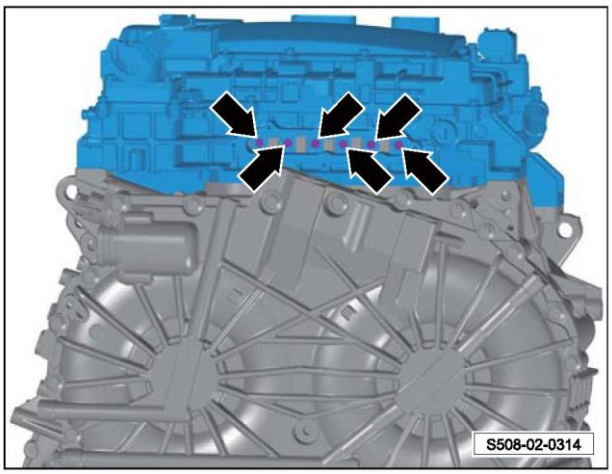
o. Disconnect the connector of the engine harness ① and the hybrid transmission oil temperature sensor (see arrow A).

p. Disengage the fixing clip (see arrow B) of the engine harness ①.



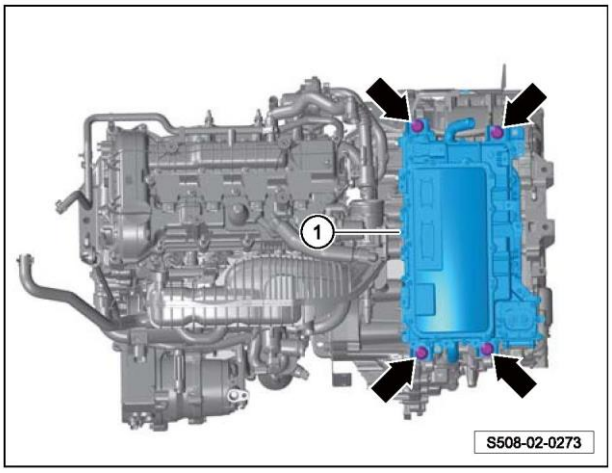
q. Unscrew the fixing bolt (see the arrow), and remove the motor three-phase copper bar connecting window ①.

- Tightening torque of bolt: **2±0.1N·m**



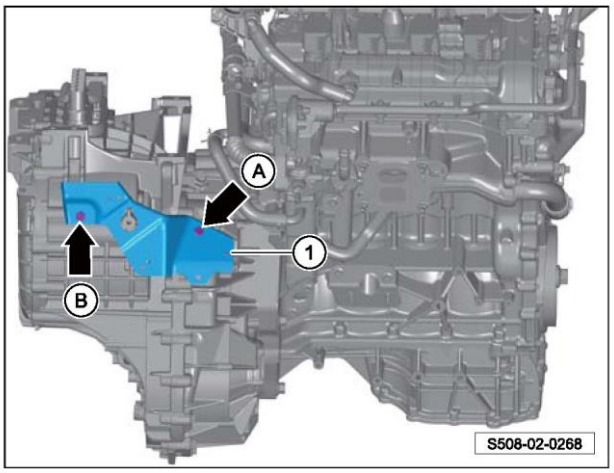
r. Unscrew the fixing bolt of the motor control three-phase copper bar (see the arrow).

- Tightening torque of bolt: **11±2 N·m**



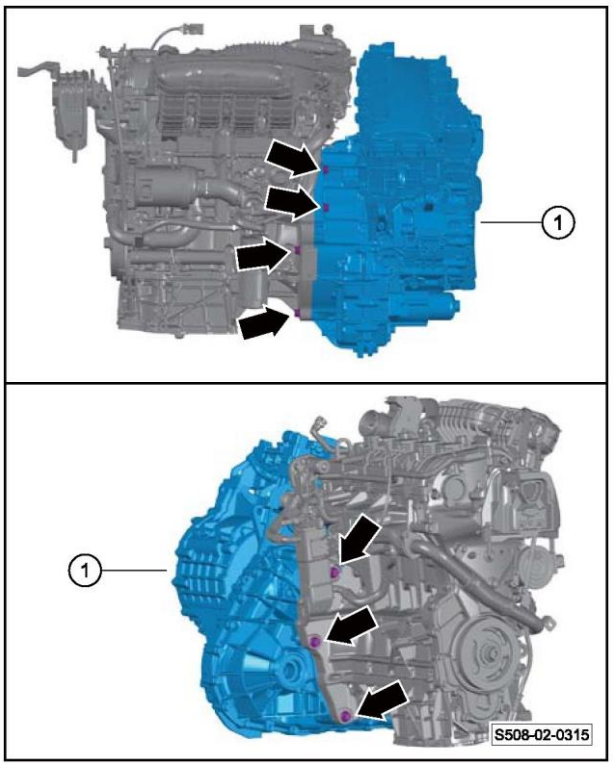
s. Unscrew the fixing bolt (see the arrow), and remove MCU/GCU (integrated dual motor controller) ①.

- Tightening torque of bolt: 50±3 N·m



t. Unscrew the fixing bolts (see arrows A and B) and remove the harness bracket ①.

- Tightening torque of bolt (see arrow A): 10±1 N·m
- Tightening torque of bolt (see arrow **B**): **25±1 N·m**



u. Unscrew the connecting bolts (see the arrows) between the engine and the hybrid transmission assembly.

v. Detach the hybrid transmission assembly ① from the engine assembly.

- Tightening torque of bolt: **100±5 N·m**

Installation procedures

The installation procedure is to be performed

basically in the reverse order:

2.11 Engine mount

2.11.1 Specification

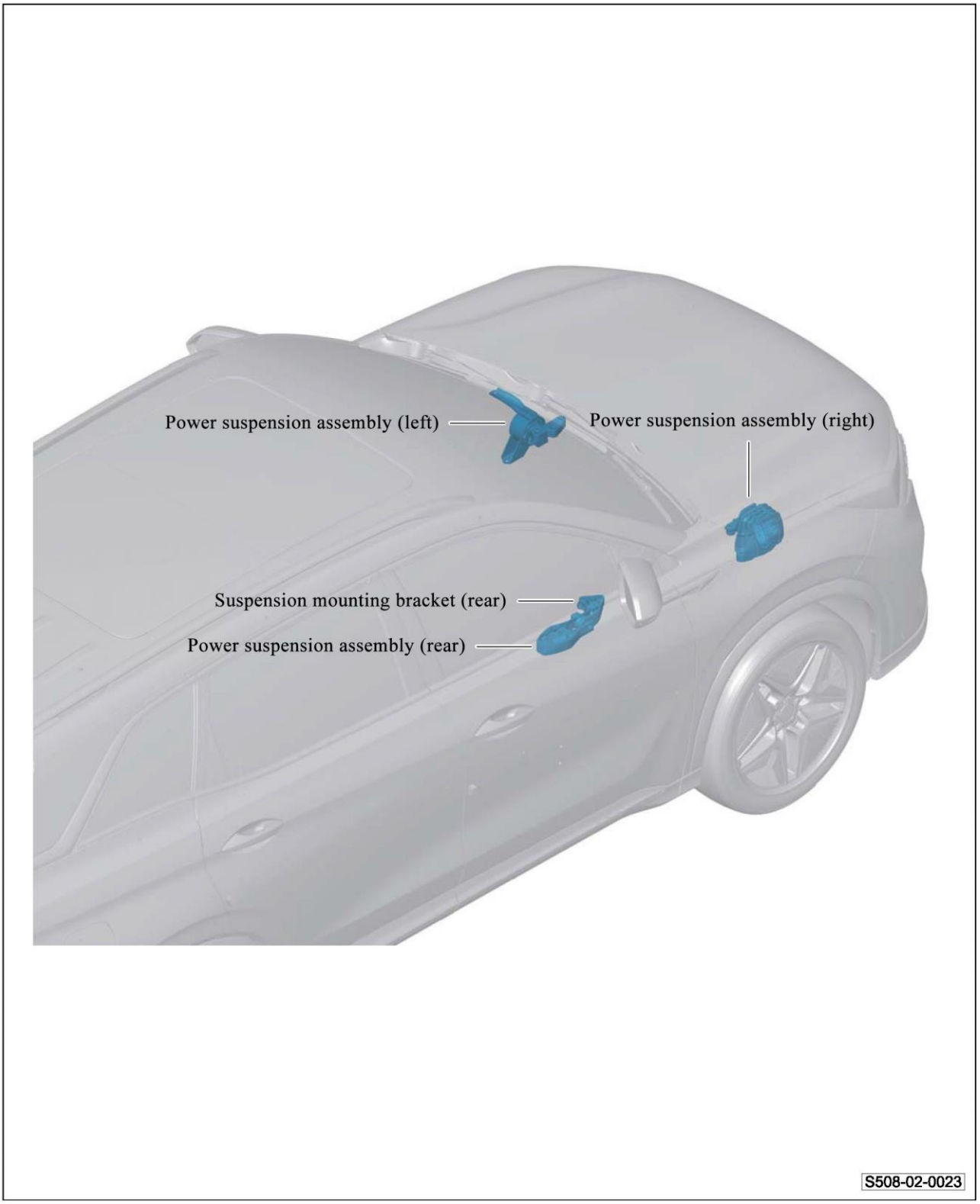
2.11.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between power suspension assembly (right) and engine	Hexagon head flange bolt M12×1.25×60	90±5
	All-metal hexagon flange locking nut M12×1.5	90±5
Connection between power suspension assembly (right) and body	Hexagon head flange bolt c/w plain washer cluster M10×1.25×65	60±3
	All-metal hexagon flange locking nut M10×1.25	60±3
Connection between power suspension assembly (left) and body	Hexagon head flange bolt c/w plain washer cluster M10×1.25×35	60±3
	All-metal hexagon flange locking nut M10×1.25	60±3
Connection between power suspension assembly (left) and hybrid transmission	Hexagon head flange bolt M12×1.25×60	90±5
	All-metal hexagon flange locking nut M12×1.25	90±5
Power suspension assembly (rear)	Guide hexagon head flange bolt c/w plain washer cluster was M14×1.5×85	160±10
Suspension mounting bracket (rear)	Hexagon head flange bolt M10×1.25×45	60±3

2.11.2 Component position

2.11.2.1 Component position

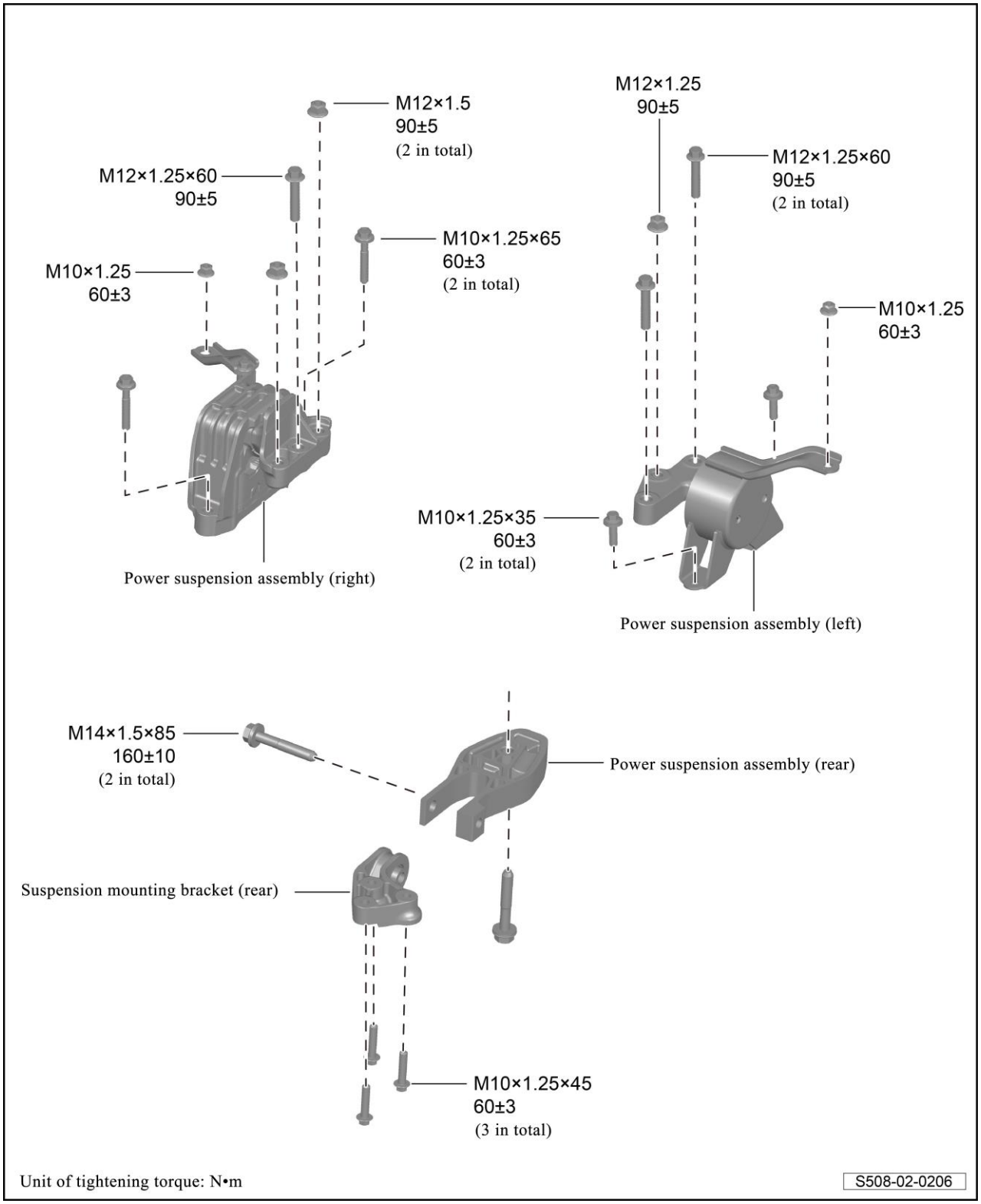
Component location diagram



2.11.3 Exploded view

2.11.3.1 Exploded view

Exploded view



2.11.4 Removal and installation

2.11.4.1 Removal and installation of power suspension assembly (left)

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

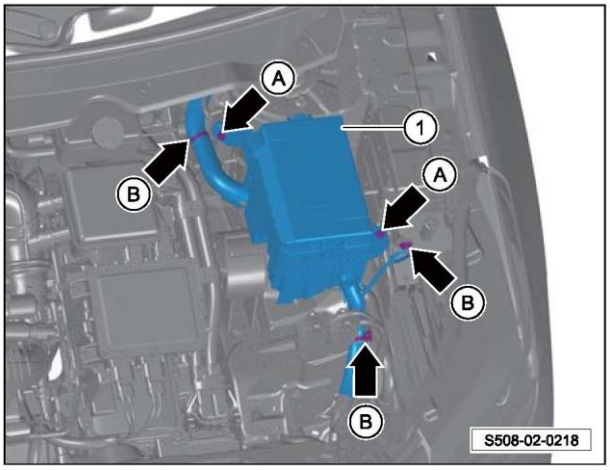
6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

7 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

8 Remove the ECU assembly. Refer to 2.8.7.4 Removal and installation of ECU assembly

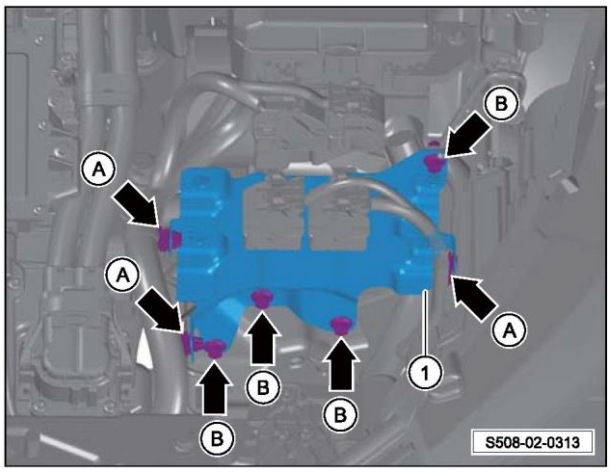
9 Remove the VCU. Refer to 5.2.7.1 Removal and installation of VCU

10 Jack up the transmission firmly.

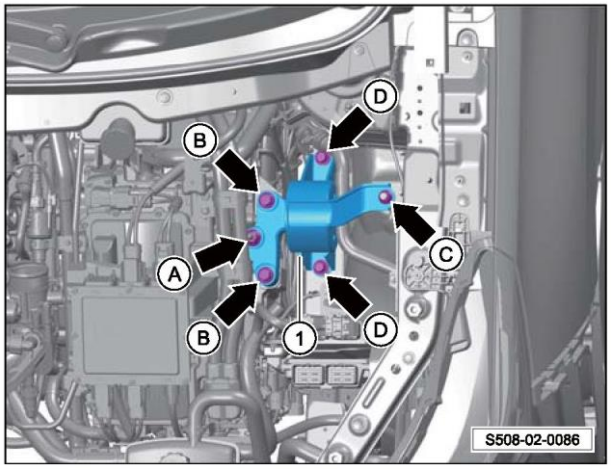


11 Removal of power suspension assembly (left)

a. Unscrew the fixing bolt (see arrow A), disengage the harness fixing clip (see arrow B), and move the harness in fuse box assembly area ① aside.



b. Disengage the harness fixing clip (see arrow A), unscrew the fixing bolt (see arrow B), and remove the ECU bracket ①.



c. Unscrew the fixing nut (see arrow A) and bolt (see arrow B) of the power suspension assembly (left) ① and the hybrid transmission.

d. Unscrew the fixing nut of the power suspension assembly (left) ① and the body (see arrow C).

e. Unscrew the fixing bolt of the power suspension assembly (left) ① and the frame longitudinal beam (see arrow D).

f. Remove the power suspension assembly (left) ①.

- Tightening torque of nut (see arrow **A**): **90±5 N·m**
- Tightening torque of bolt (see arrow **B**): **90±5 N·m**
- Tightening torque of bolt (see arrows C): 60±3 Nm
- Tightening torque of nut (see arrow D): 60±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.11.4.2 Removal and installation of power suspension assembly (right)

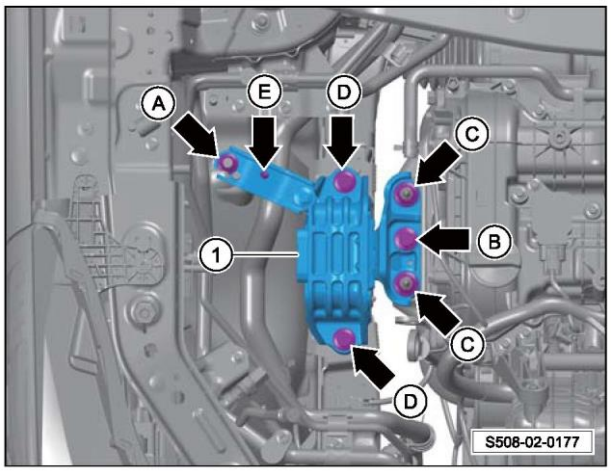
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

3 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

4 Remove the water reservoir assembly. Refer to 2.9.7.2 Removal and installation of water reservoir assembly



5 Removal of power suspension assembly (right)

a. Jack up the bottom area of the right side of the engine firmly with a jack.

b. Unscrew the fixing nut of the power suspension assembly (right) ① and the body (see arrow A).

c. Unscrew the fixing bolt of the power suspension assembly (right) ① and the engine (see arrow B).

c. Unscrew the fixing nut of the power suspension assembly (right) ① and the engine (see arrow C).

c. Unscrew the fixing bolt of the power suspension assembly (right) ① and the frame longitudinal beam (see arrow D).

c. Disengage the fixing clip of the HVAC three-way valve inlet pipe assembly (see arrow E).

b. Remove the power suspension assembly (right) ①.

- Tightening torque of nut (see arrow **A**): **60±3 N·m**
- Tightening torque of bolt (see arrow **B**): **90±5 N·m**
- Tightening torque of nut (see arrow **C**): **90±5 N·m**
- Tightening torque of bolt (see arrow D): 60±3 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, add coolant to the engine cooling system. Refer to 1.4.3.40 Engine coolant change

– After installation, add coolant to the power battery cooling system. Refer to 5.4.5.1 Replacement of power battery coolant

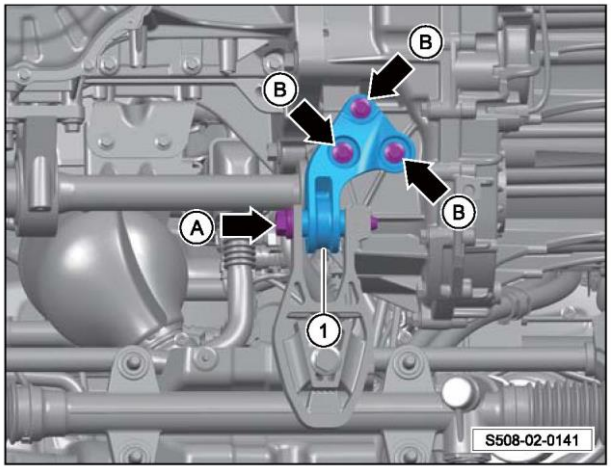
2.11.4.3 Removal and installation of suspension mounting bracket (rear)

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Lift the vehicle.

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Removal of suspension mounting bracket (rear)

a. Unscrew the fixing bolt (see arrows A and B), and remove the suspension mounting bracket (rear) ①.

- Tightening torque of bolt (see arrow **A**): **160±10 N·m**
- Tightening torque of bolt (see arrow B): 60±3Nm

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.11.4.4 Removal and installation of power suspension assembly (rear)

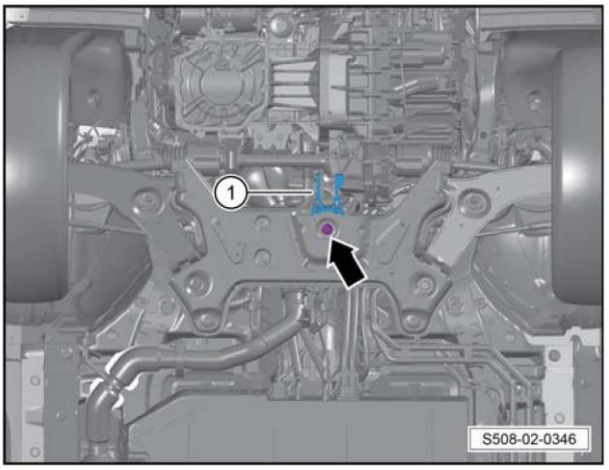
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Lift the vehicle.

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

4 Remove the suspension mounting bracket (rear). Refer to 2.11.4.3 Removal and installation of suspension mounting bracket (rear)



5 Removal of power suspension assembly (rear)

a. Unscrew the fixing bolt (see the arrow), and remove the power suspension assembly (rear) ①.

- Tightening torque of bolt: **160±10 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

2.12 Mechanical system

2.12.1 Specification

2.12.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Cylinder head cover	Bolt	10
Crankshaft damping pulley	Hexagon flange bolt c/w flat washer	（150±10）+（180°±5°）
Ignition coil	Bolt	10
Electronic throttle body assembly	Hexagon lobular socket pan head screw	8±1
Timing tensioner	Hexagon head flange bolt M6	10±2
Exhaust sprocket	Hexagon head bolt	(50±2.5)+(90°±5°)
VVT component	M22×1	50+30°
Intake and exhaust camshaft bearing caps	Hexagon head flange bolt M6	(7±1)+(14±1)
Intake manifold	Bolt	25
Engine coolant temperature sensor	M12×1.5	23
Cylinder head assembly	Hex lobular socket head cap bolt M9×1.25	25+60°+90°+60°
Oil pump	Bolt	25
Cylinder block skirt component	Bolt	25
Dual-mass flywheel	Bihexagon socket head cap bolt	60+90°
Crankshaft signal disc	Hexagon lobular socket countersunk head screw	10±2
Main bearing cap	Hexagon head flange bolt M9×1.25	24+60°+60°
Crankshaft rear oil seal component	Bolt	10
Connecting rod bearing cap	Bihexagonal flange bolt M7×1	(16±2)+((90±5))°

2.12.1.2 Specifications of mechanical system

The engine model is F31A, which adopts liquid-cooled spark ignition, four-stroke, intake manifold (multi-point) (gasoline), naturally aspirated, liquid-cooled, fluffy, in-line modes, and is equipped with OBD onboard fault diagnosis system. Main performance parameters of the engine are as follows:

Engine	**Value**
Displacement (ml)	1498
Single-cylinder displacement of engine (mL)	375
Cylinder center distance of engine (mm)	80
Number of cylinders / Number of valves per cylinder	4/4
Rated power (KW/r/min)	81/6000
Maximum torque (N·m/(r/min))	135/4500
Ignition sequence	1-3-4-2
Fuel oil	92# or above unleaded gasoline for motor vehicles
Emission level	China VI
Self-diagnosis	Yes
Compression ratio	15.5:1

Engine	Value
Cylinder diameter × stroke (mm)	72×92
Electronic accelerator	Yes
Three-way catalytic convertor	Yes
Air-fuel ratio control and adjustment	Yes
Camshaft drive mode	Chain
Size of valve structure (mm)	Intake diameter: 29.30 Exhaust diameter: 25.60

Technical Data of Interior Engine

Crankshaft	Value
Diameter of main journal	42.986～42mm
Thickness of crankshaft thrust plate	2.45～2.5mm

Piston ring		Value
Ring groove clearance	First compression ring	0.04～0.08mm
	Second compression ring	0.03～0.07mm
End gap	First compression ring	0.15~0.25mm
	Second compression ring	0.25～0.40mm

Cooling system

Thermostat	Initial open temperature	Fully open lift
Electronic thermostat	97±2°C	≥8mm (113°C)
Cylinder block thermostat	70±2°C	≥7mm (85°C)

2.12.2 Description and operation

2.12.2.1 Overview

Camshaft

The dual overhead camshafts (DOHC) are adopted, namely there are two camshafts. One camshaft controls the intake valve and the other one controls the exhaust valve. The camshaft is located on the top of the engine and in the journal of the cylinder head, which is fixed by camshaft bearing cover. The hole in the camshaft journal of the cylinder head is used as the oil passage. The engine oil flows under pressure to the camshaft to lubricate the various camshaft journals. The engine oil returns to the oil pan through the return hole in the cylinder head. The cam lobe is machined to accurately open and close the intake/exhaust valve to an appropriate degree at an appropriate time.

Crankshaft

The crankshaft is integral in structure and its blank is forged by a whole piece of steel. The integral crankshaft features reliable work, light weight, high stiffness and strength and less machining surface and is generally used with a plain bearing. The front end of the crankshaft is provided with timing gears and pulleys. The structure is simple and the maintenance is convenient. The rear end of the crankshaft is provided with flange, and the drive plate is connected with the crankshaft through bolts and locating pins. The locating pins are used to ensure the correct assembly position relationship between drive plate and crankshaft when the drive plate is re-installed. This connection is simple and reliable.

Piston component

The piston component includes parts that reciprocate in the cylinder, such as piston, piston pin, and piston ring, which have the harshest working conditions in a reciprocating engine. The working reliability and durability of the engine are largely related to the operation of the piston assembly. The life of the piston component determines the maintenance interval of the engine.

Connecting rod component

The connecting rod component of the internal combustion engine includes connecting rod body, connecting rod cover, connecting rod bearing bush and connecting rod bolt. The function of the connecting rod component is to convert the reciprocating motion of piston into the rotational motion of crankshaft, and transmit the force acting on the piston component to the crankshaft.

2.12.3 System working principle

2.12.3.1 Working principle of engine

Intake stroke

The piston is moved from the top dead center to the bottom dead center by the crankshaft. At this time, the exhaust valve is closed and the intake valve is opened. During the movement of the piston, the cylinder volume is gradually increased, and a certain degree of vacuum is formed in the cylinder. At this time, the intake valve is opened, air is drawn into the cylinder through the intake valve, and the ECU controls the injector to inject the gasoline into the cylinder and form a combustible mixture in the cylinder.

Compression stroke

After the intake stroke ends, the crankshaft continues to move the piston from bottom dead center to top dead center. At this time, the intake and exhaust valves are closed, and as the piston moves, the volume in the cylinder gradually becomes smaller. Since the gas is compressible, the temperature of the gas rapidly rises after compression.

Working stroke

At the end of the compression stroke, the engine control unit controls the primary coil circuit of the ignition coil to open, generating the induced high voltage at the secondary coil, and the high voltage is quickly transmitted to the spark plug mounted on the top of the cylinder head through the ignition wire. Eventually the high voltage breaks through the gap of the spark plug to create an electrical spark that ignites the combustible mixture within the cylinder. The flame is quickly transferred to the entire combustion chamber while releasing a large amount of heat. The volume of the burning gas expands rapidly. The pressure and temperature also rise at the same time, and the expanding force acts on the top of the piston, causing the piston to move from the top dead center to the bottom dead center, and the reciprocating motion of the piston is converted into the rotary motion through connecting rod. At this time, the intake and exhaust valves are still closed.

Exhaust stroke

At the beginning of the exhaust stroke, the exhaust valve is opened, the intake valve is still closed, and the crankshaft drives the piston from the bottom dead center to the top dead center through the connecting rod. At this time, the expanded combustion gas is exhausted out of the cylinder through the exhaust valve under its residual pressure and the pushing of piston. When the piston reaches the top dead center, the exhaust stroke ends and the exhaust valve closes.

However, in the actual process, the intake valve opens earlier than the top dead center and closes later than the bottom dead center. This design is to make the intake more sufficient and reduce the power consumed in the intake process. During exhaust, the exhaust valve is open earlier than the time when the piston arrives at BDC and is closed later than the time when the piston arrives at the TDC. The purpose is to reduce the amount of mixture in the cylinder and reduce the power consumed in the intake process. In addition, since the intake and exhaust valves have a certain overlapping angle, that is, the intake and exhaust valves can be simultaneously opened within a certain crank angle. At this time, since the gas that has been burned is exhausted through the exhaust valve, a certain inertia is formed, which drives the combustible mixture to enter, so that the intake is more sufficient to some extent. However, it is not the bigger angle of the valve overlap, the better. Under different working conditions, the valve overlap angle requirements are different. Therefore, variable valve timing is adopted for the intake valve of the engine. The purpose is to meet the engine's demand for the opening

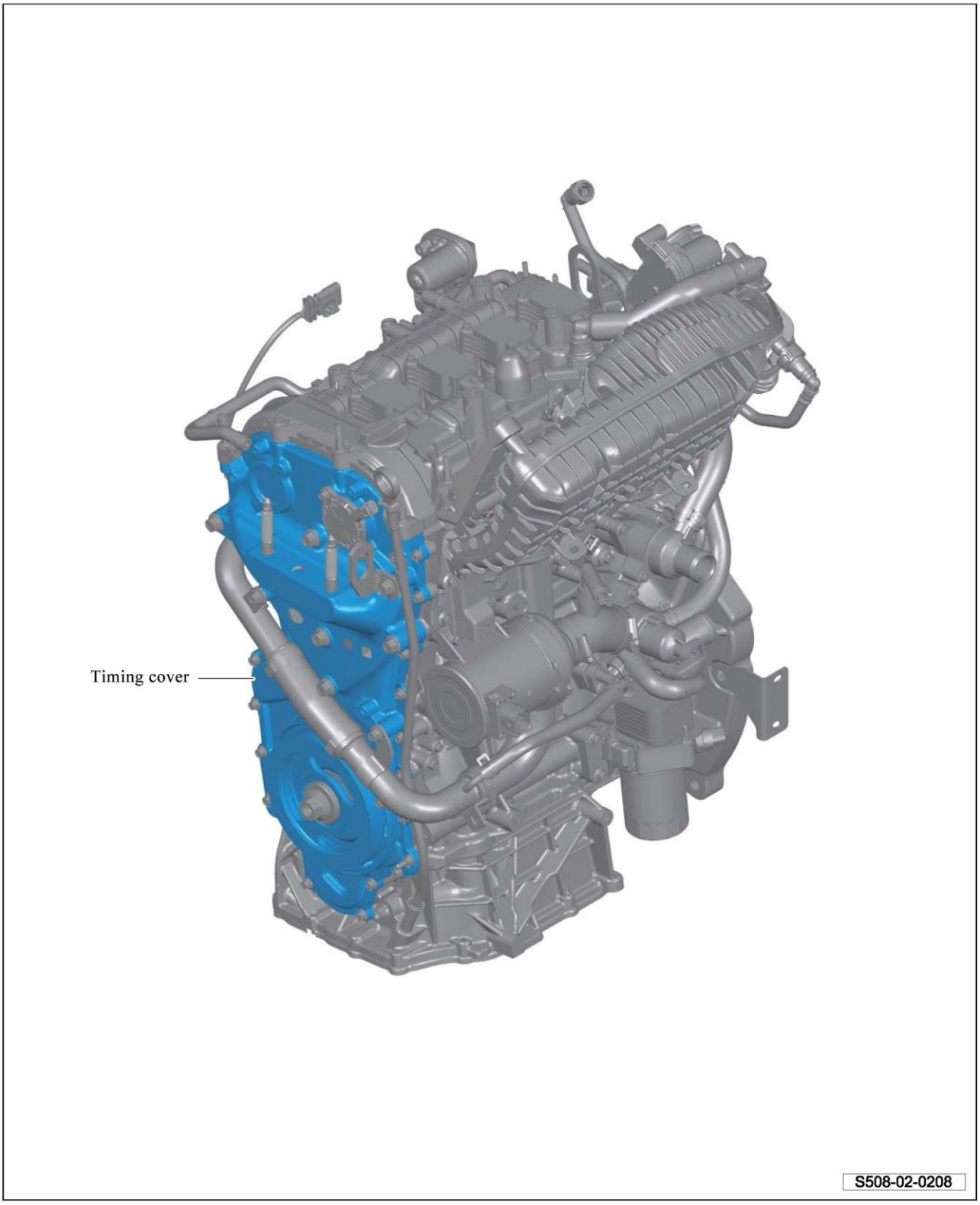
angle of the intake valve under different working conditions. This function is realized by the VVT system.

Working principle of VVT

VVT is short for Variable Valve Timing, which refers to the variable timing valve system. Everything with mass has inertia, and the air drawn into the engine cylinder also has inertia. After the intake process, the trend of entering the cylinder remains. At this time, if the valve closing time is delayed, the cylinder can suck in more air to improve the volume efficiency. The result is that the longer the delay in valve closing, the higher the performance at high speed. Conversely, the earlier the valve closing, the more stable the operation at low speed and the greater the torque.

2.12.4 Component position

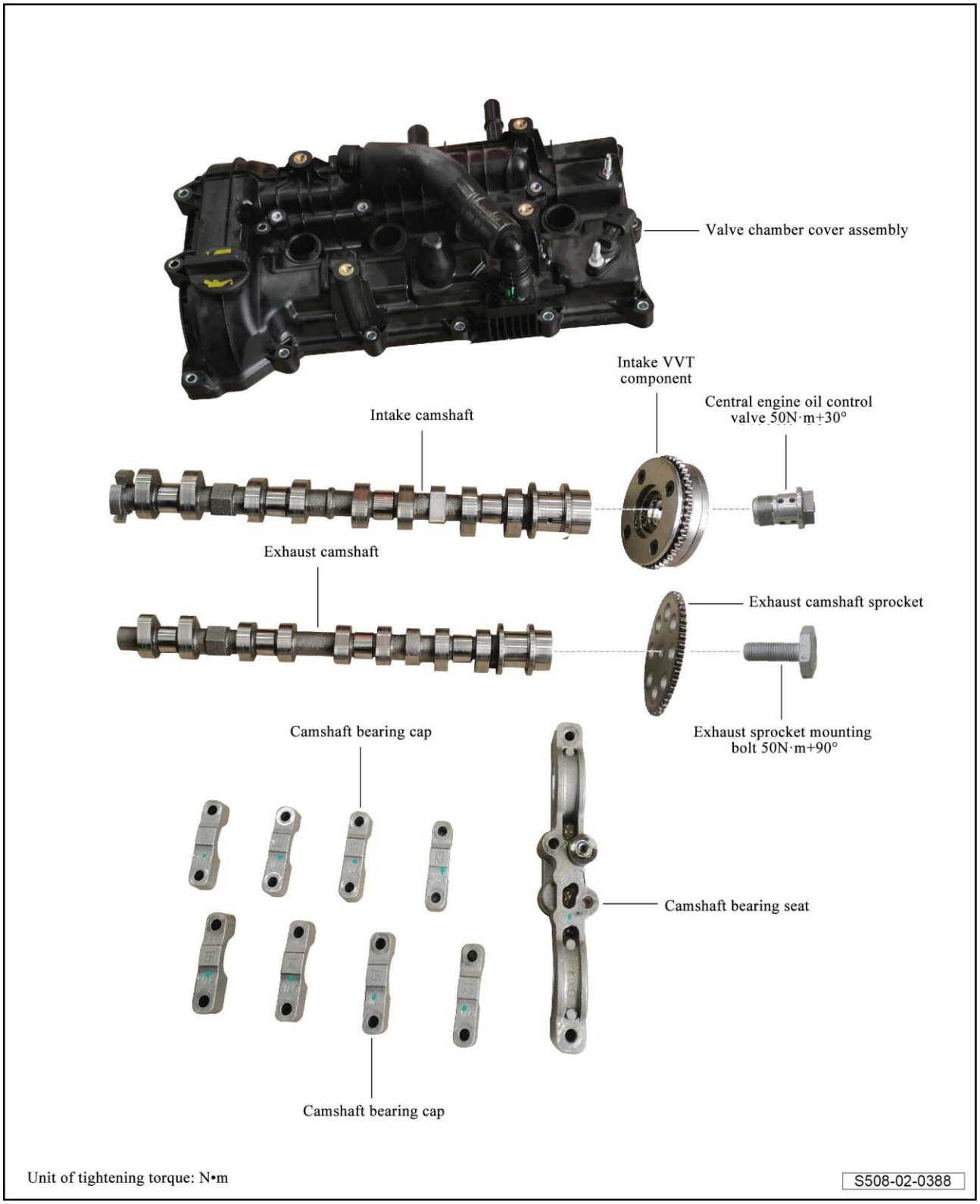
2.12.4.1 Component position



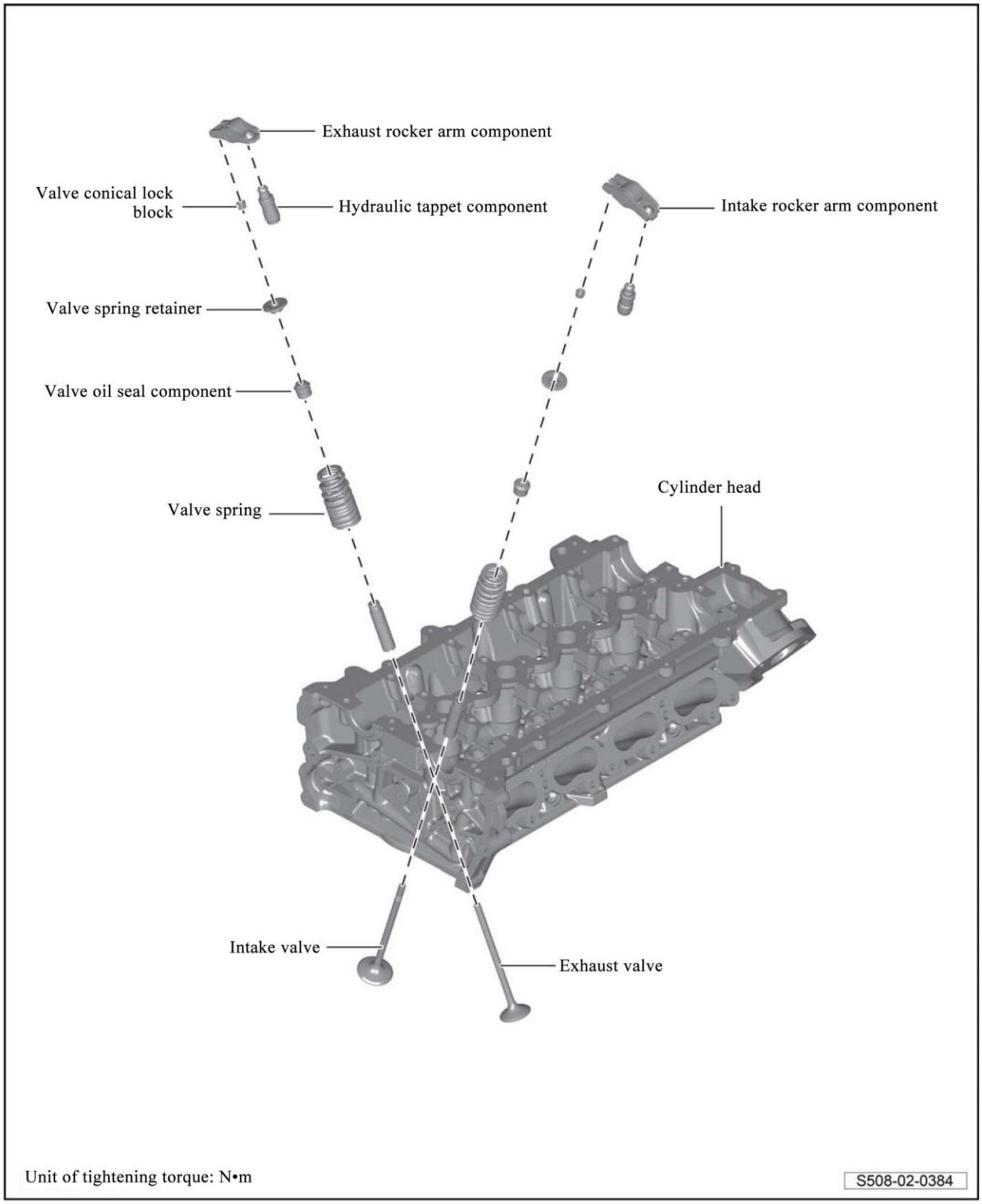
2.12.5 Exploded view

2.12.5.1 Exploded view

Exploded view 1 of mechanical system

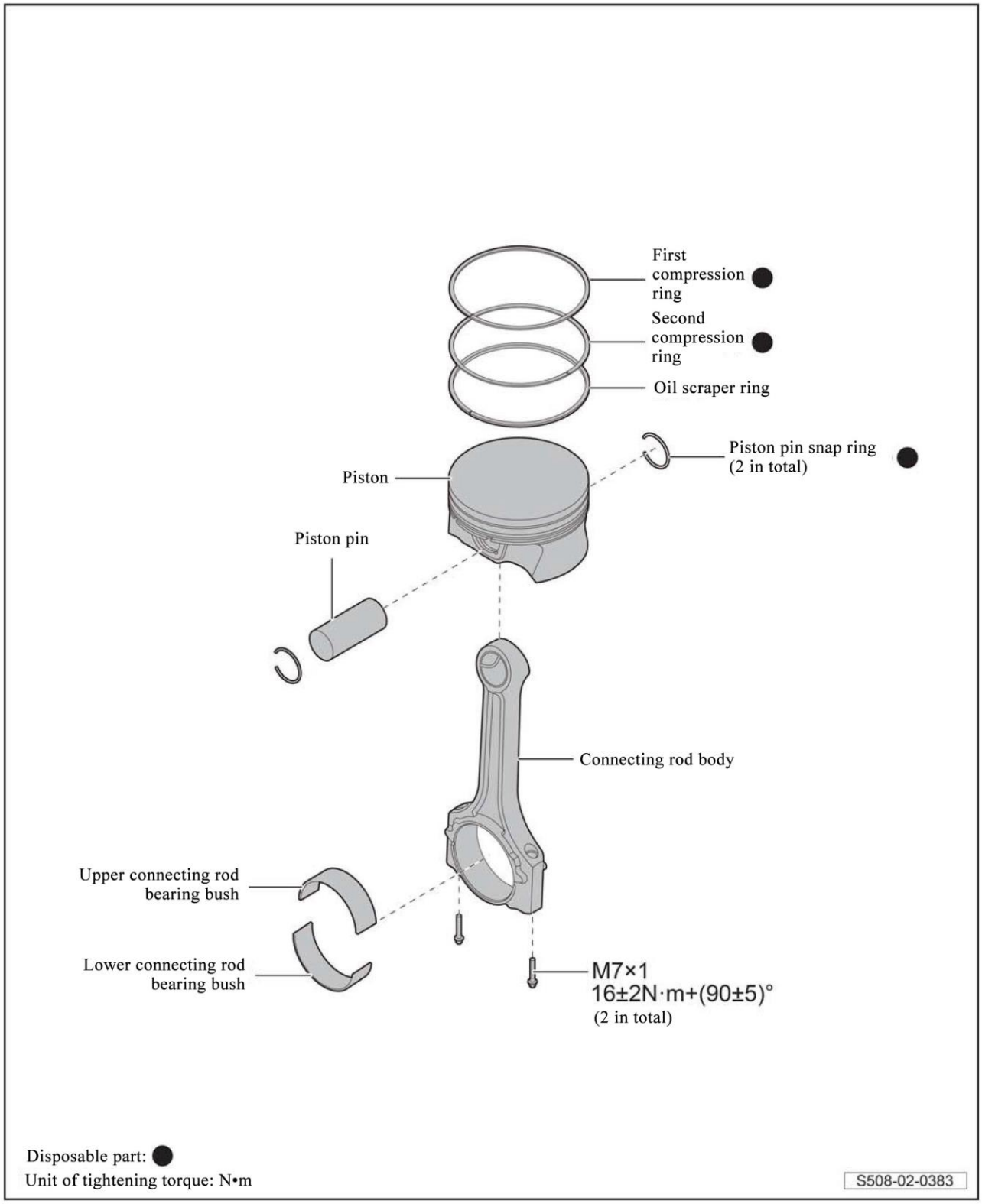


Exploded view 2 of mechanical system

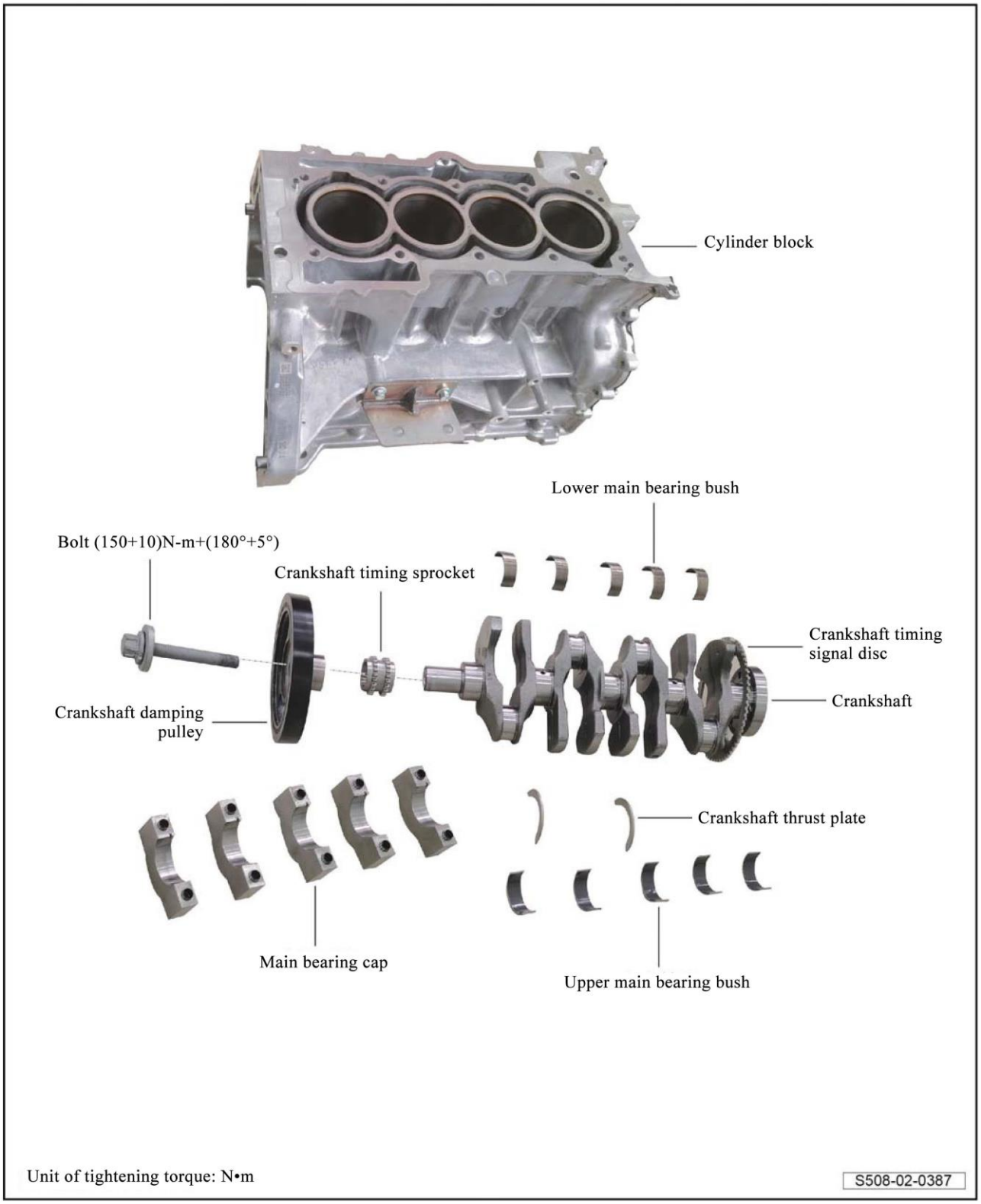


Exploded view 3 of mechanical system

Exploded view 4 of mechanical system



Exploded view 5 of mechanical system



2.12.6 Diagnosis information and steps

2.12.6.1 Diagnostic instructions

Be sure to be familiar with the system functions and operations before starting system diagnosis, which will help you determine the correct fault diagnosis steps in the event of a failure, and more importantly, help determine whether the situations described by the customer are normal.

2.12.6.2 Visual inspection

- Check whether there is any added device that may affect the performance of mechanical system.
- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- Confirm whether the engine oil level and viscosity are normal.
- Record specific factors such as engine speed and ambient temperature.
- Compare with a known good engine to confirm whether the current engine is in good condition.

2.12.6.3 Engine noises under load

Diagnosis steps

Step 1	Check for any abnormal sound in the valve chamber cover.

A Check whether there is a rhymed, clear and uniform “tap-tap” sound can be heard near the cylinder head cover. Is it obvious during idling and weakens when the engine speed increases?

Yes → If the measured oil pressure is up to the standard, it indicates that the hydraulic tappet fails. Replace the hydraulic tappet.

No

Step 2	Check the main bearing clearance.

A Check whether the clearance of the main bearing is too large and exceeds the specified value.

Yes → Replace the main bearing bush and confirm whether the fault is eliminated.

No

Step 3	Check the connecting rod bearing clearance.

A Check whether the clearance of the connecting rod bearing is too large and exceeds the specified value.

Yes → Replace the connecting rod bearing bush and confirm whether the fault is eliminated.

Next

Step 4	The diagnosis is over.

2.12.6.4 Slight engine vibration during warming

Diagnosis steps

Step 1	Check the engine knock-related data flow.

A Check the data related to "knock" in the data stream using the diagnostic scanner and check whether there is deflagration phenomenon in the engine.

Yes → Check the engine timing system and fuel quality and eliminate faults.

No

Step 2	Check the exhaust pipe.

A Check whether the exhaust pipe leaks.

B Check whether the exhaust pipe is loose.

Yes → Replace the exhaust pipe gasket and re-tighten the connecting nuts of the exhaust pipe.

No

Step 3	Check the clearance of connecting rod bearing bush.

A Check whether the clearance of the connecting rod bearing bush is too large and exceeds the specified value.

Yes → Replace the connecting rod bearing and confirm whether the fault is eliminated.

Next

Step 4	The diagnosis is over.

2.12.6.5 Engine misfire with abnormal noise

Diagnosis steps

Step 1	Check the ECU.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch ON, and read and record the ECU DTC.

C Check whether the same DTC is displayed.

Yes → Repair the faulty part based on the DTC.

No

Step 2	Check the "knock-related" data in the engine data flow.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch ON, and check and record the "knock-related" data in the ECU data flow.

C Check whether the fuel system data and timing system data are normal compared with those of a normal vehicle.

Yes → Repair the faulty part.

No

Step 3	Check the valve spring.

A Check whether the valve spring is too soft or broken.

Yes → Replace the faulty component and confirm whether the fault is eliminated.

No

Step 4	Check the valve.

A Check whether the valve is stuck or bent.

Yes → Replace the faulty component and confirm whether the fault is eliminated.

No

Step 5	Inspect valve lifters.

A Check whether the valve tappet is damaged, stuck or worn.

Yes → Replace the faulty component and confirm whether the fault is eliminated.

No

Step 6	Check the intake and exhaust camshafts.

A Check the intake and exhaust camshaft cams for excessive wear or obvious defects.

Yes → Replace the camshaft.

No

Step 7	Check the valve guide.

A Check whether the valve guide pipe has cracks or excessive wear.

No → Replace the faulty component and confirm whether the fault is eliminated

No

Step 8	Check the valve spring retainer and valve spring washer.

A Check whether the valve spring seat and gasket are assembled incorrectly.

Yes → Repair the faulty component and confirm whether the fault is eliminated

Next

Step 9	The diagnosis is over.

2.12.6.6 Cylinder Pressure Too Low with Insufficient Engine Power

Diagnosis steps

Step 1	Check the intake system

A Check whether the air filter element and intake pipe are dirty or blocked.

Yes → Replace the air filter element. Clean the intake pipe and wash the throttle.

No

Step 2	Check the crankcase ventilation system.

A Open the fuel filler cap when the engine is running. Observe whether there is smoke coming out and whether there is blue smoke from the exhaust pipe.

Yes → If the cylinder, piston and piston ring are excessively worn, disassemble, check and repair the engine.

No

Step 3	Check the valve train.

A Check the timing chain of the valve train for wear.

Yes → Replace the timing chain and guide rail.

No

Step 4	Check the cylinder pressure (1).

A Fill the cylinder whose pressure is too low with 20~30ml engine oil (remove the spark plug and fill oil into spark plug hole).

B Re-measure the cylinder pressure and check whether the re-measured value is higher than that of the first measurement and close to the standard cylinder pressure.

Yes → If the cylinder, piston and piston ring are excessively worn or the piston ring is aligned, stuck, broken and the cylinder wall is scratched, resulting in poor sealing of the cylinder, disassemble and repair the engine.

No

Step 5	Check cylinder pressure (2).

A Check whether the re-measured cylinder pressure value is close to the first measured cylinder pressure.

Yes

If the intake and exhaust valves are not tightly sealed, check and repair the valves and valve shaft guides.
If the cylinder gasket is not tightly sealed, check and repair the warpage of the cylinder head and replace the cylinder gasket.

No

Step 6	Check cylinder pressure (3).

A Check whether the pressures of two adjacent cylinders are approximate in two times of measurement.

Yes

If the cylinder gasket is burnt out and blown by gas, replace the cylinder gasket.
If the tightening torque of cylinder head bolts fails to meet the standard, replace the cylinder gasket and cylinder head bolts, and tighten the cylinder head bolts to standard.

No

Step 7	Check whether the fault still exists after performing inspection and repair correctly.

Does the fault still exit?

No

Troubleshoot from other symptoms

Next

Step 8	The diagnosis is over.

2.12.6.7 Cylinder pressure too high with engine knocking

Diagnosis steps

Step 1	Check for carbon deposits in the combustion chamber.

A Check whether there are excessive carbon deposits in the combustion chamber. If there are excessive carbon deposits, the volume of the combustion chamber will be reduced.

Yes

Clean the carbon deposit in the combustion chamber.

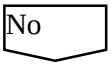
No

Step 2	Check the piston.

A Check the piston for damage or whether a piston of wrong model is used.

Yes

Replace the original piston.


No

Step 3	Inspect the cylinder head gasket.

A Check whether the cylinder gasket is of wrong model or too thin.

Yes → Replace the original cylinder head gasket.

No

Step 4	Check the cylinder head.

A Check whether the height of cylinder head becomes low due to excessive grinding, resulting in too small combustion chamber volume.

Yes → Replace the cylinder head gasket and cylinder head.

No

Step 5	Check whether the fault still exists after performing inspection and repair correctly.

Does the fault still exit?

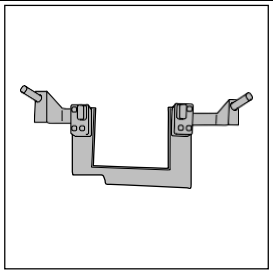
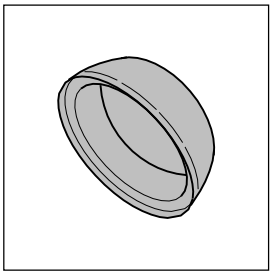
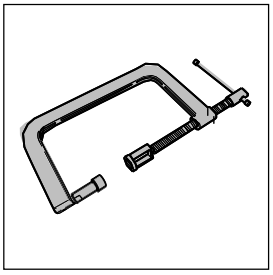
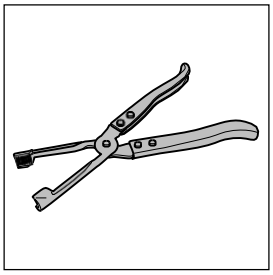
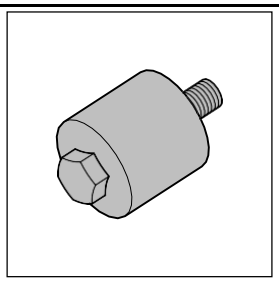
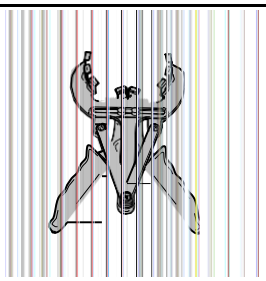
Yes → Troubleshoot from other symptoms

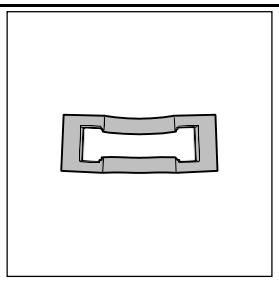
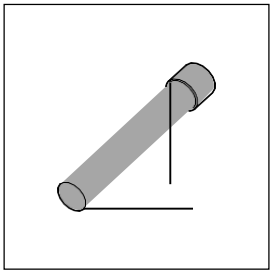
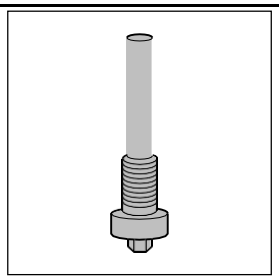
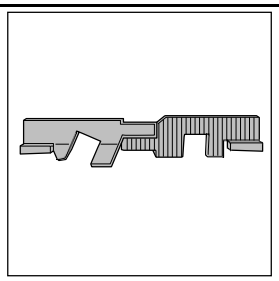
No

Step 6	The diagnosis is over.

2.12.7 Special tool

2.12.7.1 List of special tools

S/N	Symbol	Description	Function
1		Flywheel removal and installation tool	For removal and installation of flywheel and crankshaft damping pulley
2		Installation tool for crankshaft rear oil seal	For installing the rear oil seal of crankshaft
3		Valve spring compression tool	For removing valve
4		Valve oil seal pulling plier	For removing valve oil seal
6		Installation tool for crankshaft front oil seal	For installing the front oil seal of crankshaft
7		Piston ring removal and installation tool	Front removing piston ring

S/N	Symbol	Description	Function
8		Connecting rod bearing bush assembling tooling	For installing the connecting rod bearing bush
9		Installation tool for valve oil seal	For installing valve oil seal
10		Timing chain mounting tool	For fixing crankshaft
11		Timing chain mounting tool	For fixing intake/exhaust camshaft

2.12.8 Removal and installation

2.12.8.1 Removal and installation of crankshaft damping pulley

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

4 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

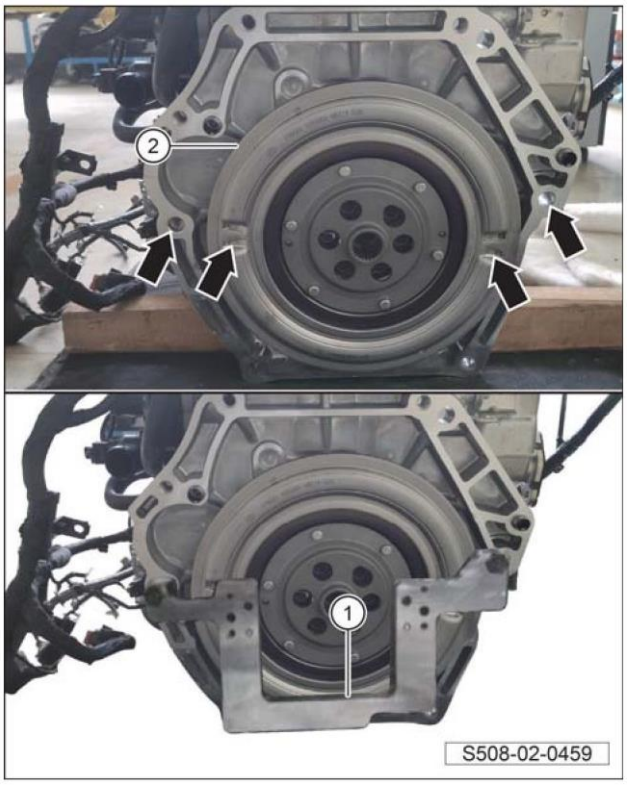
5 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

6 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

7 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

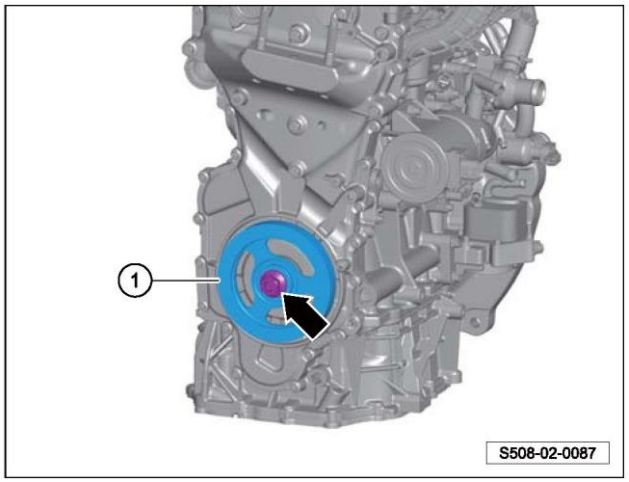
8 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

9 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission



10 Removal of crankshaft damping pulley

a. Use a flywheel anti-rotating tool ① to fix the dual-mass flywheel ② in the position of (the arrow).



b. Unscrew the fixing bolt (see the arrow), and take out the crankshaft damping pulley ①.

- Tightening torque of bolt: **(150±10)N·m+(180°±5°)**

Tip:

The fixing bolt of the crankshaft damping pulley is disposable, and shall be replaced with new ones after removal.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Use crankshaft timing tooling when installing the crankshaft damping pulley.
- The bolt of the crankshaft damping pulley is disposable, and shall be replaced with new ones after removal. In the process of 180° rotation, if the monitoring torque is greater than 300N ·m, the rotation will stop, and the rotation angle can be less than 180°. The end face of the damping pulley and the end face of the crankshaft shall be kept clean without any oil stain.

2.12.8.2 Removal and installation of cylinder head cover assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

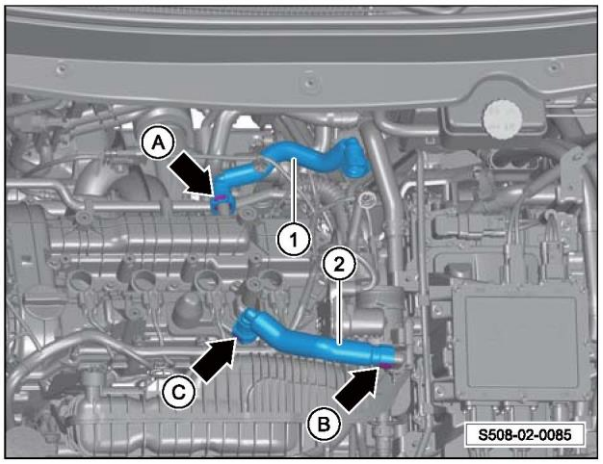
7 Remove the engine compartment fully-wrapped cover support plate component (right). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

8 Remove the ignition coil. Refer to 2.7.7.1 Removal and installation of ignition coil

9 Remove the camshaft phase sensor (intake side). Refer to 2.7.7.5 Removal and installation of camshaft phase sensor

10 Remove the electronic throttle body assembly. Refer to 2.6.7.6 Removal and installation of electronic

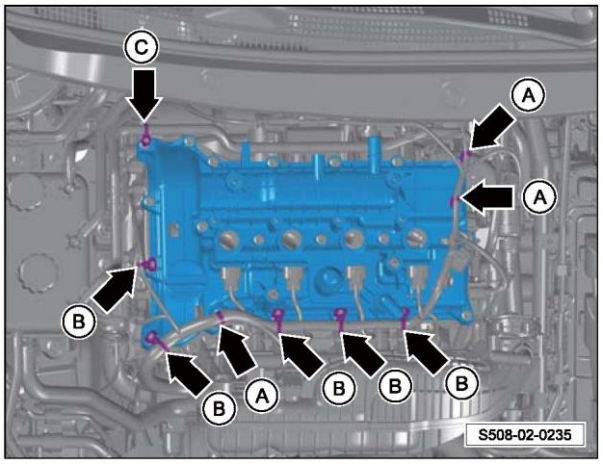
throttle body assembly



11 Remove the cylinder head cover assembly.

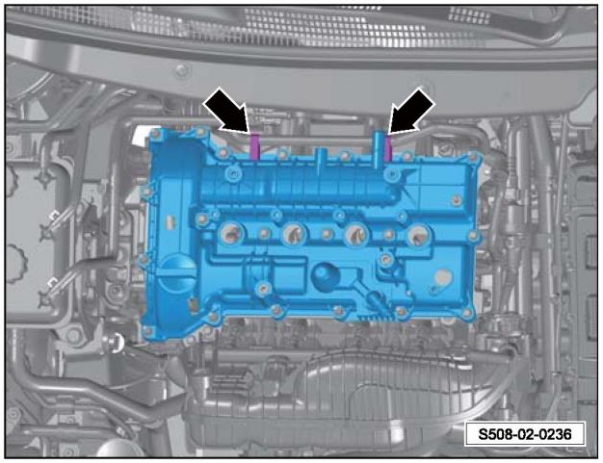
a. Press the quick connector (see arrow A), and remove the crankshaft box vent hose ①.

b. Press the quick connector (see arrows B and C), and remove the PCV vent pipe ②.

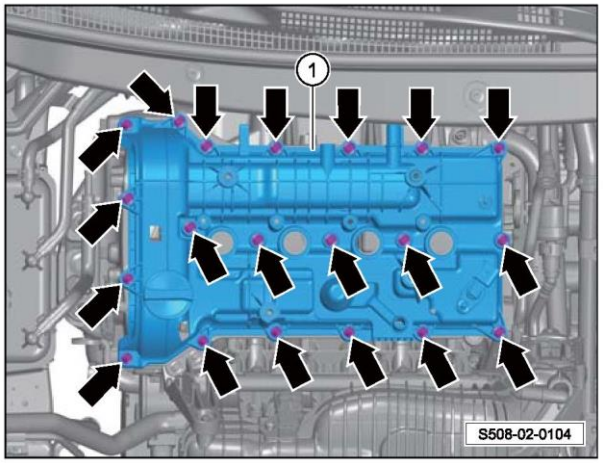


c. Disengage the fixing clips (see arrows A and B) of the engine harness.

d. Disengage the fixing clip of the engine outlet hose (see arrow C).

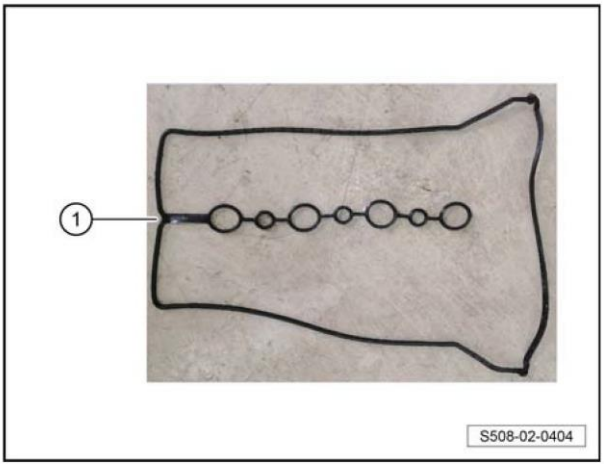


e. Remove the engine outlet hose in the position of (the arrow).



f. Unscrew the fixing bolts (see the arrows) and remove the cylinder head cover assembly ①.

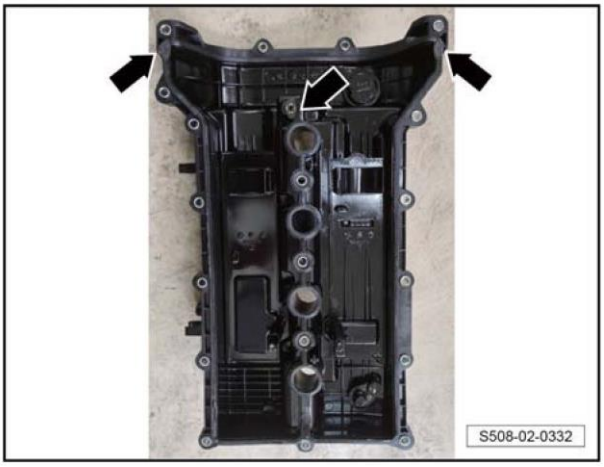
- Tightening torque of bolt: **10 N·m**



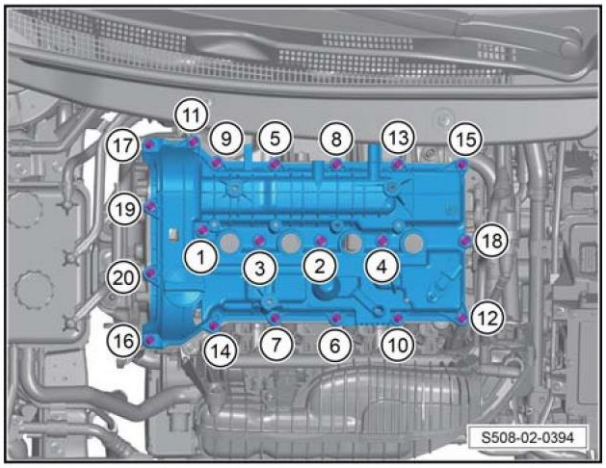
Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Replace the sealing ring ① of cylinder head cover.



– As shown in the figure, apply sealant (see the arrows).



– Tighten the fixing bolts of the cylinder head cover assembly in sequence from ① to ⑳.

- Tightening torque of bolt: **10 N·m**

2.12.8.3 Removal and installation of timing cover

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

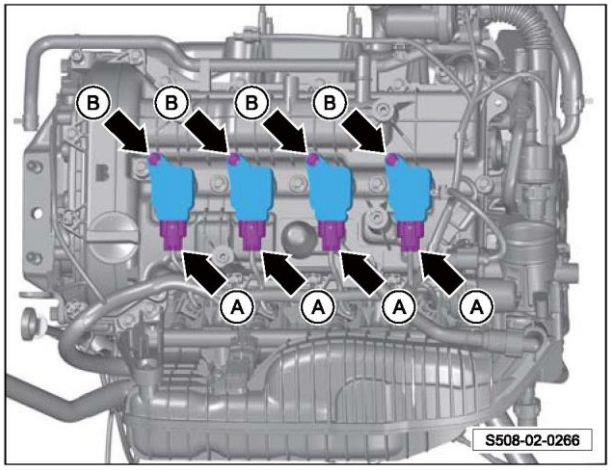
4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the crankshaft damping pulley. Refer to 2.12.8.1 Removal and installation of crankshaft damping pulley

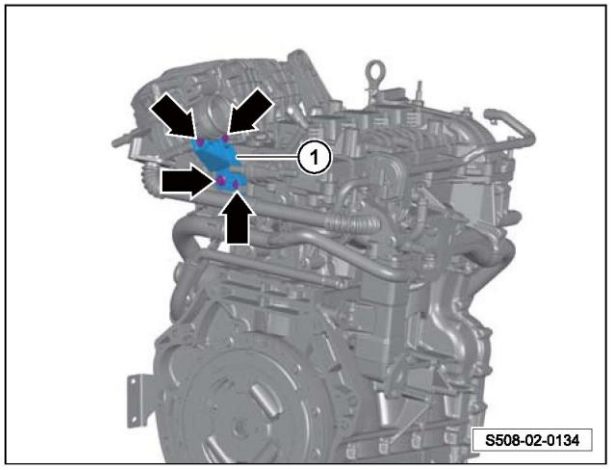


9 Remove the timing cover

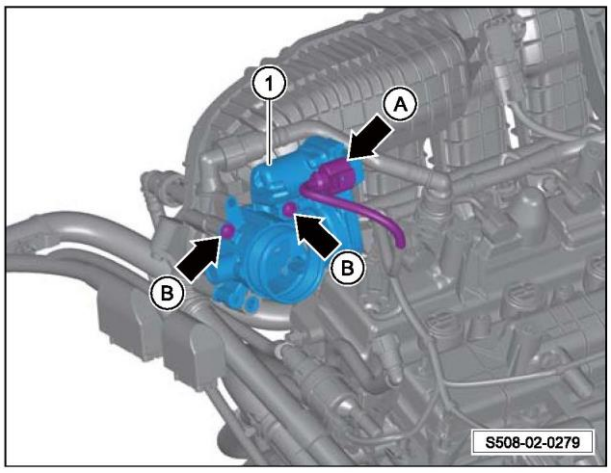
a. Disconnect the ignition coil connector (see arrow A).

b. Unscrew the fixing bolts (see arrow B) and remove the ignition coil.

- Tightening torque of bolt (see arrow **B**): **10 N·m**



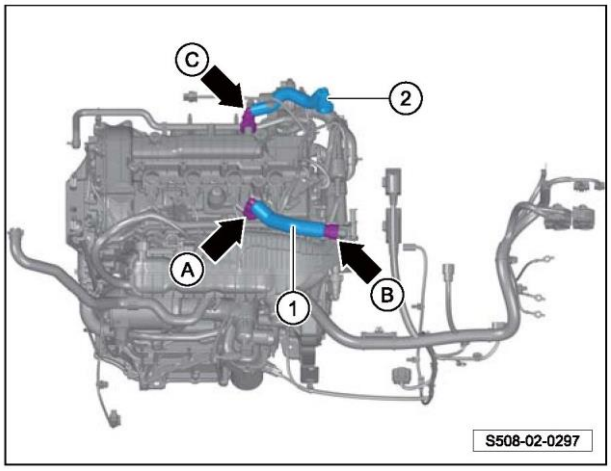
c. Unscrew the fixing bolt (see the arrow), and remove the intake manifold bracket 2 ①.



d. Disconnect the connector (see arrow A) of the electronic throttle body assembly.

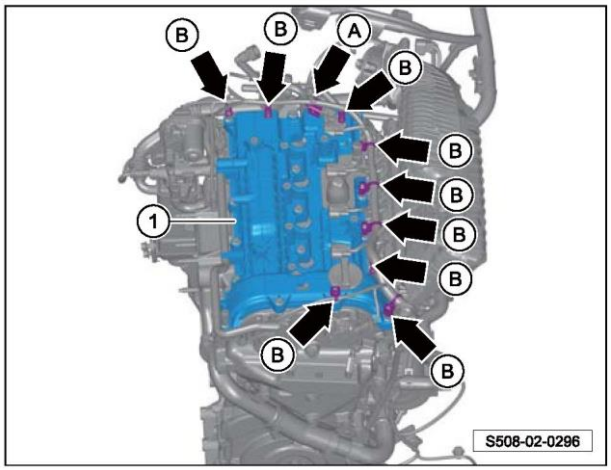
e. Unscrew the fixing bolt (see arrow B), and take out the electronic throttle body assembly ①.

- Tightening torque of bolt (see arrow B): 8±1 N·m



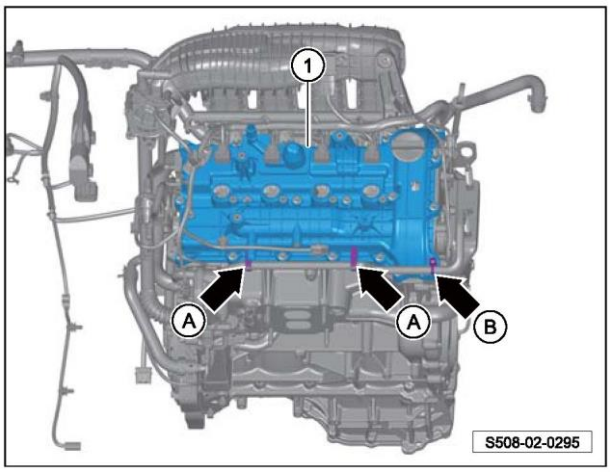
f. Press the quick connector (see arrows A and B), and remove the PCV vent pipe ①.

g. Press the quick connector (see arrow C), and remove the crankshaft box vent hose ②.



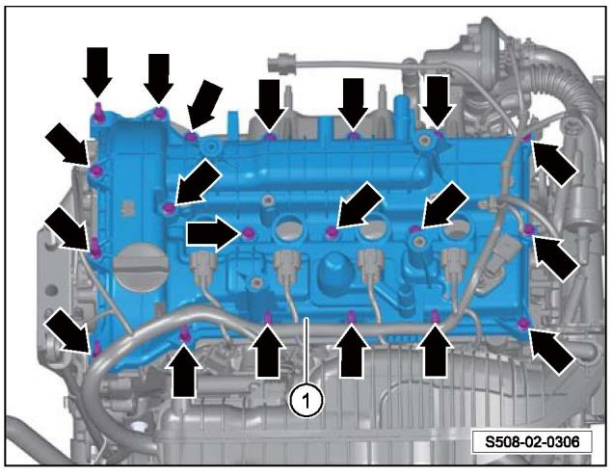
h. Disconnect the connector (see arrow A) of the camshaft phase sensor.

i. Disengage the fixing clip of the engine harness and cylinder head cover assembly ① (see arrow B).



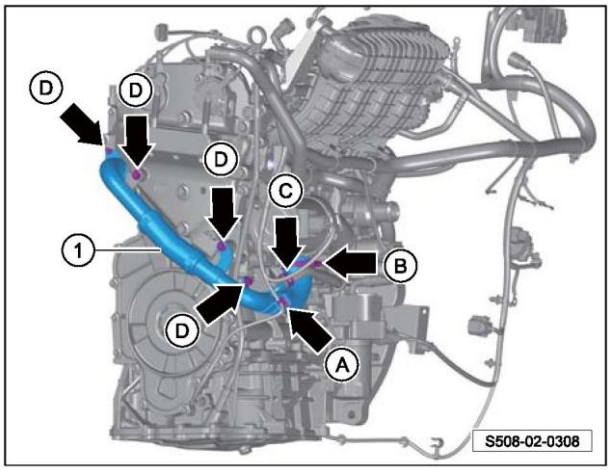
g. Remove the engine outlet hose in the position of (arrow A).

k. Disengage the fixing clip of the engine harness and cylinder head cover assembly ① (see arrow B).



l. Unscrew the fixing bolts (see the arrows) and remove the cylinder head cover assembly ①.

- Tightening torque of bolt: **10 N·m**

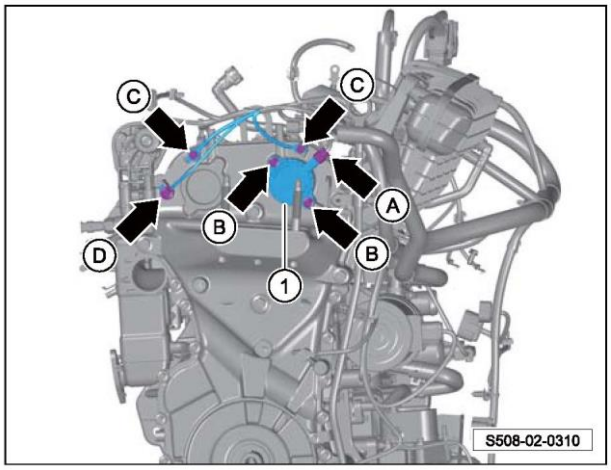


m. Disengage the fixing clip of engine harness and coolant pump outlet pipe component ① (see arrow A).

n. Loosen the fixing clamp (see arrow B), and disengage the coolant pump outlet pipe component ① from the coolant pump.

o. Loosen the fixing clamp (see arrow C), and disengage the coolant pump outlet pipe component ① from the oil cooler.

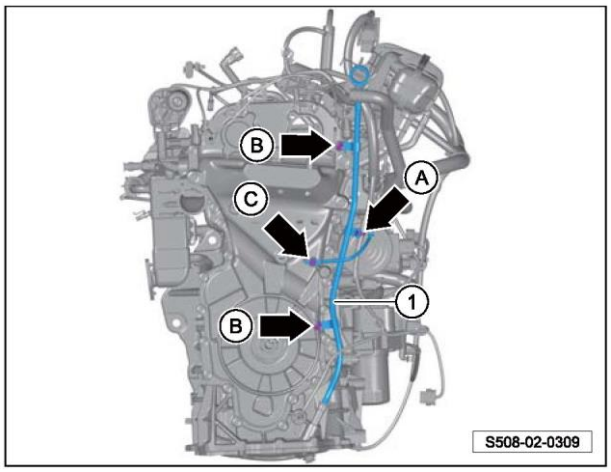
p. Unscrew the fixing bolt (see arrow D), and remove the coolant pump outlet pipe component ①.



q. Disconnect the connector of the central electromagnet (see arrow A).

r. Unscrew the fixing bolts (see arrow B) and remove the central electromagnet ①.

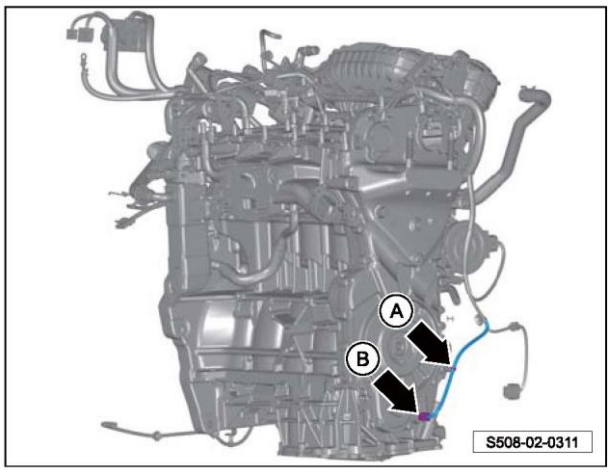
s. Unscrew the ground bolt of the engine harness (see arrows C and D).



t. Disengage the fixing clip of engine harness and oil dipstick duct seat ① (see arrow A).

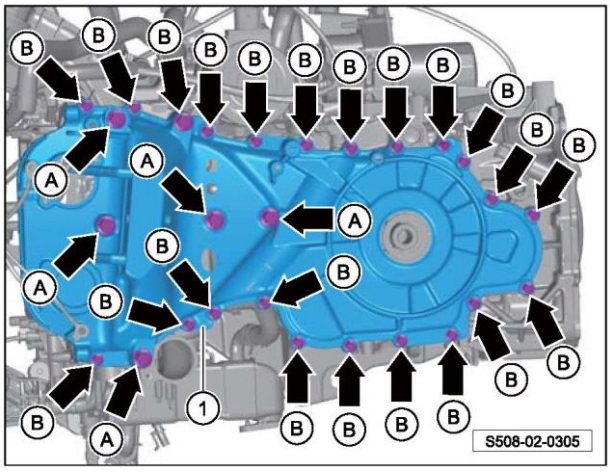
u. Unscrew the fixing bolt (see arrow B), and remove the oil dipstick duct seat ①.

v. Unscrew the fixing ground bolt (see arrow C) of engine harness.

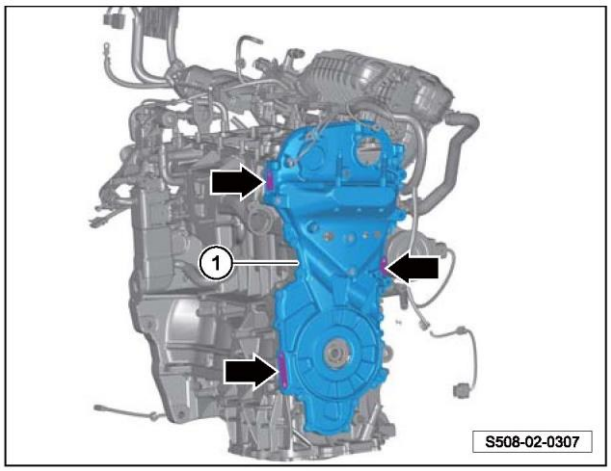


w. Disengage the fixing clips of the engine harness (see arrow A).

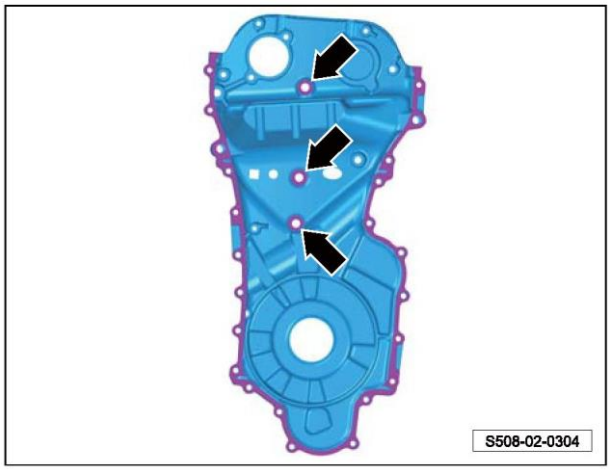
x. Disconnect the connector of the oil pump solenoid valve (see arrow B), and remove the engine harness.



y. Unscrew the fixing bolts (see the arrows A and B) and remove the timing cover ① .



z. Gently tap the timing cover with a rubber hammer to loosen it, then use an appropriate tool to pry at the three pry points (see the arrow) on the joint of the cylinder block, cylinder head, camshaft box with the timing cover, and carefully pry open the timing cover ①.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- As is shown in the figure, apply plane sealant evenly to the clean timing cover groove (transition from the inside semicircle through the bolt hole), and there shall be no break point in the diameter of the glue line of Φ2~Φ3mm.
- Focus on the sealant at the joint surface of the fixing bolt in the position of (the arrow).
- Install the timing cover on the cylinder block and cylinder head, screw the bolt into the corresponding hole position, and tighten in a cross way.

2.12.8.4 Removal and installation of timing chain

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

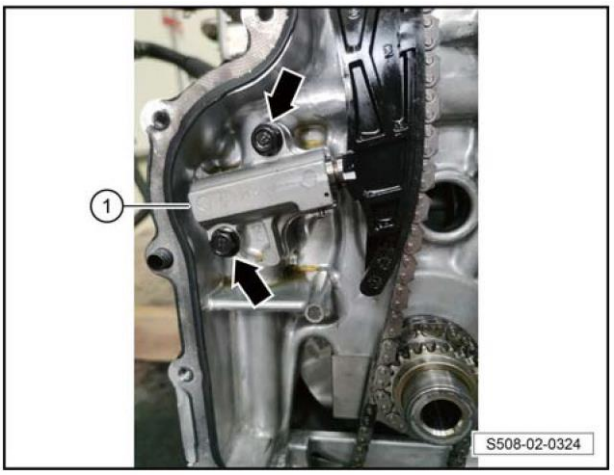
7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing cover. Refer to 2.12.8.3 Removal and installation of timing cover

10 Remove the timing chain

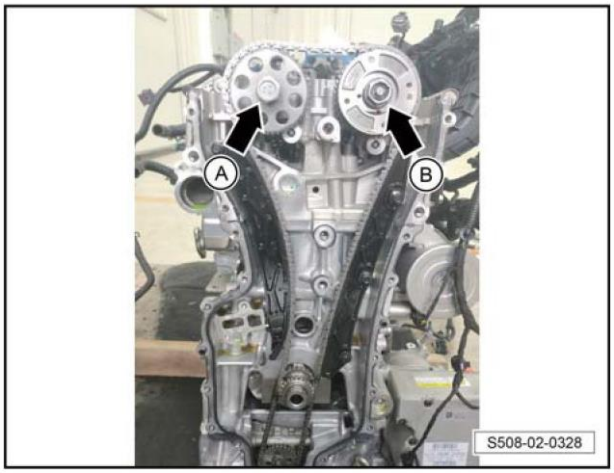
a. Compress the timing tensioner tappet in place, and lock the tensioner with a lock pin ①.



b. Unscrew the fixing bolts (see the arrows) and take out the timing tensioner ①.

- Tightening torque of bolt: 10±2 N·m

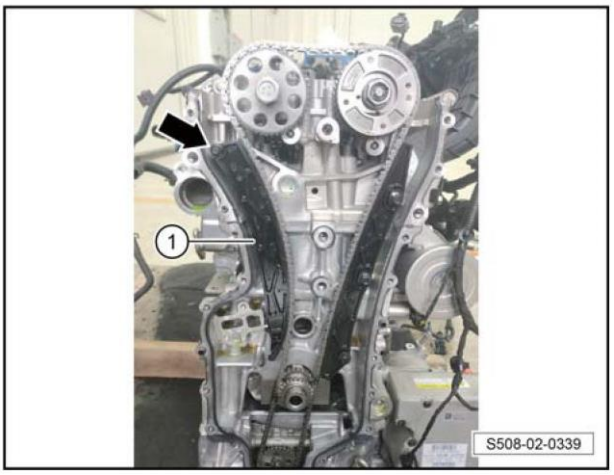
c. Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.



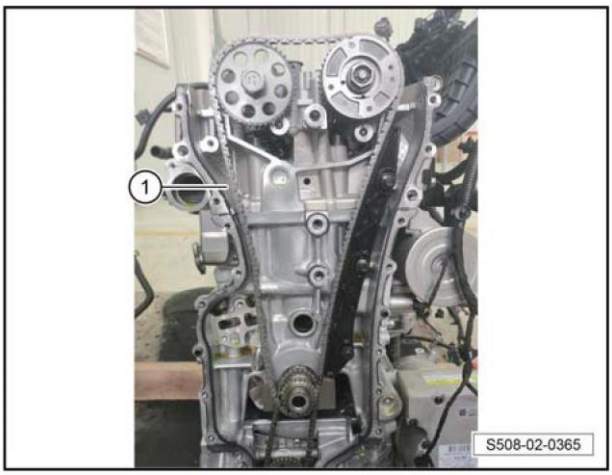
d. Unscrew the fixing bolt of the exhaust sprocket (see arrow A).

e. Unscrew the fixing bolt of the central control valve (see arrow B).

- Tightening torque of bolt (see arrow **A)**: **50N·m+90°**
- Tightening torque of bolt (see arrow **B**): **50 N·m+30°**



f. Unscrew the fixing bolt (see the arrow), and take out the timing chain tension plate component ①.

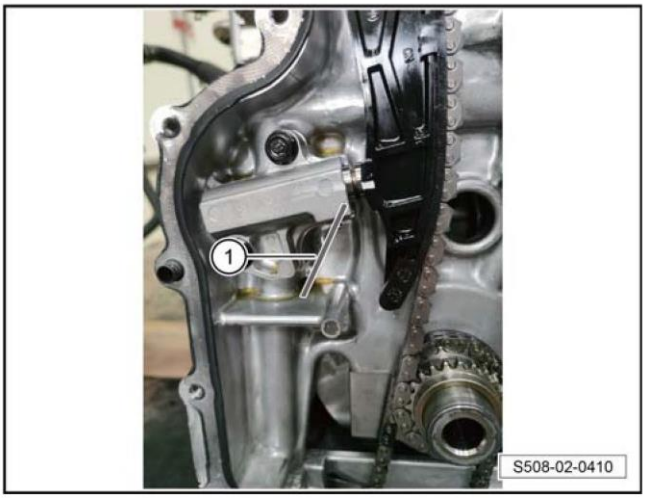


g. Take out the timing chain ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

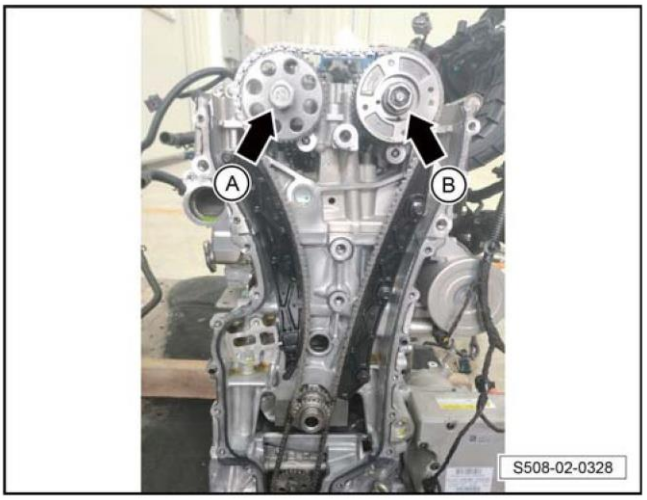
– Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.



– The timing chain is installed in the groove of the timing chain guide plate and the timing chain tension plate (the chain with marked side facing outward). Install the timing chain on the intake VVT component and the exhaust sprocket.

– Install the fixing bolt of the timing tensioner, and take out the bayonet pin ①.

- Tightening torque of bolt: 10±1 N·m



– After installation of the timing chain, tighten the exhaust sprocket fixing bolt (see arrow A) and the central control valve fixing bolt (see arrow B) according to the specified torque.

- Tightening torque of bolt (see arrow **A)**: **50N·m+90°**
- Tightening torque of bolt (see arrow **B**): **50 N·m+30°**

2.12.8.5 Removal and installation of timing chain tensioner

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

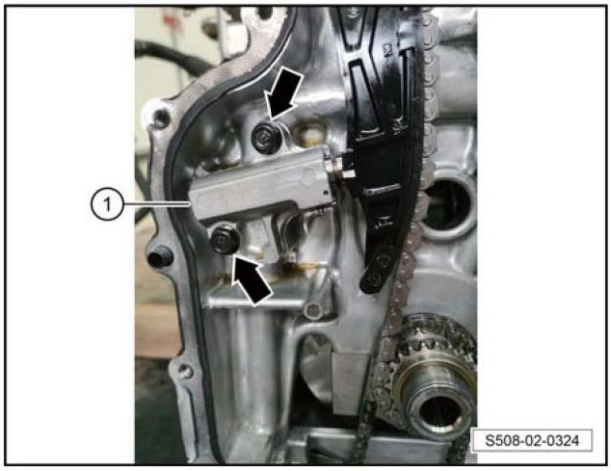
7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing cover. Refer to 2.12.8.3 Removal and installation of timing cover

10 Remove the timing chain tensioner.

a. Compress the timing tensioner tappet in place, and lock the tensioner with a lock pin ①.



b. Unscrew the fixing bolts (see the arrows) and take out the timing tensioner ①.

- Tightening torque of bolt: 10±2 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Install the fixing bolt of the timing tensioner, and take out the bayonet pin ①.

- Tightening torque of bolt: 10±1 N·m

2.12.8.6 Removal and installation of timing chain guide plate component

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

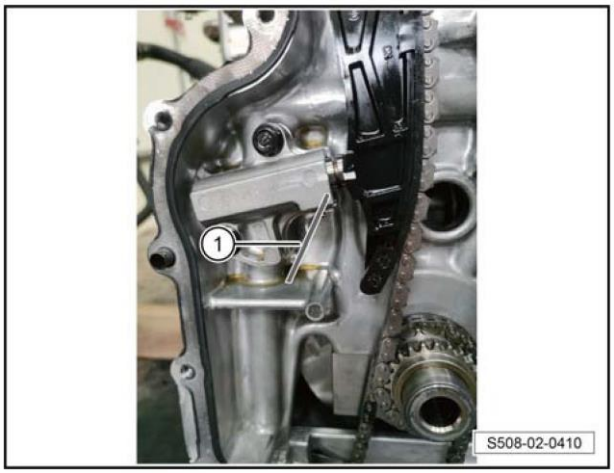
5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

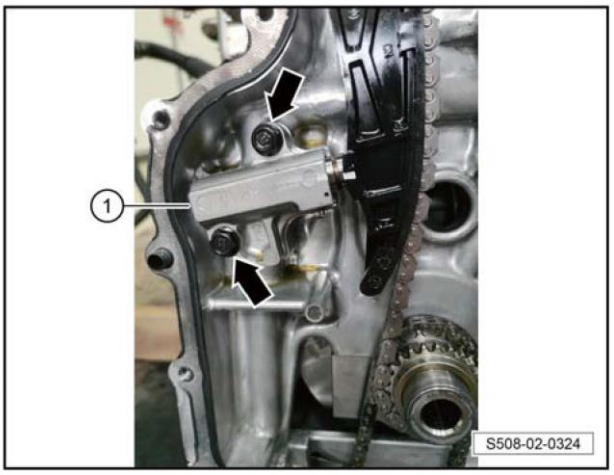
8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing cover. Refer to 2.12.8.3 Removal and installation of timing cover



10 Remove the timing chain guide plate component

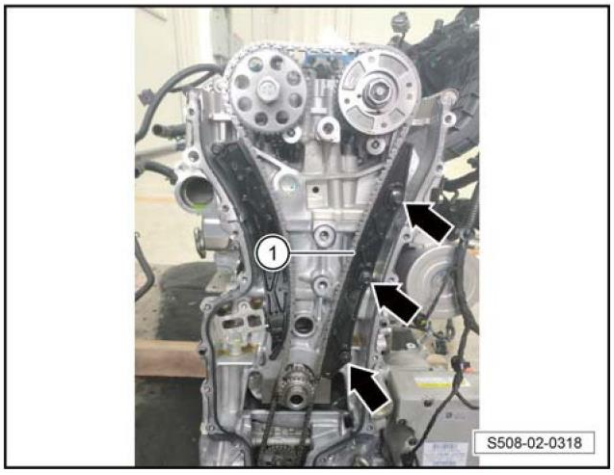
a. Compress the timing tensioner tappet in place, and lock the tensioner with a lock pin ①.



b. Unscrew the fixing bolts (see the arrows) and take out the timing tensioner ①.

- Tightening torque of bolt: 10±2 N·m

c. Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.

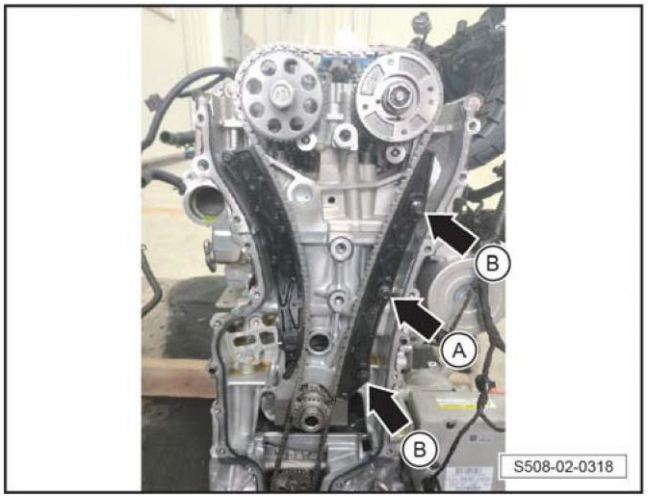


d. Unscrew the fixing bolt of the timing chain guide rail (see the arrow), and take out the timing chain guide plate component ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.



– Install the timing chain guide plate on the cylinder block and cylinder head, and tighten the bolts (first tighten the middle bolt (see arrow A), and then tighten the upper and lower bolts (see arrow B)).

- Tightening torque of bolt (see arrow A): 10±1 N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m

– Install the fixing bolt of the timing tensioner, and take out the bayonet pin ①.

- Tightening torque of bolt: 10±1 N·m

2.12.8.7 Removal and installation of timing chain tension plate component

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

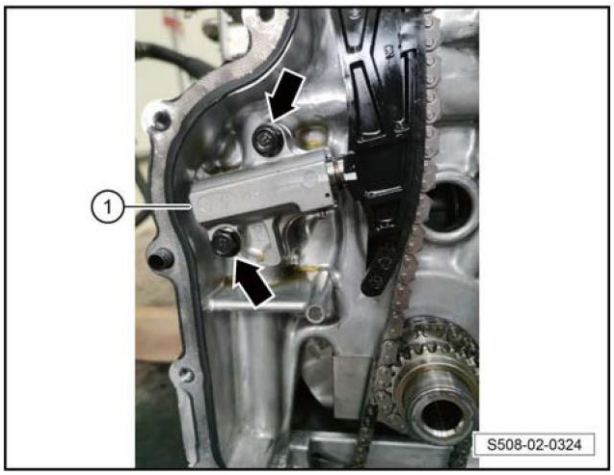
7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing cover. Refer to 2.12.8.3 Removal and installation of timing cover

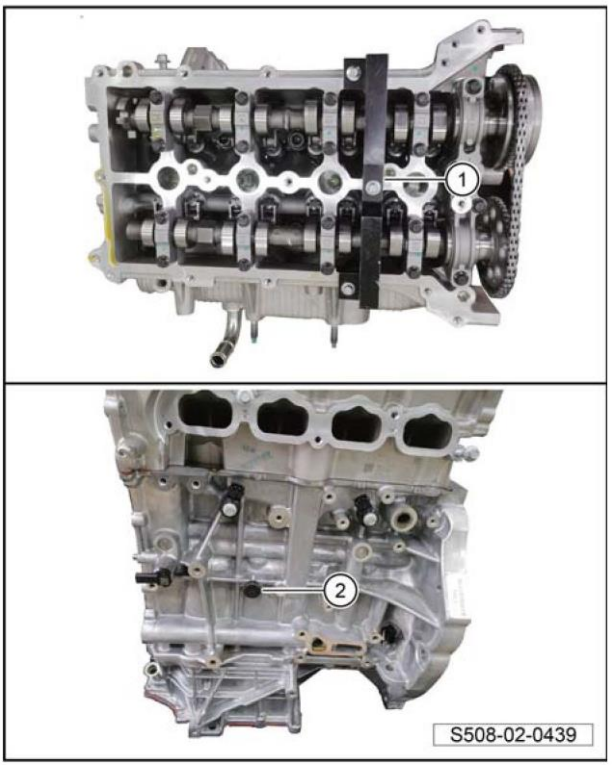
10 Remove the timing chain tension plate component.

a. Compress the timing tensioner tappet in place, and lock the tensioner with a lock pin ①.

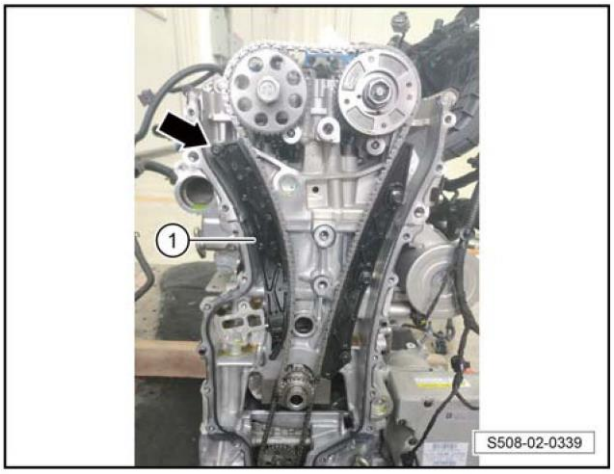


b. Unscrew the fixing bolts (see the arrows) and take out the timing tensioner ①.

- Tightening torque of bolt: 10±2 N·m



c. Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.



d. Unscrew the fixing bolt (see the arrow), and take out the timing chain tension plate component ①.

- Tightening torque of bolt: **10 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.

– Install the fixing bolt of the timing tensioner, and take out the bayonet pin ①.

- Tightening torque of bolt: 10±1 N·m

2.12.8.8 Removal and installation of intake VVT component

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing cover. Refer to 2.12.8.3 Removal and installation of timing cover

10 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

11 Removal of intake VVT component

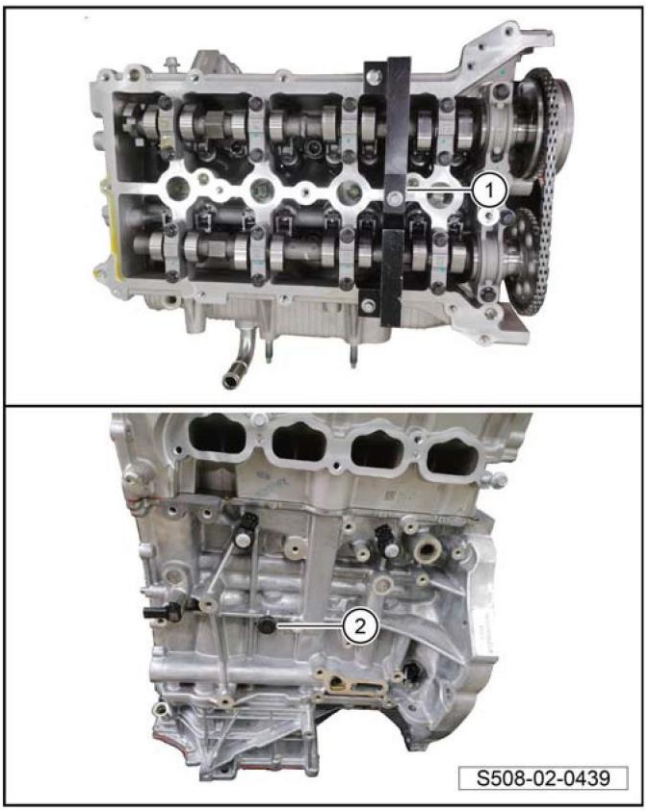
a. Unscrew the fixing bolt of the central control valve (see the arrow), and remove the intake VVT component ①.

- Tightening torque of bolt: **50N·m+30°**

Tip:

The mounting bolt of the intake VVT component (central oil control valve) can only be used for 3 times.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.

– Install the fixing bolt of the timing tensioner, and take out the bayonet pin ①.

- Tightening torque of bolt: 10±1 N·m

– After installation of the timing chain, tighten the fixing bolts (see the arrow) of the intake VVT component (central oil control valve) according to the specified torque.

- Tightening torque of bolt: **50N·m+30°**

2.12.8.9 Removal and installation of intake and exhaust camshaft

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

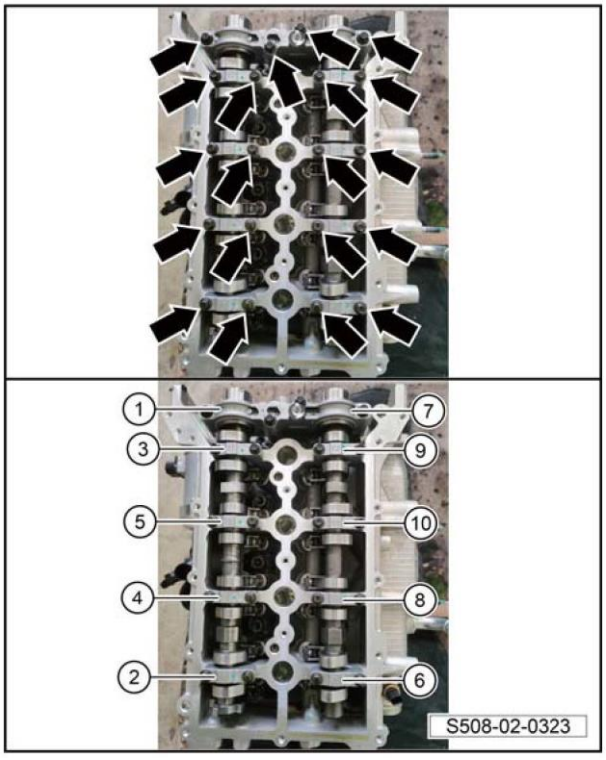
3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the intake VVT component. Refer to 2.12.8.8 Removal and installation of intake VVT component

7 Remove the exhaust camshaft sprocket. Refer to 2.12.8.10 Removal and installation of exhaust camshaft sprocket



8 Remove the intake and exhaust camshafts

a. Unscrew the fixing bolt (see the arrow), and remove the camshaft bearing cap and bearing seat in the sequence from ① to ⑩.

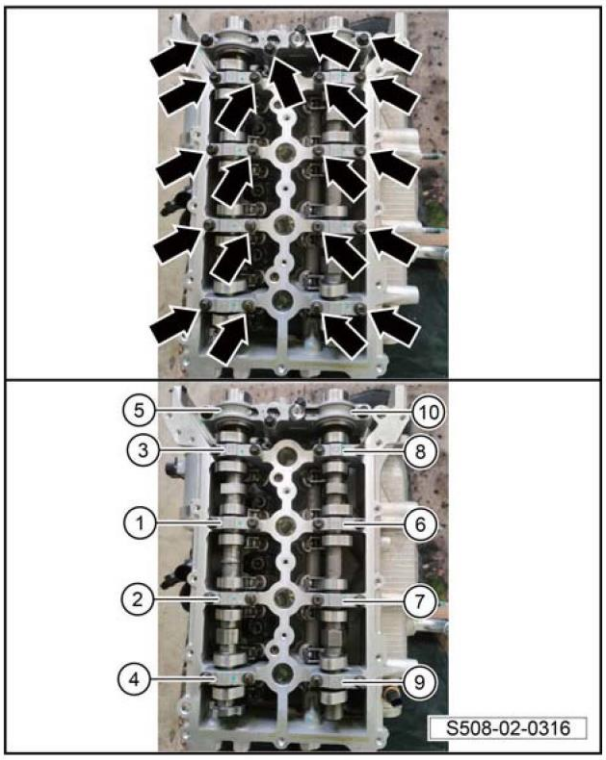
b. Take out intake and exhaust camshaft.

- Tightening torque of bolt: (7±1)+(14±1)N·m

Notes

Mark the intake and exhaust camshaft bearing cover removed for installation and install it in original position.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Tighten the fixing bolts (see the arrows) of the intake and exhaust camshaft bearing covers in sequence from ① to ⑩.

– Rotate the intake and exhaust camshafts by 1-2 turns. The intake and exhaust camshafts should rotate freely without jam;

• Tightening torque of bolt: (7±1)+(14±1)N·m

Notes

The fixing bolt of intake and exhaust camshaft bearing cap can only be used twice, and shall be replaced with new ones after use for 2 times.

2.12.8.10 Removal and installation of exhaust camshaft sprocket

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

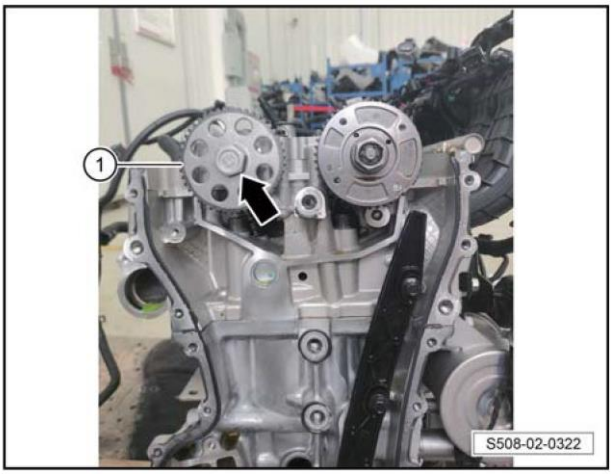
6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing cover. Refer to 2.12.8.3 Removal and installation of timing cover

10 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain



11 Remove the exhaust camshaft sprocket.

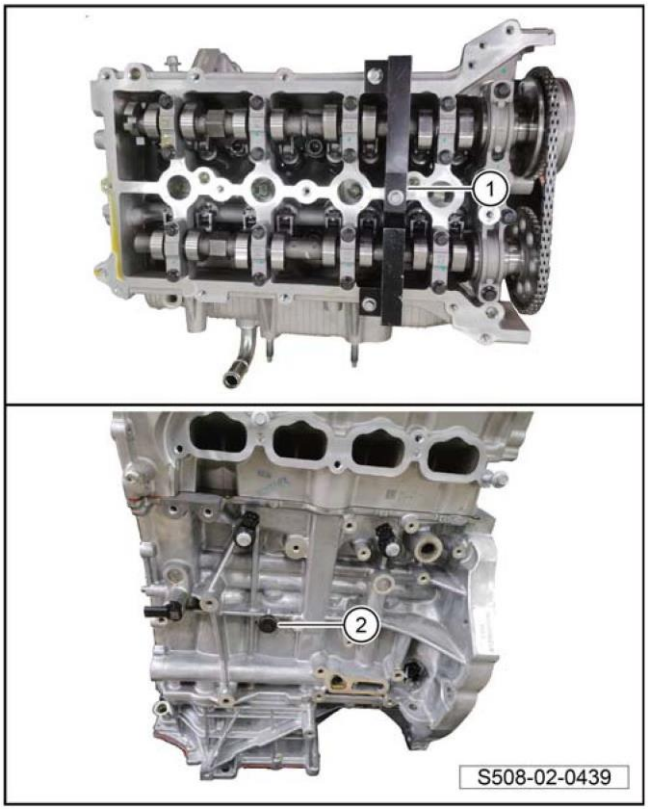
d. Unscrew the fixing bolt (see the arrow), and take out the exhaust camshaft sprocket ①.

- Tightening torque of bolt: **(50±2.5) N·m+(90±5)°**

Tip:

The fixing bolt of the exhaust camshaft is disposable, and shall be replaced after removal.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Install the camshaft timing positioning tooling ① and crankshaft timing tooling ② to ensure that crankshaft cylinders 1 and 4 are at TDC.

– Unscrew the fixing bolts (see the arrows) of the timing tensioner ① and take out the bayonet pin.

- Tightening torque of bolt: 10±1 N·m

– After installation of the timing chain, tighten the fixing bolt (see the arrow) of the exhaust sprocket according to the specified torque.

- Tightening torque of bolt: (**50±2.5**) **N·m+(90±5)**°

2.12.8.11 Removal and installation of cylinder head

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

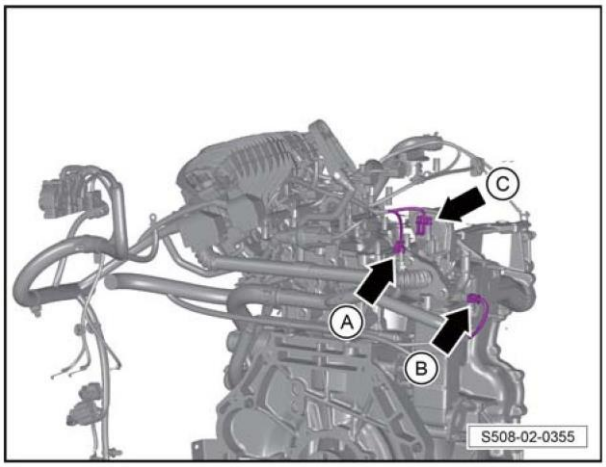
4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

7 Remove the intake VVT component. Refer to 2.12.8.8 Removal and installation of intake VVT component

8 Remove the exhaust camshaft sprocket. Refer to 2.12.8.10 Removal and installation of exhaust camshaft sprocket

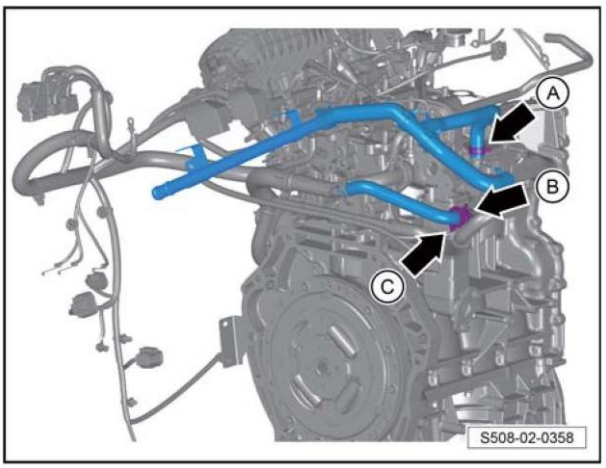


9 Remove the cylinder head

a. Disconnect the connector of the engine coolant temperature sensor (see arrow A).

b. Disconnect the connector of the EGR temperature sensor (see arrow B).

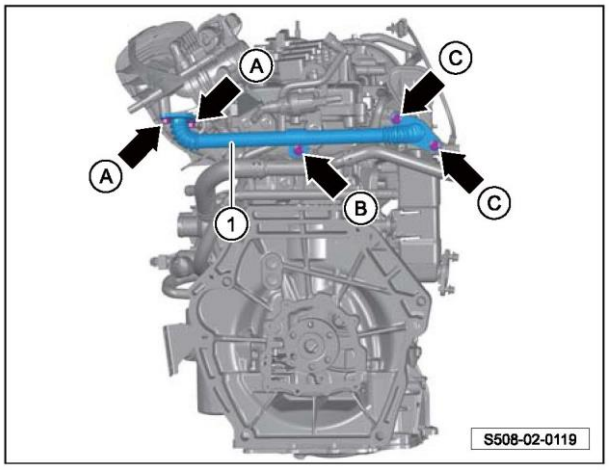
c. Disconnect the connector of the EGR valve component (see arrow C).



d. Loosen the fixing clamp (see arrow A) and disengage the PTC circulating water pump inlet pipe assembly from the cylinder head.

e. Loosen the fixing clamp (see arrow B), and disengage the EGR valve water outlet pipe from the EGR component.

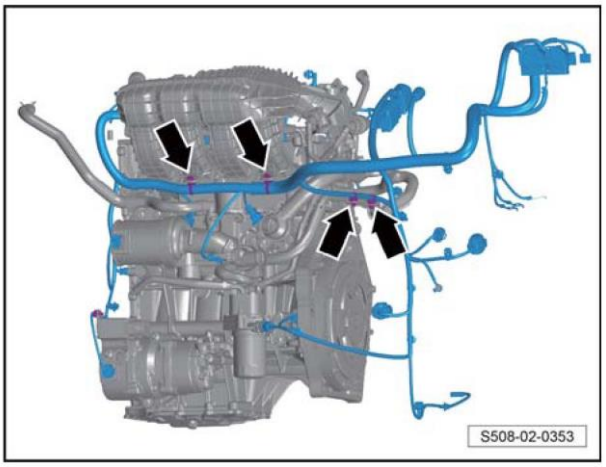
f. Disengage the fixing pipe clamp of the EGR temperature sensor harness and the EGR valve water outlet pipe (see arrow C).



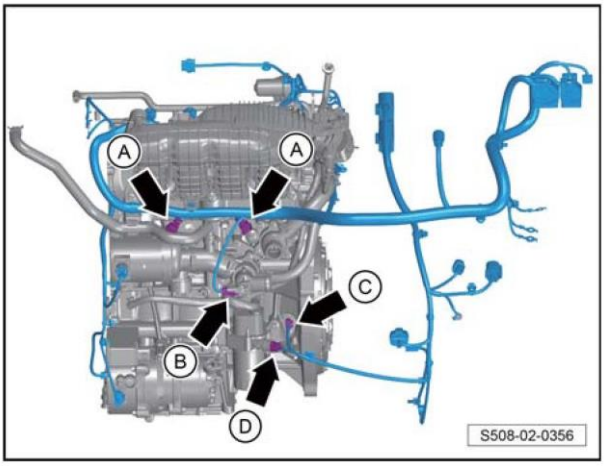
g. Unscrew the fixing bolt of the EGR valve outlet pipe ① and the intake manifold assembly (see arrow A), and take out the gasket.

h. Unscrew the fixing bolt of the EGR valve outlet pipe ① and the EGR valve component (see arrow B), and take out the gasket.

i. Unscrew the fixing bolt (see arrow C), and remove the EGR valve outlet pipe ①.



k. Disengage the fixing clips (see the arrows) of the engine harness.

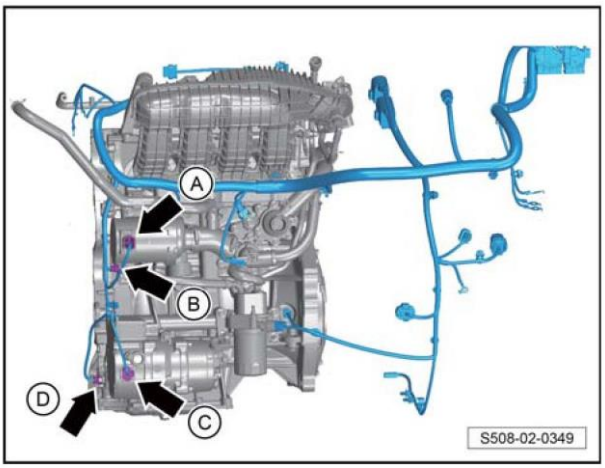


l. Disconnect the knock sensor connector (see the arrow A) of knock sensor.

m. Disconnect the electronic thermostat connector (see arrow B).

n. Disconnect the connector of the crankshaft position sensor (see arrow C).

o. Disconnect the connector (see arrow D) of the oil pressure switch.

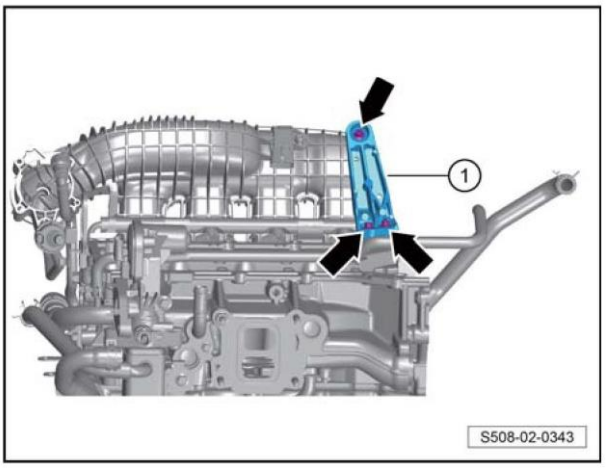


p. Disconnect the connector of the engine electric coolant pump (see arrow A).

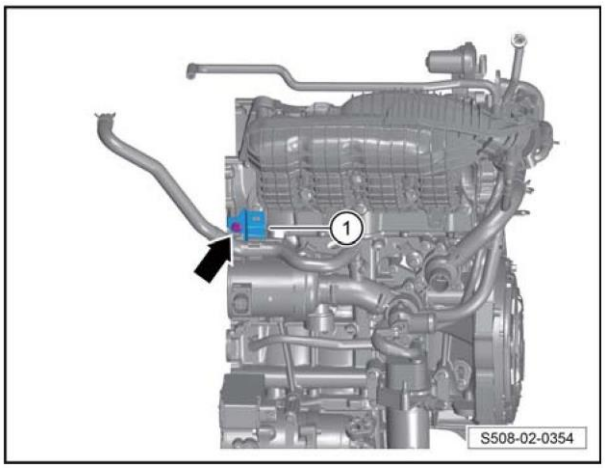
q. Disconnect the connector of the PCJ control valve (see arrow B).

r. Disconnect the connector plug (see the arrow C) of the compressor.

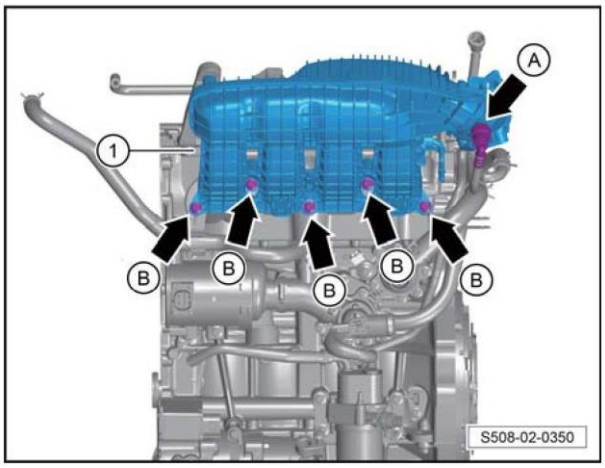
s. Disconnect the connector of the secondary variable oil pump (see arrow D).



t. Unscrew the fixing bolts (see the arrows) of the intake manifold bracket ①.



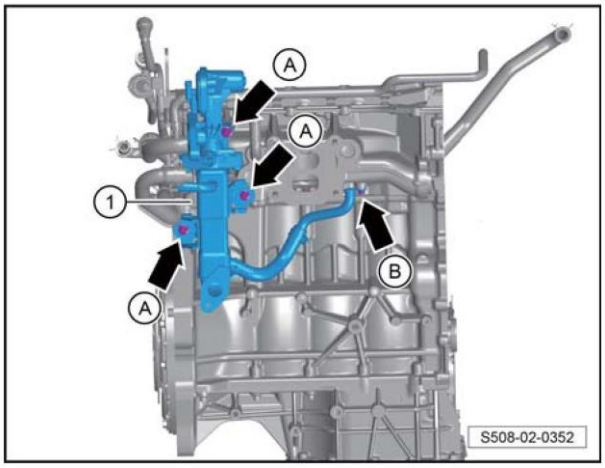
u. Unscrew the fixing bolt (see the arrow) of the water reservoir outlet hose bracket ①.



v. Press the quick connector (see arrow A), and disengage the intake manifold component ① from the canister solenoid valve pipeline.

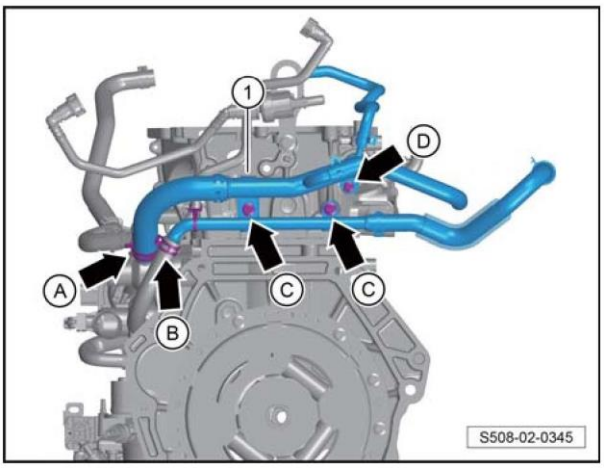
w. Unscrew the fixing bolts (see the arrow B). Remove the intake manifold component.

- Tightening torque of bolt (see arrow **B**): **25N·m**



y. Unscrew the fixing bolt of the EGR valve inlet pipe component (see arrow A).

z. Unscrew the fixing bolt (see arrow B), and remove the EGR valve component ①.

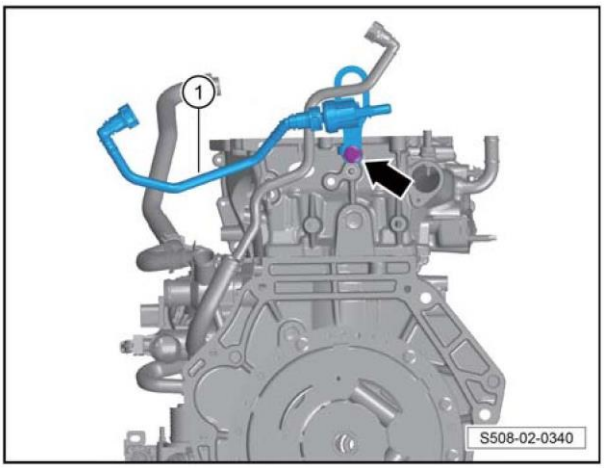


aa. Loosen the fixing clamp (see arrow A), and disengage the cylinder head outlet hose ① from the cylinder block thermostat.

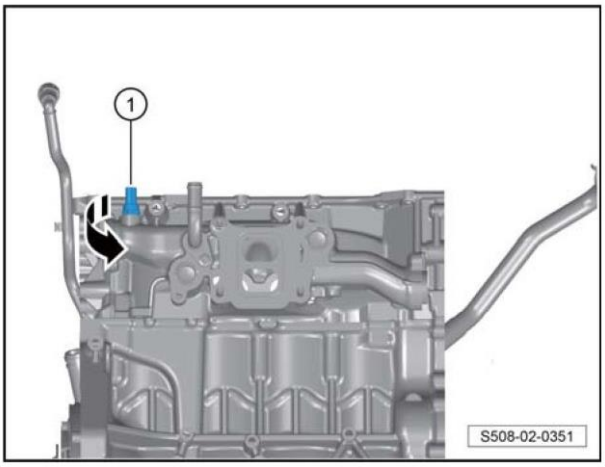
ab. Loosen the fixing clamp (see arrow B), and disengage the cylinder head outlet hose ① from the thermostat.

ac. Disengage the fixing clip of the high-pressure desorption pipe assembly and the cylinder head outlet hose ① (see arrow C).

ad. Unscrew the fixing bolt of the cylinder head outlet hose ① (see arrow D).

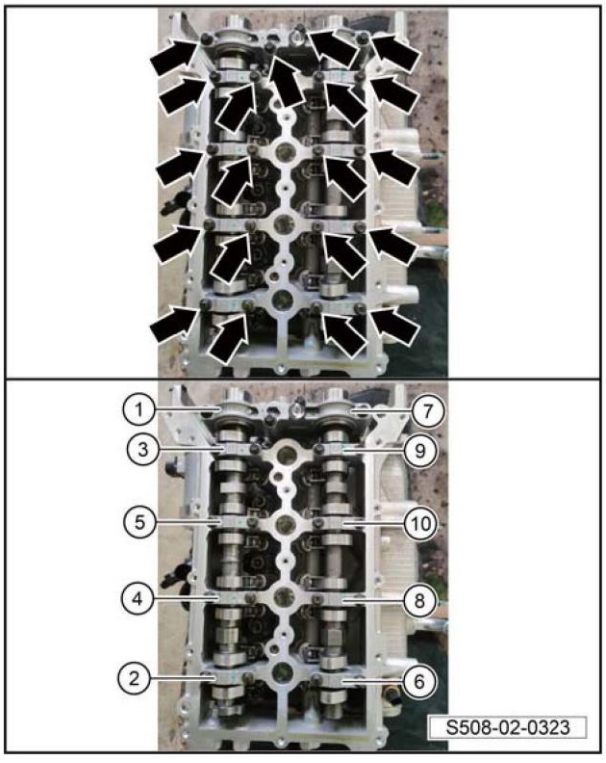


ae. Unscrew the fixing bolt (see the arrow), and remove the engine lifting lug and canister solenoid valve bracket assembly ①.



af. Unscrew the engine coolant temperature sensor ① in direction of (the arrow).

- Tightening torque of coolant temperature sensor:**23N·m**



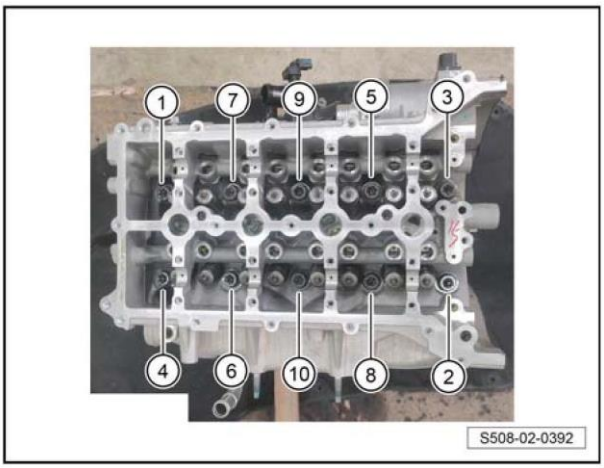
ag. Unscrew the fixing bolt (see the arrow), and remove the camshaft bearing cap and bearing seat in the sequence from ① to ⑩.

ah. Take out intake and exhaust camshaft.

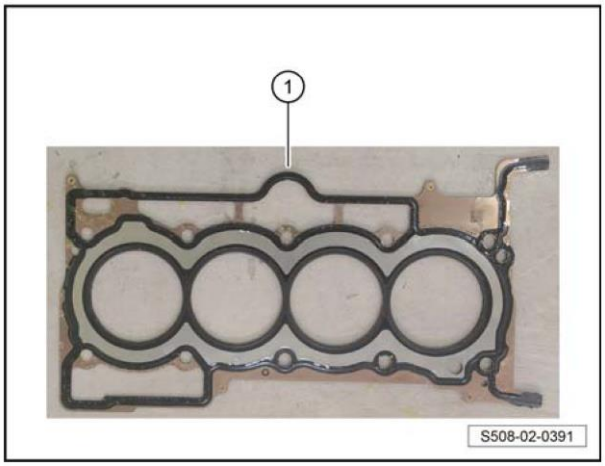
- Tightening torque of bolt: **(7±1)+(14±1)N·m**

Notes

Mark the intake and exhaust camshaft bearing cover removed for installation and install it in original position.



ai. Unscrew the fixing bolts in sequence from ① to ⑩ with a cylinder head bolt removal and installation tool, and remove the cylinder head assembly.

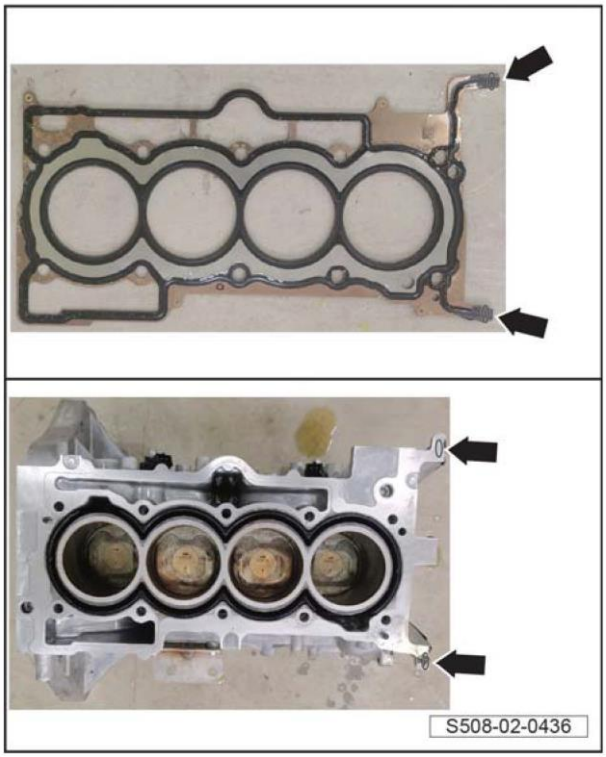


aj. Take out cylinder head gasket ①.

Tip:

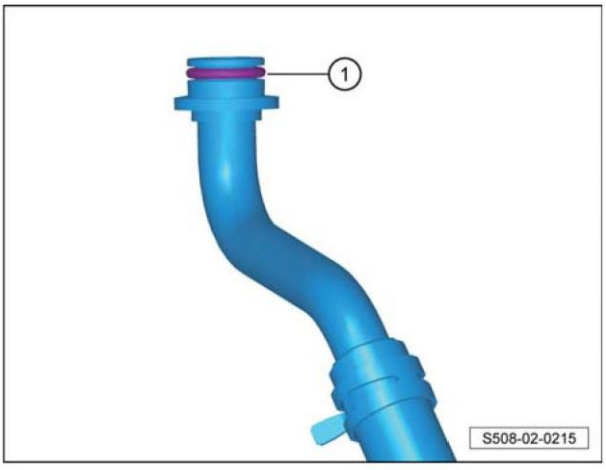
Every time the cylinder head assembly is disassembled and reinstalled, the cylinder gasket needs to be replaced.

Installation procedures

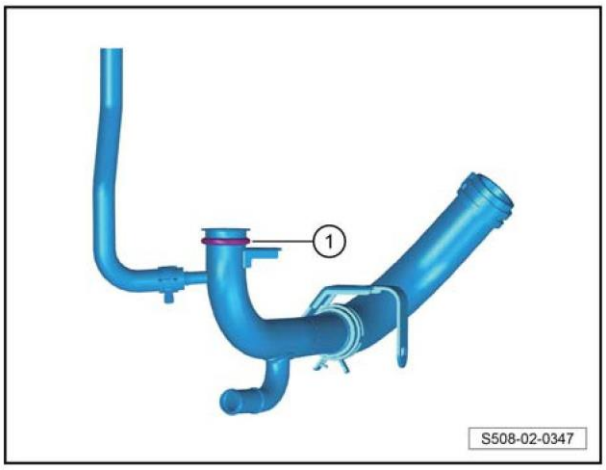


Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

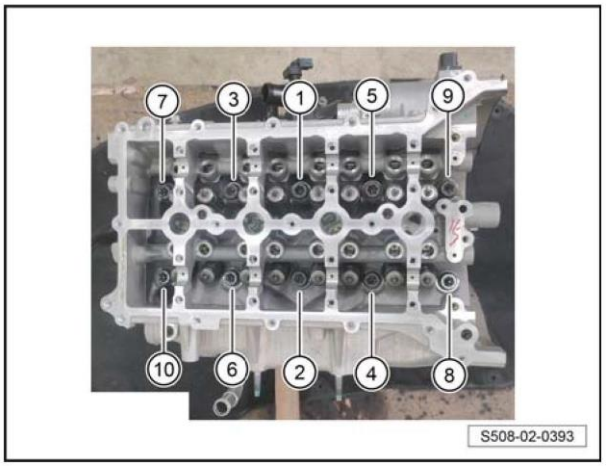
- Knock 2 positioning sleeves vertically into the seat holes using a copper hammer.
- Install the cylinder head washer on the top surface of the cylinder block, the positioning hole on the washer shall be aligned with the positioning sleeve. At this time, the oil hole and water hole on the cylinder block shall be aligned with those on the cylinder head washer. Before installation, apply sealant on the T-shaped surface in the position of (the arrow), with glue line diameter of Φ2.5mm~Φ 3.5mm, and glue line length of 10mm.
- The cylinder head washer surface and the fitting surface between the cylinder block and cylinder head shall be kept clean without foreign matters such as grease, and the washer shall not be installed reversely.
- Align with the positioning sleeve hole and slowly drop the cylinder head on the cylinder block; note: put it down gently when positioning, do not damage the cylinder washer.



- Before installing EGR valve inlet pipe component, replace the sealing ring ① of the EGR valve inlet pipe component.



– Before installing the cylinder head outlet hose, replace the cylinder head outlet hose sealing ring ①.



– There shouldn't be engine oil or coolant in the cylinder block bolt hole. Otherwise, crack may be caused due to excessive pressure in the cylinder block when installing the cylinder head bolts.
– Align the cylinder head with the locating pins and then place it on the cylinder block.
– Do not tighten the cylinder head bolt (plastic) more than 2 times. If the bolt has been tightened more than 2 times, replace it with a new bolt.
– As shown in the figure, tighten the bolts in sequence from ① to ⑩ and carry out in four procedures:

Step 1, Tighten the cylinder head bolt to 25N·m.

Step 2, Tighten the cylinder head bolt for 60° angle.

Step 3: Tighten the cylinder head bolt for 90° angle.

Step 4: Tighten the cylinder head bolt for 60° angle.

• Tightening torque of bolt: **25N·m+60°+90°+60°**

2.12.8.12 Removal and installation of cylinder block skirt rack component

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil
2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change
3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant
4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant
5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

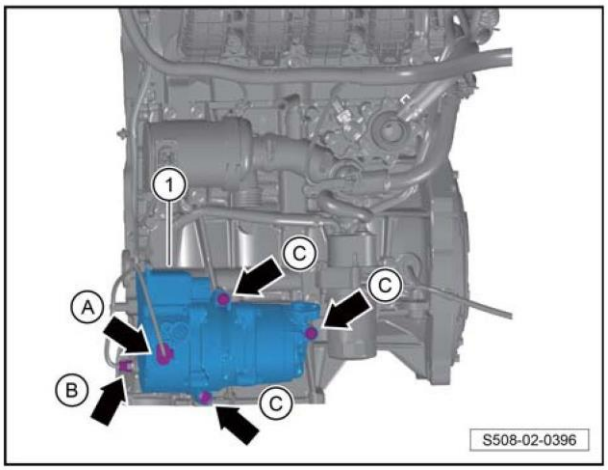
7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the crankshaft rear engine oil seal seat. Refer to 2.12.8.20 Removal and installation of camshaft rear oil seal component

9 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

10 Remove the oil pump chain. Refer to 2.13.8.6 Removal and installation of oil pump chain

11 Remove the oil pan component. Refer to 2.13.8.11 Removal and installation of oil pan component



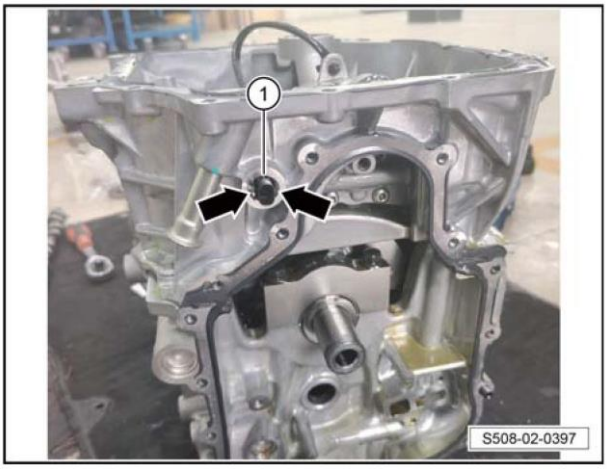
12 Remove the cylinder block skirt component

a. Disconnect the connector (see arrow A) of compressor assembly.

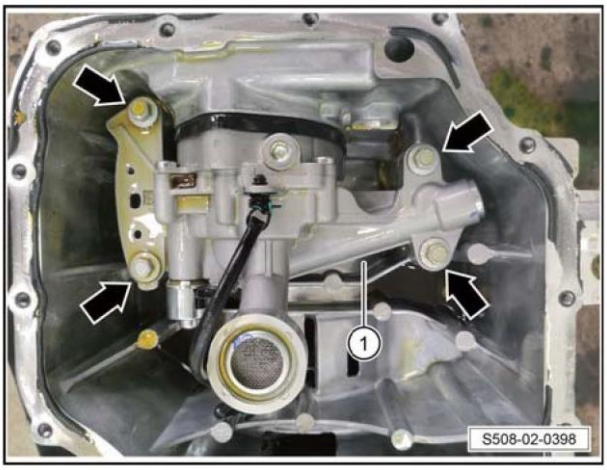
b. Disconnect the connector of the secondary variable oil pump (see arrow B).

c. Unscrew the fixing bolts (see arrow C) and remove the compressor assembly ①.

- Tightening torque of bolt: **25 N·m**

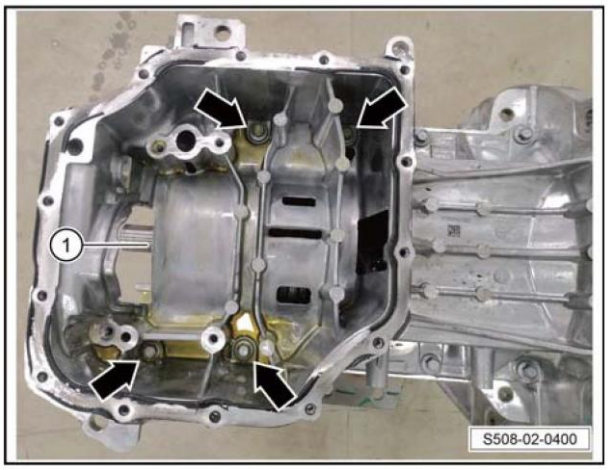


d. Press the position of (the arrow), and disengage the oil pump harness socket ①.



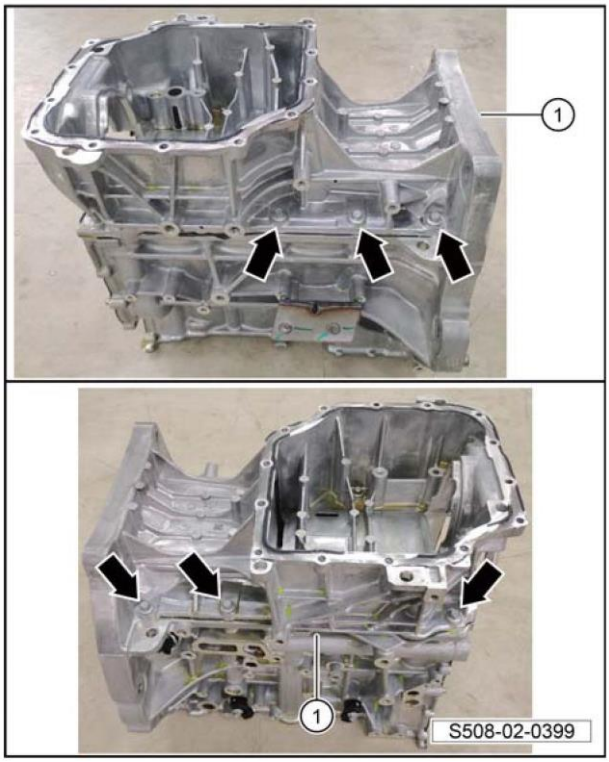
e. Unscrew the fixing bolts (see the arrows) and remove the oil pump ①.

- Tightening torque of bolt: **25 N·m**



f. Unscrew the fixing bolt in the cylinder block skirt rack component ①.

- Tightening torque of bolt: **25 N·m**

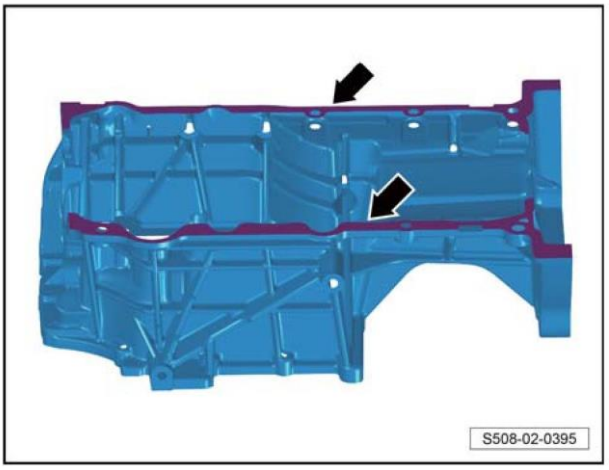


g. Unscrew the fixing bolt out of the cylinder block skirt rack component ①.

h. Remove the cylinder block skirt rack component ①.

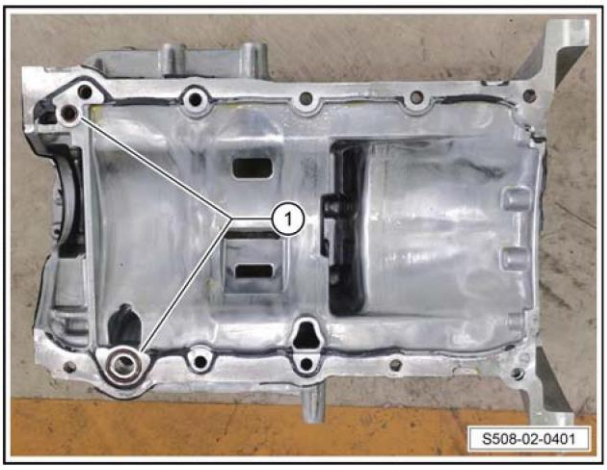
- Tightening torque of bolt: **25 N·m**

Installation procedures

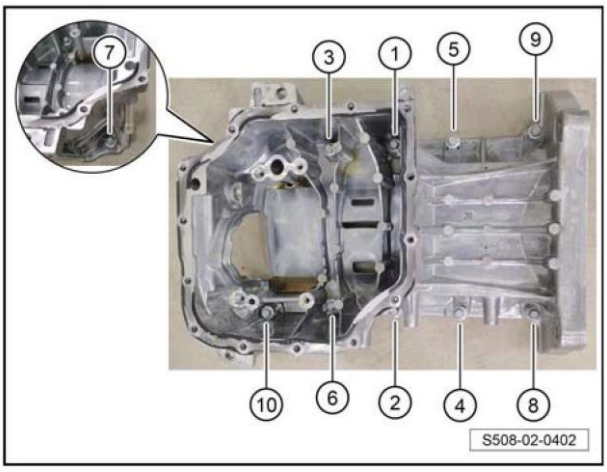


Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Confirm that the location pin of the skirt rack has been pressed in place.
- As shown in the figure, apply sealant evenly to the upper surface of the clean cylinder block skirt rack component, with rubber line diameter of Φ2~Φ3mm, and there shall be no break point.



- Apply a little amount of lubricating grease to the outer circle of two O-rings ①, and then mount the two O-rings into the skirt rack oil hole.



- Install the skirt rack onto the cylinder block, pretighten the bolts in cross mode according to the sequence in the figure, and then tighten the bolts to the specified torque of 25N·m.

2.12.8.13 Removal and installation of intake and exhaust valves

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

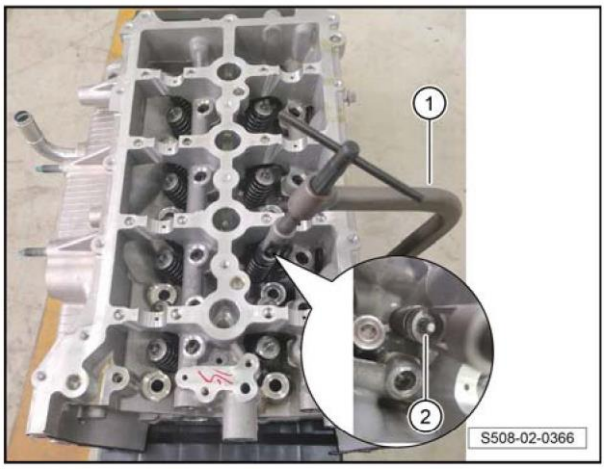
6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

9 Remove the intake and exhaust camshafts. Refer to 2.12.8.9 Removal and installation of intake and exhaust camshafts

10 Remove the cylinder head. Refer to 2.12.8.11 Removal and installation of cylinder head

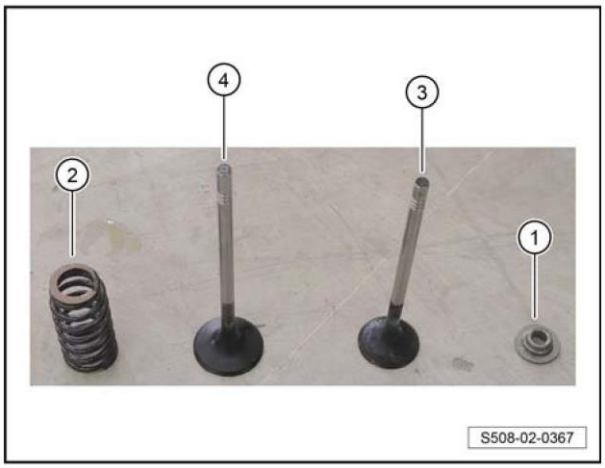


11 Remove intake and exhaust valves

a. Compress the valve spring with ① valve spring compression tool.

b. Use tweezers or absorbing bar to take out the valve cotter ②.

c. Remove the valve spring compression tool ①.



d. Take out the valve spring upper seat ① and valve spring ②, and remove the exhaust valve ③ and intake valve ④.

Tip:

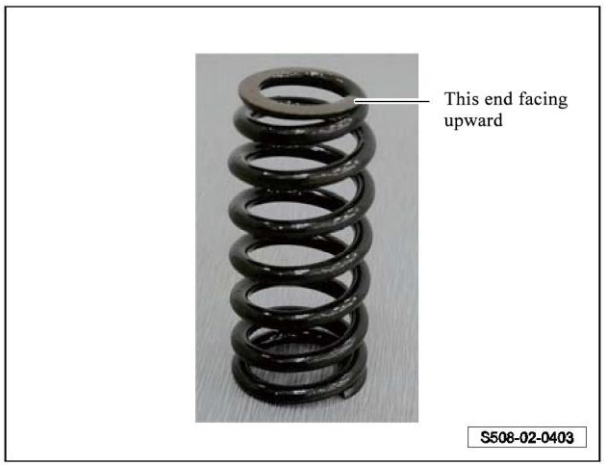
Always mark the removed intake and exhaust valves properly or put them in order without mixing.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Before installing the valve, apply engine oil to the valve stem from the point 26mm from the valve end to the valve end.

– The valve spring is a honeycomb spring, with small end upward.



– Compress the valve spring with a special tool, install the valve lock clamp at the end of the valve, and carefully loosen the valve spring when the clamp is in place.

– After installation, gently tap the valve stem end with a point punch to make the valve better fit with the valve lock clamp.

2.12.8.14 Removal and installation of valve oil seal components

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

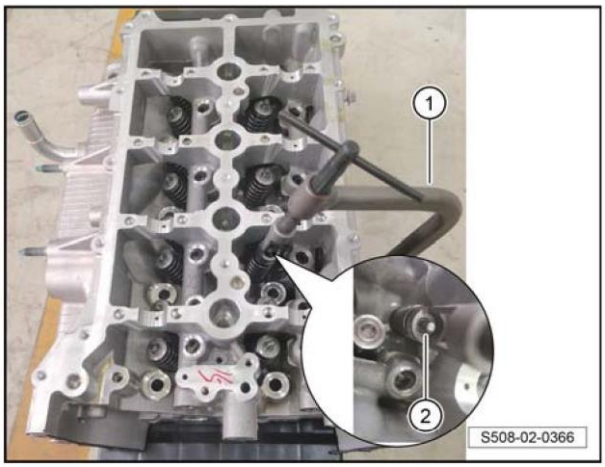
6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the intake and exhaust camshafts. Refer to 2.12.8.9 Removal and installation of intake and exhaust camshafts

9 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

10 Remove the cylinder head. Refer to 2.12.8.11 Removal and installation of cylinder head

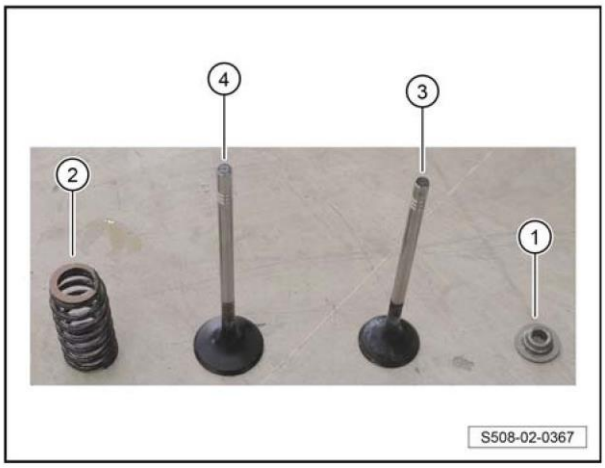


11 Remove the valve oil seal components

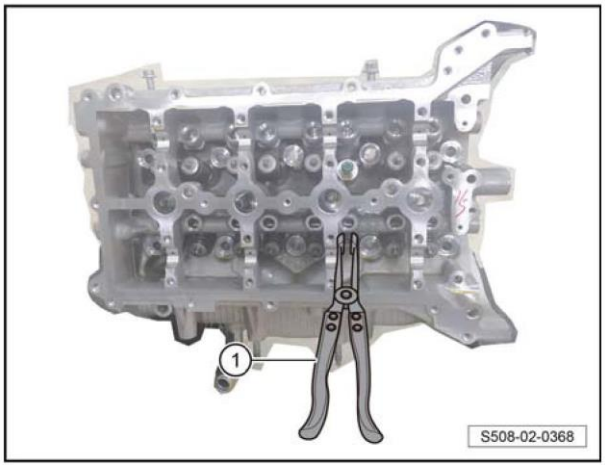
a. Compress the valve spring with ① valve spring compression tool.

b. Use tweezers or absorbing bar to take out the valve cotter ②.

c. Remove the valve spring compression tool ①.



d. Take out the valve spring upper seat ① and valve spring ②, and remove the exhaust valve ③ and intake valve ④.

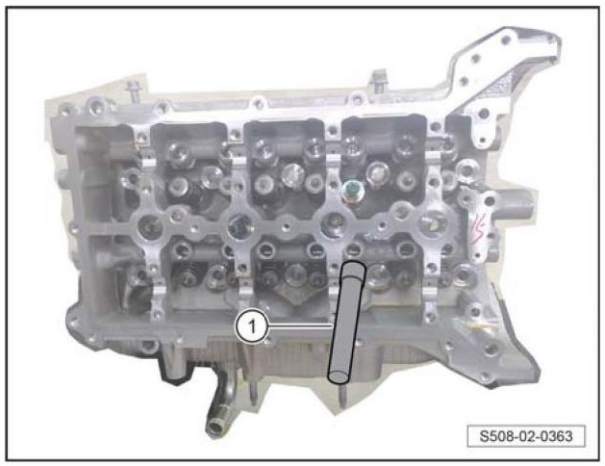


e. Use the valve oil seal pulling plier ① to clamp the valve oil seal, and pull out the valve oil seal in the axial direction of the valve stem.

Tip:

The valve oil seal is nonreusable and must be replaced each time it is removed.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Press with valve oil seal installation tool ① in the installation direction of the valve. Press the valve oil seal onto the valve guide pipe.

Tip:

Before installing new valve oil seals, apply general-purpose lithium grease to the 16 new valve oil seals.

2.12.8.15 Removal and installation of dual-mass flywheel

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

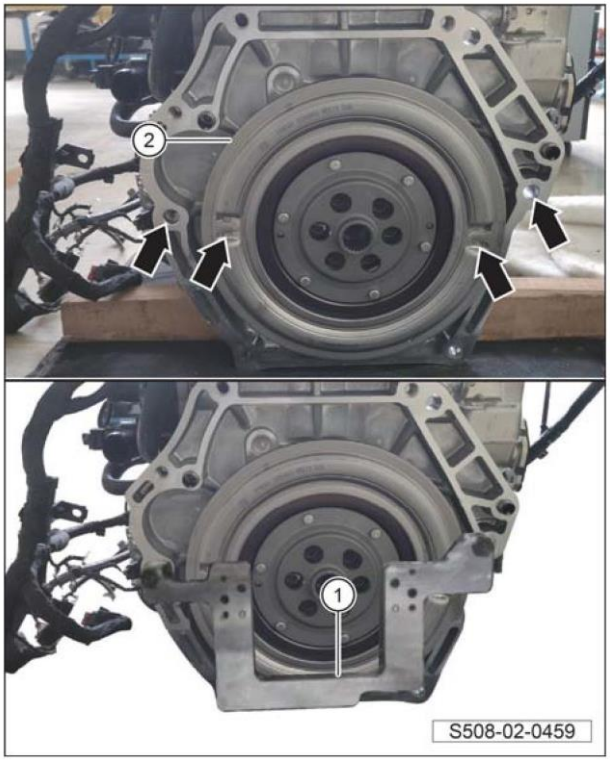
3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

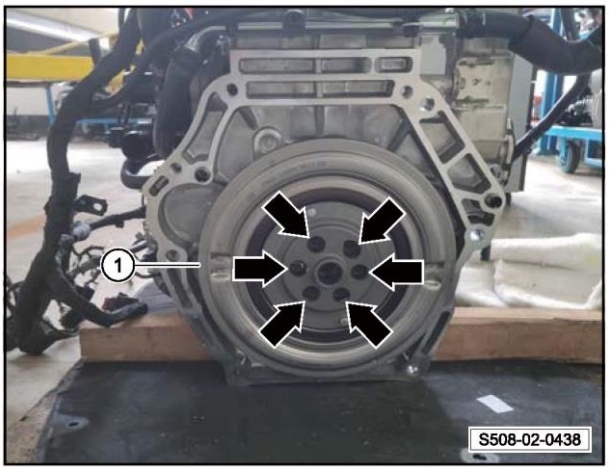
6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission



8 Removal of dual-mass flywheel

a. Use a flywheel anti-rotating tool ① to fix the dual-mass flywheel ② in the position of (the arrow).

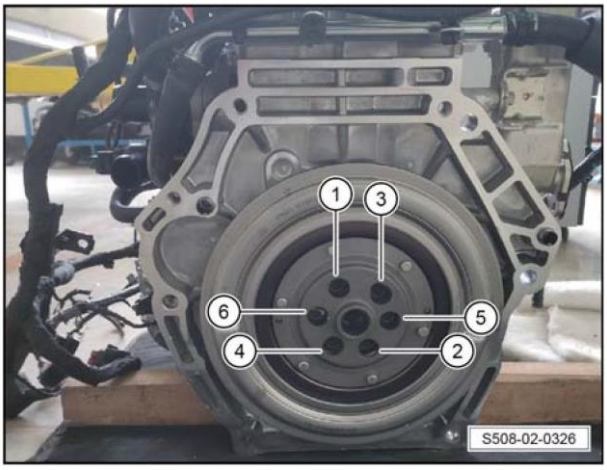


b. Unscrew the fixing bolt (see the arrow), and remove the dual-mass flywheel ①.

- Tightening torque of bolt: **60 N·m+90°**

Tip:

The fixing bolt of the dual-mass flywheel is disposable, and shall be replaced with new ones after removal.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Install the dual mass flywheel and pre-tighten fixing bolts ① to ⑥.

– Use flywheel anti-rotation tooling to lock the dual-mass flywheel.

– The flywheel shall not be tightened or loosened through impact.

– Tighten the fixing bolts of the dual-mass flywheel in the sequence from ① to ⑥ in the figure. Remove the flywheel anti-rotation tooling.

- Tightening torque of bolt: **60 N·m+90°**

2.12.8.16 Removal and installation of crankshaft signal disc

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the dual-mass flywheel. Refer to 2.12.8.15 Removal and installation of dual-mass flywheel

9 Remove the crankshaft rear engine oil seal seat. Refer to 2.12.8.20 Removal and installation of camshaft rear oil seal component

10 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

11 Remove the cylinder head. Refer to 2.12.8.11 Removal and installation of cylinder head

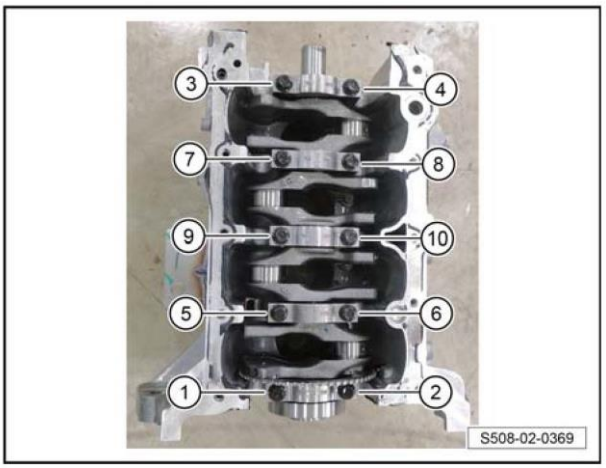
12 Remove the oil pan component. Refer to 2.13.8.11

Removal and installation of oil pan component

13 Remove the oil pump assembly. Refer to 2.13.8.5 Removal and installation of oil pump

14 Remove the cylinder block skirt rack component. Refer to 2.12.8.12 Removal and installation of cylinder block skirt rack component

15 Remove the piston and connecting rod assembly. Refer to 2.12.8.24 Removal and installation of piston and connecting rod assembly

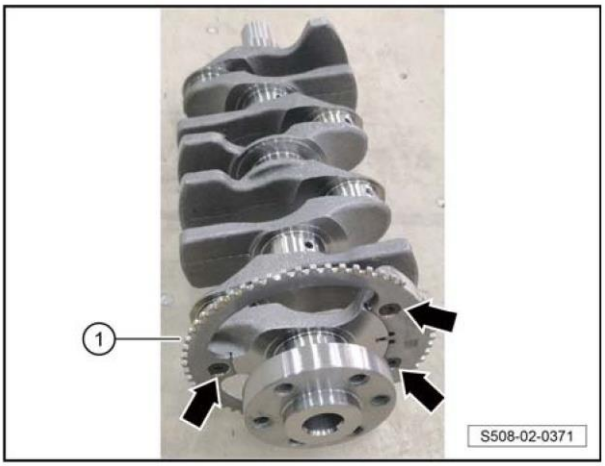


16 Remove the crankshaft timing signal disc

a. Unscrew the main bearing cap bolts in sequence from ① to ⑩.

b. Remove main bearing cap and crankshaft assembly.

- Bolt tightening torque: **24N·m+60°+60°**



c. Unscrew the fixing bolts (see the arrows) and take out the crankshaft timing signal disc ①.

- Tightening torque of bolt: 10±2 N·m

Installation procedures

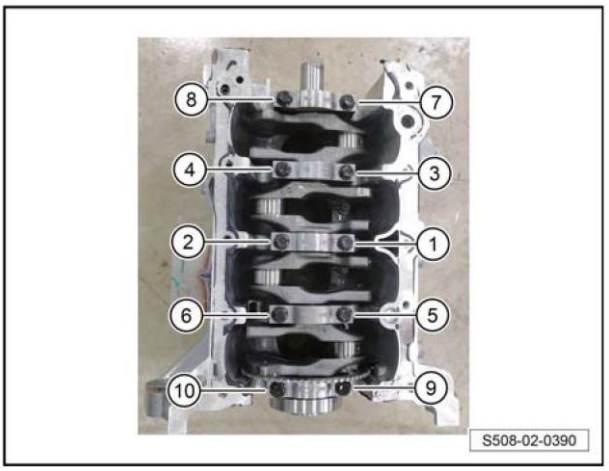
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– When replacing the crankshaft timing signal disc, check whether the part number of the gear ring is correct.

– Before installing the crankshaft timing signal disc, pre-apply adhesive to or ensure self-adhesive on the fixing bolts of the crankshaft timing signal disc.

2.12.8.17 Tightening sequence of main bearing cap bolts

Tightening procedure



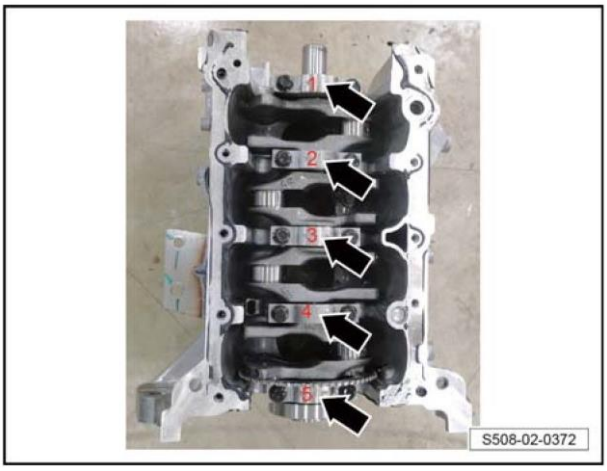
Tightening sequence of main bearing cap bolts

– Tighten main bearing cap bolts from ① to ⑩ in the sequence as shown in the figure.

- Tightening torque of bolt: **24±2N·m+(60±5)°+(60±5)°**

2.12.8.18 Assembling relationship of main bearing cap

Assembly relationship



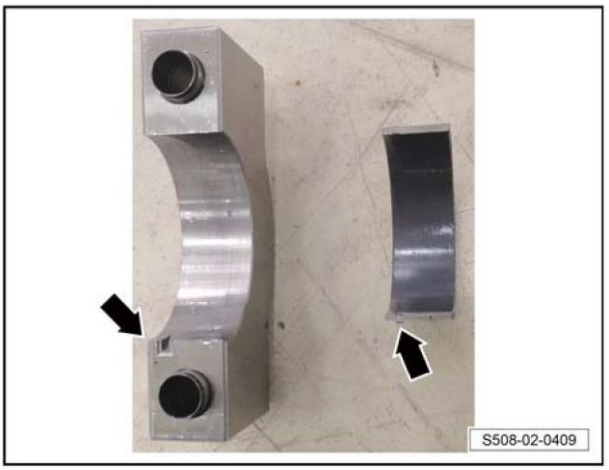
Assembling relationship of main bearing cap

– The arrow on the top of the main bearing cap shall face the timing chain.

– There is figure 1/2/3/4/5 on the top of the first/second/third/fourth/fifth bearing cap respectively (see the arrows).

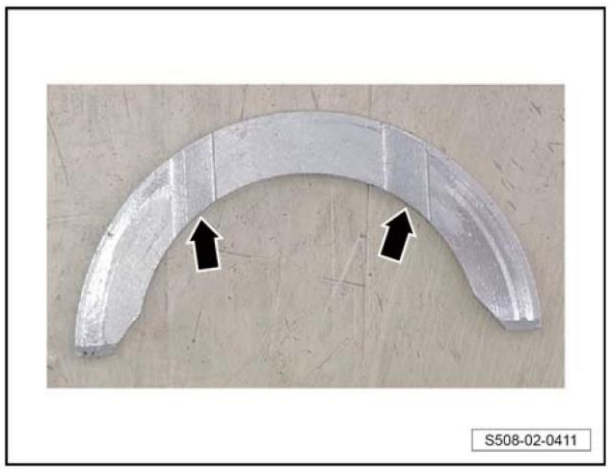
2.12.8.19 Assembling relationship of main bearing bush

Assembly procedure



– 1. The main bearing bush includes the upper and lower main bearing buses, which are installed on the cylinder block and the main bearing cap respectively. Install the upper main bearing bush (installed on the main bearing cap) correctly according to the notch and position of (the arrow).

– 2. The lower main bearing bush (installed on the cylinder block) has an oil hole. Install the lower main bearing bush correctly according to the notch and position of (the arrow).



– 3. Crankshaft thrust plates are installed on both sides of the third main bearing seat respectively. When installing, the oil grooves of the thrust plates face outward (toward the crankshaft thrust plane) (see the arrow). The plates must not be installed upside down.

2.12.8.20 Removal and installation of crankshaft rear oil seal component

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

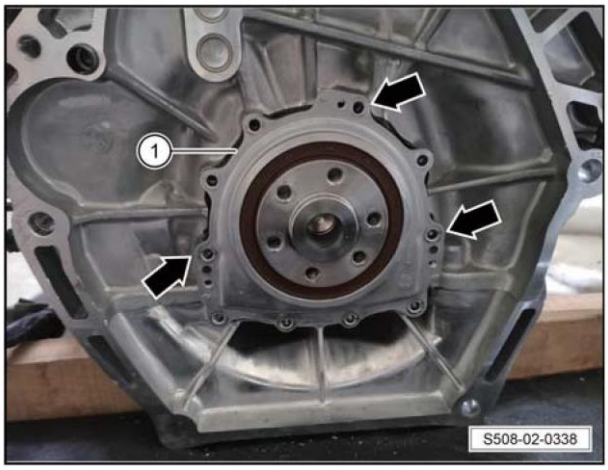
7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the dual-mass flywheel. Refer to 2.12.8.15 Removal and installation of dual-mass flywheel

9 Remove the crankshaft rear oil seal component

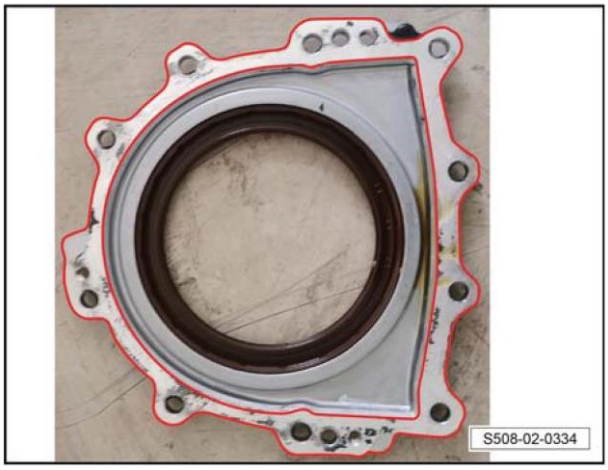
a. Unscrew the fixing bolts (see the arrows) and remove the crankshaft rear oil seal component ①.

- Tightening torque of bolt: **10 N·m**



b. Screw in the M6X35 bolts in the 3 positions indicated in the figure, tighten them evenly (up to 1/2 turns at a time), and press out and remove the crankshaft rear oil seal component ①.

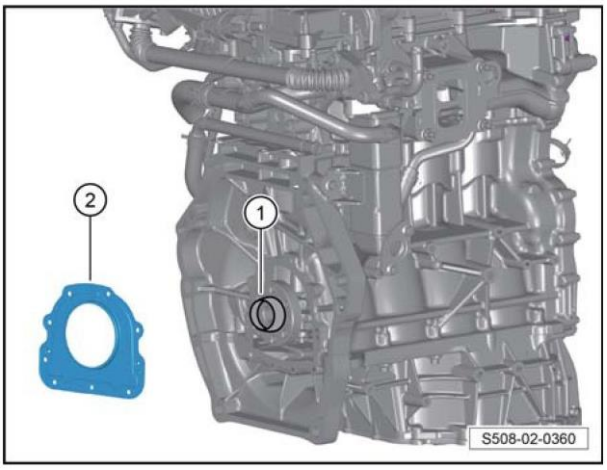
Installation procedures



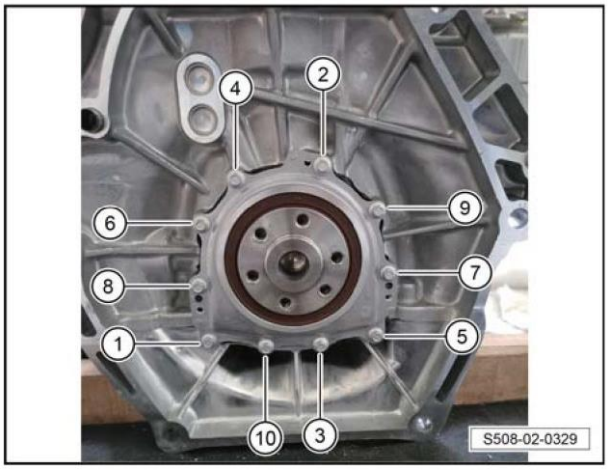
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Before installing the oil seal, clean the oil seal mounting surface at the rear end of the crankshaft with a clean cloth sprayed with detergent to ensure that the joint surface is clean, dry and oil-free.

– Apply adhesive according to the adhesive line (as shown in the figure), ensure that the adhesive line is complete, uniform and continuous and free of break point, and the diameter of the adhesive line is Φ2.5mm~Φ3.5mm. Complete the assembly within 5 minutes after applying adhesive.



– As is shown in the figure, use the crankshaft rear oil seal installation tool ① to carefully install the crankshaft rear oil seal component ② into the rear end of the crankshaft.



– Tighten the fixing bolts of the crankshaft rear oil seal component in sequence from ① to ⑩.

- Tightening torque of bolt: **10 N·m**

2.12.8.21 Removal and installation of crankshaft front oil seal component

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

4 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

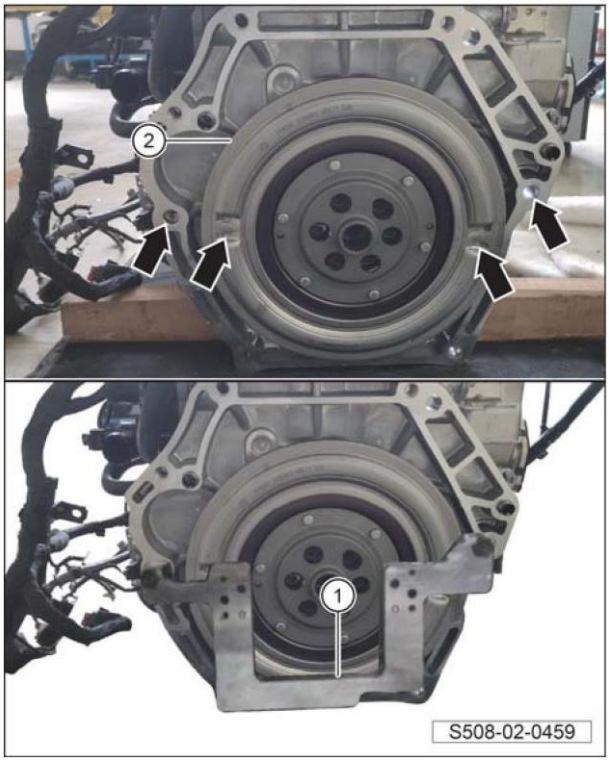
5 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

6 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

7 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

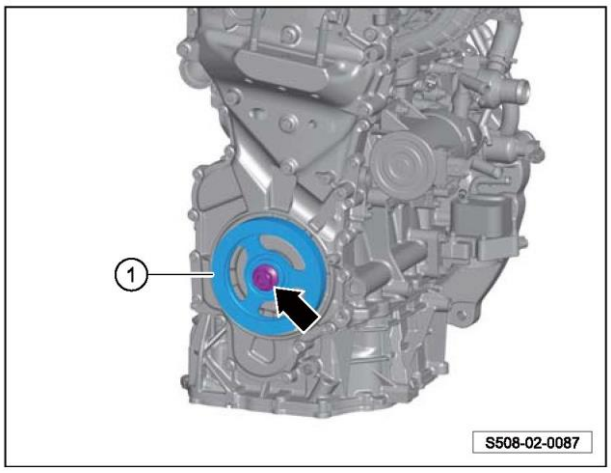
8 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

9 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission



10 Remove the crankshaft front oil seal component

a. Use a flywheel anti-rotating tool ① to fix the dual-mass flywheel ② in the position of (the arrow).

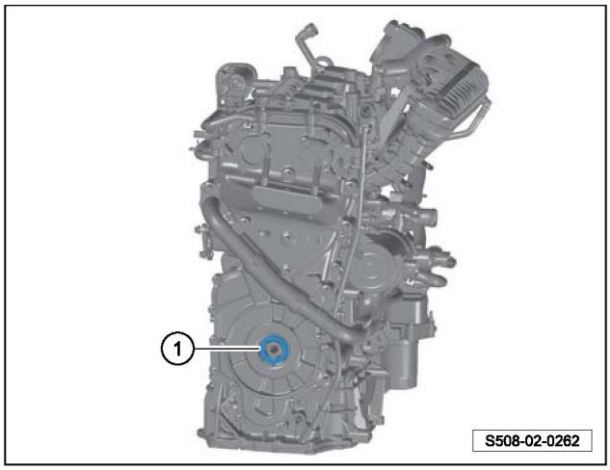


b. Unscrew the fixing bolt (see the arrow), and take out the crankshaft damping pulley ①.

- Tightening torque of bolt: **150N·m+180°**

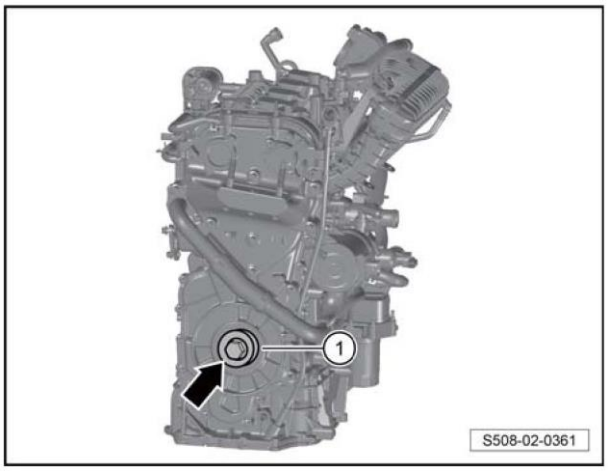
Tip:

The fixing bolt of the crankshaft damping pulley is disposable, and shall be replaced with new ones after removal.



c. Remove the crankshaft front oil seal component ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– The oil seal can be used only once. A new oil seal must be used for installation.

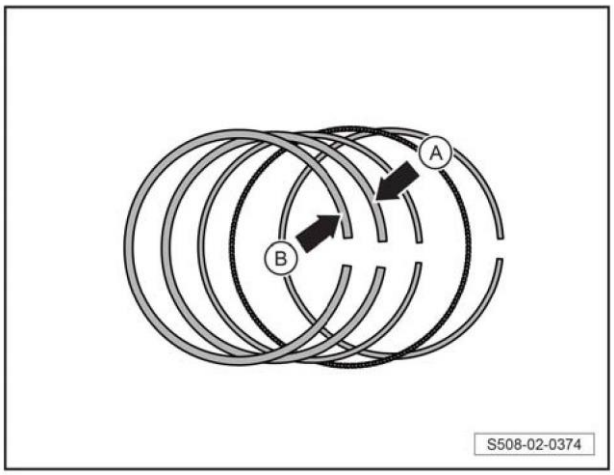
– Use the crankshaft front oil seal component press tooling ① to press the crankshaft front oil seal (see the arrow) into the timing cover, with a height of 13.0mm~13.5mm, and height difference not exceeding 0.25mm.

2.12.8.22 Removal and installation of crankshaft timing sprocket

Disassembly procedures

1 Remove the crankshaft timing sprocket. Refer to 2.13.8.6 Removal and installation of oil pump chain

2.12.8.23 Assembling position of piston ring



Assembling position of piston ring

- Install the oil ring (scrapers and lining spring) first, then the second gas ring, and finally the first gas ring.
- The mediate ring is located between the upper and lower scrapers, with their gaps misaligned approximately 180º.
- When installing the 2nd compression ring, make sure that the manufacturer's mark (see arrow A) on the piston ring faces the piston top. The compression ring is made of oxidized steel with a brown surface.
- When installing the 1st compression ring, make sure that the manufacturer's mark (see arrow B) on the piston ring faces the piston top. The compression ring is made of nitrided steel with a bright outer circular surface.
- Check the notch of piston ring after installing the piston ring. The notch should not face the piston pin shaft side and piston operation surface. The opening of adjacent rings cannot be overlapped. Stagger every 180°.
- Check whether the piston ring can rotate freely after installation.

2.12.8.24 Removal and installation of piston and connecting rod assembly

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

9 Remove the intake VVT component. Refer to 2.12.8.8 Removal and installation of intake VVT component

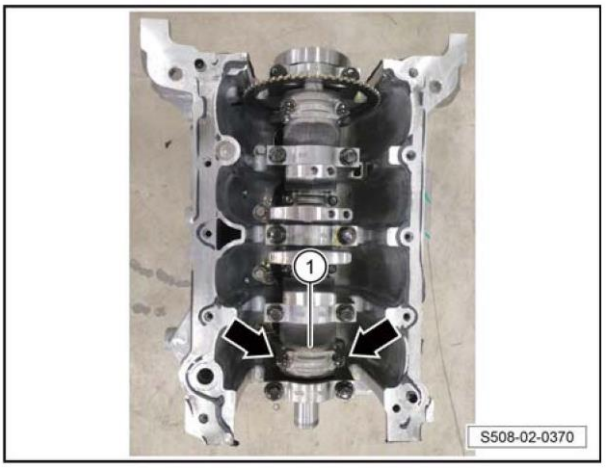
10 Remove the exhaust camshaft sprocket. Refer to 2.12.8.10 Removal and installation of exhaust camshaft sprocket

11 Remove the cylinder head. Refer to 2.12.8.11 Removal and installation of cylinder head

12 Remove the oil pump assembly. Refer to 2.13.8.5 Removal and installation of oil pump

13 Remove the cylinder block skirt rack component. Refer to 2.12.8.12 Removal and installation of cylinder block skirt rack component

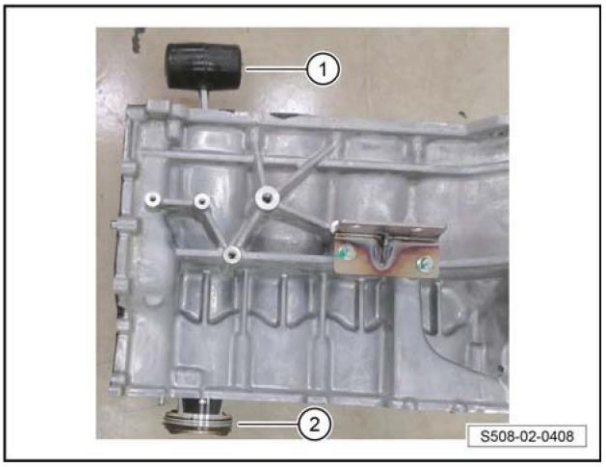
14 Remove the oil cooling nozzle. Refer to 2.13.8.10 Removal and installation of oil cooling nozzle



15 Remove the piston and connecting rod assembly

a. Unscrew the fixing bolts (see the arrows) and remove the connecting rod bearing cap ①.

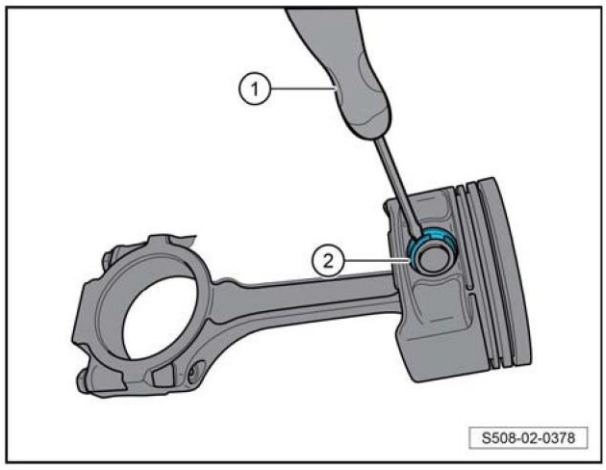
- Tightening torque of bolt: **16±2N·m+(90±5)°**



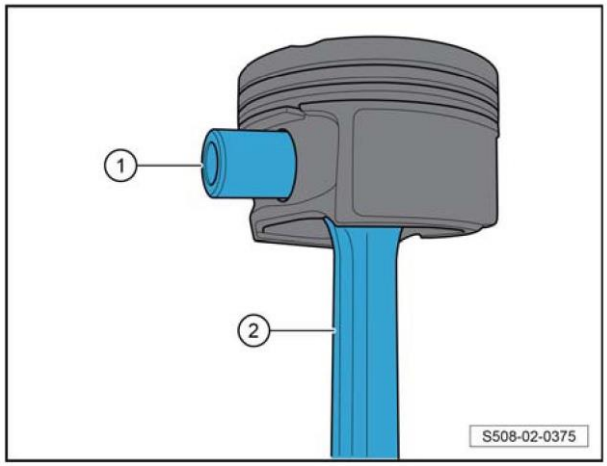
b. Use the handle of hammer ① or a soft tool to push out the piston component ②.

Tip:

When removing the piston connecting rod, mark every piston connecting rod to avoid confusing the corresponding cylinder.

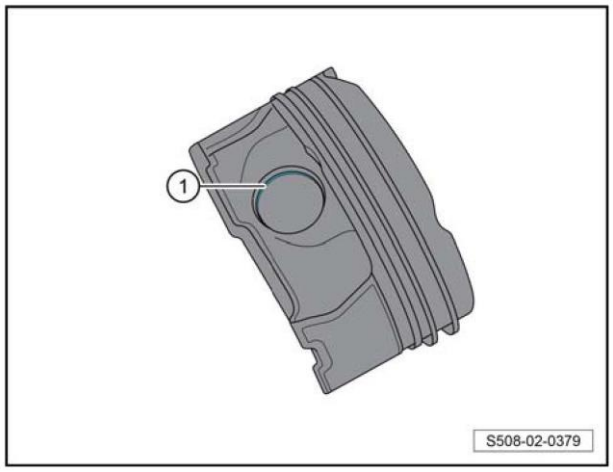


c. Remove the piston pin snap ring ② with a straight screwdriver ①.



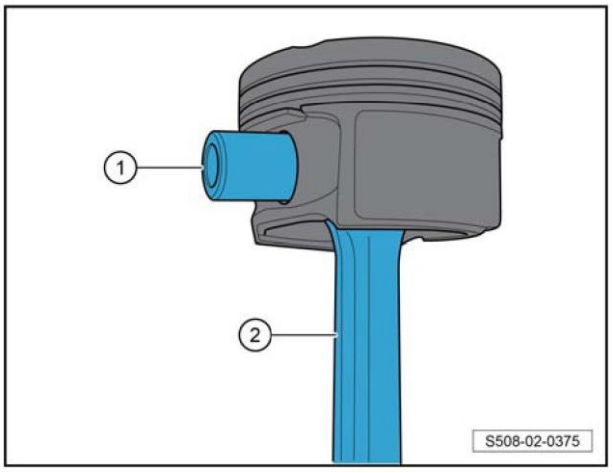
d. Remove the piston pin ① and take out the connecting rod ②.

Installation procedures



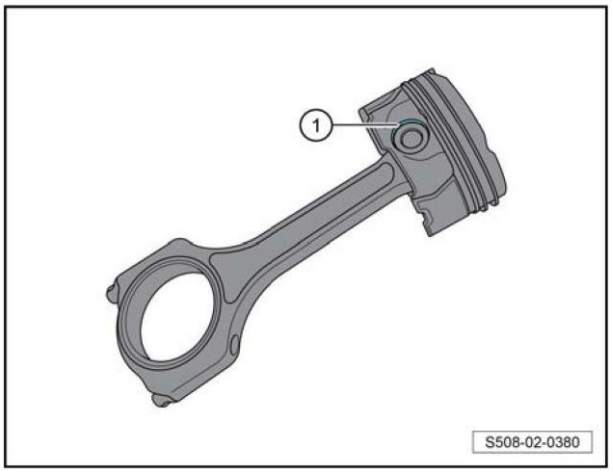
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Install the piston pin snap ring ① at one end of the piston pin seat hole, and stagger the notch at the end of the piston pin snap ring with the notch of the pin hole on the piston.

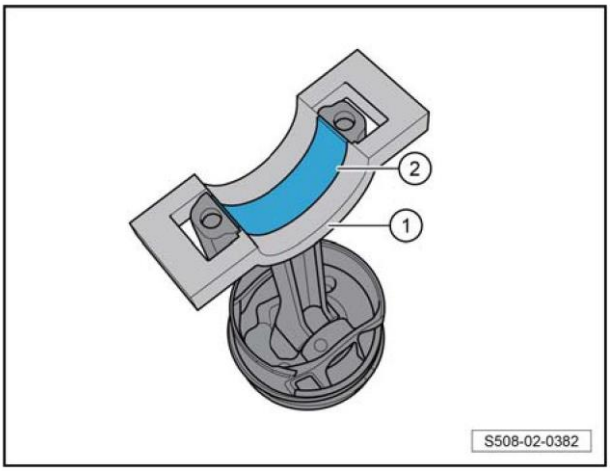


– Apply oil to the piston pin ① and piston pin seat during installation.

– Align the piston pin seat hole with the small end hole of the connecting rod body ②. Note that the forward mark on the piston top shall be consistent with the direction of the connecting rod mark. Install the piston pin ① from the other end of the piston pin seat hole.

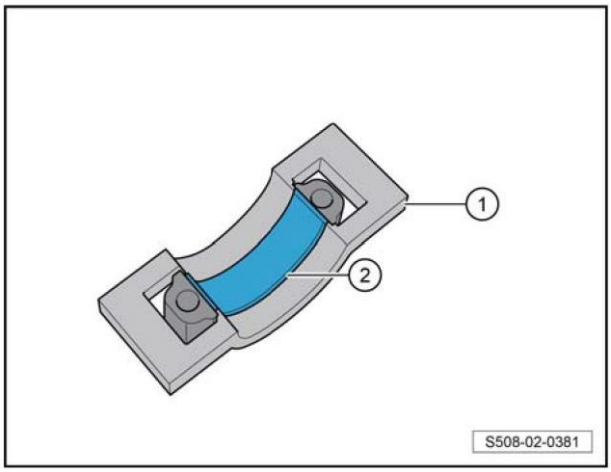


– After installing the piston pin, install the piston pin snap ring ① at the other end, and stagger the notch at the end of the snap ring with the notch of the pin hole on the piston. The piston that has been assembled shall be able to swing naturally under its own weight without jamming. Check whether the piston snap ring is completely clamped in the groove to prevent the snap ring from coming out when the engine is running.



– When installing the connecting rod bearing bush, take care to clean the big end of the connecting rod, the connecting rod cap and the bearing bush, and check for scratches on the bearing bush surface.

– As is shown in the figure, sleeve the connecting rod bearing bush assembly tooling ① on the connecting rod bearing cap, and install the connecting rod lower bearing bush ②.



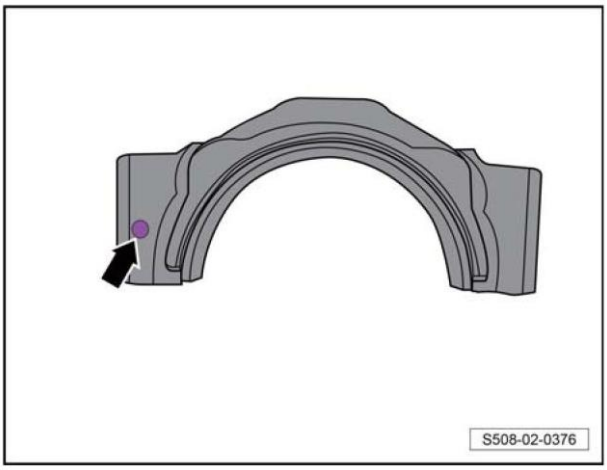
– As shown in the figure, put the connecting rod bearing bush assembling tooling ① on the connecting rod and install the connecting rod upper bearing bush ②.

2.12.8.25 Assembling relationship of piston and connecting rod

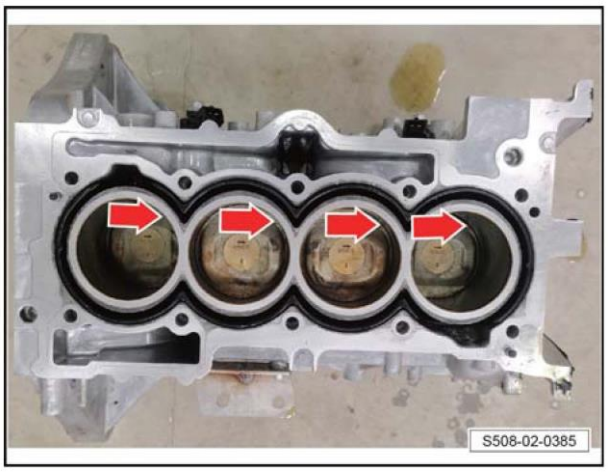
Tip:

When removing the piston connecting rod, mark every piston connecting rod to avoid confusing the corresponding cylinder.

Assembling relationship of piston and connecting rod



– As shown in figure: The protrusion marking (see the arrow) on the connecting rod bearing cap shall face the timing chain.



– As shown in the figure, on the piston top, there is an "arrow" mark, which faces the timing chain side.

2.12.8.26 Removal and Installation of piston ring

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil
2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change
3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant
4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant
5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant
6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain
7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission
8 Remove the timing chain. Refer to 2.12.8.4 removal

and installation of timing chain

9 Remove the intake VVT component. Refer to 2.12.8.8 Removal and installation of intake VVT component

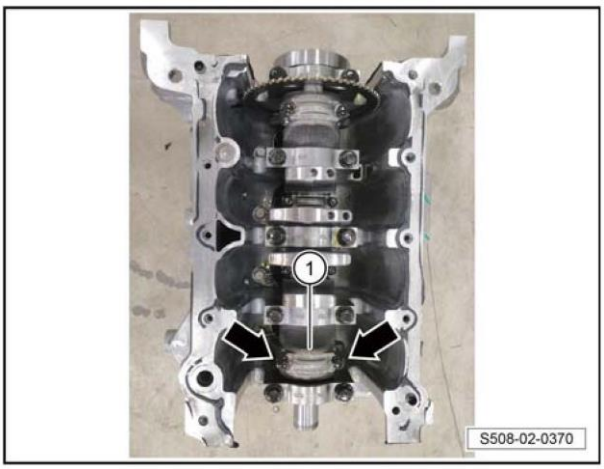
10 Remove the exhaust camshaft sprocket. Refer to 2.12.8.10 Removal and installation of exhaust camshaft sprocket

11 Remove the cylinder head. Refer to 2.12.8.11 Removal and installation of cylinder head

12 Remove the oil pump assembly. Refer to 2.13.8.5 Removal and installation of oil pump

13 Remove the cylinder block skirt rack component. Refer to 2.12.8.12 Removal and installation of cylinder block skirt rack component

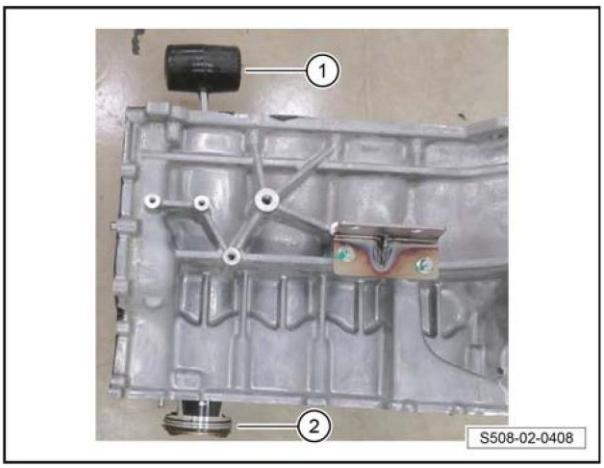
14 Remove the oil cooling nozzle. Refer to 2.13.8.10 Removal and installation of oil cooling nozzle



15 Remove piston ring

a. Unscrew the fixing bolts (see the arrows) and remove the connecting rod bearing cap ①.

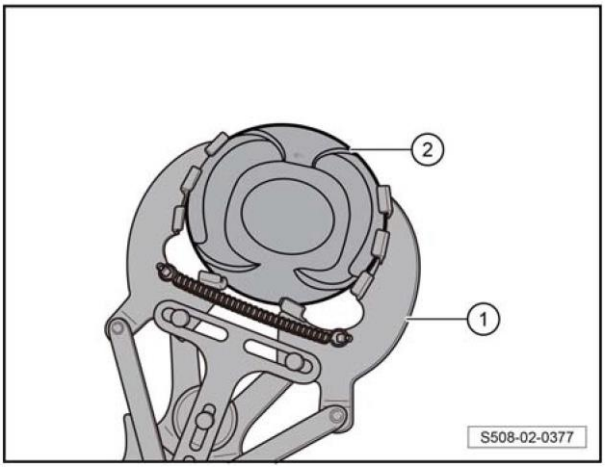
- Tightening torque of bolt: **16N·m+80°**



b. Use the handle of hammer ① or a soft tool to gently push out the piston component ②.

Tip:

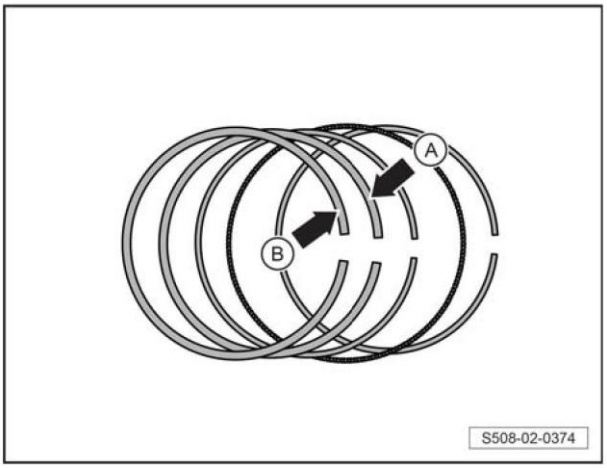
When removing the piston connecting rod, mark every piston connecting rod to avoid confusing the corresponding cylinder.



c. Use the piston ring removal and installation tool ① to remove the piston ring ②.

Tip:

The piston ring removal and installation tool is not used for removing the oil ring.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Install the oil ring (scrapers and mediate ring) first, then the second gas ring, and finally the first gas ring.
- The mediate ring is located between the upper and lower scrapers, with their gaps misaligned approximately 180º.
- When installing the 2nd compression ring, make sure that the manufacturer's mark (see arrow A) on the piston ring faces the piston top. The compression ring is made of oxidized steel with a brown surface.
- When installing the 1st compression ring, make sure that the manufacturer's mark (see arrow B) on the piston ring faces the piston top. The compression ring is made of nitrided steel with a bright outer circular surface.
- Check the notch of piston ring after installing the piston ring. The notch should not face the piston pin shaft side and piston operation surface. The opening of adjacent rings cannot be overlapped. Stagger every 180°.
- Check whether the piston ring can rotate freely after installation.

2.13 Lubrication system

2.13.1 Specification

2.13.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Oil drain plug	M14×1.5	35±3
Oil filter component	M20×1.5	12±2
Oil filter seat	Bolt	25
Oil cooler	Bolt	10
Oil pump	Bolt	25
Oil pump sprocket	Hexagon head flange bolt M8	36
Oil pressure switch	R1/8	10±2
Oil cooling nozzle	Hexagon head flange bolt M5	7±1
Oil pan	Hexagon head flange bolt M6	10

2.13.2 Description and operation

2.13.2.1 Overview

Overview of lubrication system

In order to ensure the normal operation of the engine, the surface of the relatively moving parts must be lubricated, that is, place a thin and even engine oil film between the friction surfaces to reduce frictional resistance, power consumption, wear and tear, and extend engine's service life. The system that delivers engine oil to the surface of moving parts for lubrication is called the lubrication system of the engine, referred to as the lubrication system.

The function of the lubrication system is to lubricate the surface of moving parts, reduce friction and wear, and ensure normal operation of the engine. In addition, it also cleans the friction surface and takes away grinding and other foreign matter, performing the clean function; The oil circulating in the lubrication system can take away the heat generated by the friction, which performing the cooling function; The formation of oil film (such as piston and cylinder) between moving parts can improve their sealing performance, and help prevent gas or oil leakage, performing the seal function; The oil film formed on the surface of the part can prevent corrosion and rust, which performing the protecting function; Engine oil can be used as hydraulic oil, such as performing the hydraulic function in hydraulic tappet; And the oil film formed on the surface of the moving parts can also absorb the shock and reduce the vibration, which performing the damping & buffering function.

Engine oil is the medium of the lubrication system, and its quality directly affects the operation of the lubrication system. The oil adopted must meet the use requirements. Excessively viscous oil may not circulate easily in pipelines and oil passages, resulting in large movement resistance of components or friction surfaces, and even failure to form an oil film, thus leading to direct friction between parts; excessively dilute oil may be too fluid, and the oil film formed will be destroyed quickly at high temperature. The oil mixed with moisture will form milky mixed liquid which not only cannot lubricate the parts but also make them rusty, causing the parts or friction surfaces to be stuck directly. Therefore, the oil level and quality must be checked regularly.

2.13.3 Working principle

2.13.3.1 Working principle of lubrication system

Principle of Engine Oil Pressure Switch Control

The engine oil pressure switch is mounted on the cylinder block to detect the oil pressure in the main oil passage.

When the engine stops or the oil pressure is below the specified value, the contact inside the engine oil pressure switch will close and the oil pressure warning light will turn on. When the engine starts, or the oil pressure is above the specified value, the oil pressure will push the diaphragm in the engine oil pressure switch to disconnect the contact inside the engine oil pressure switch and the oil pressure warning light will turn off.

Oil pan

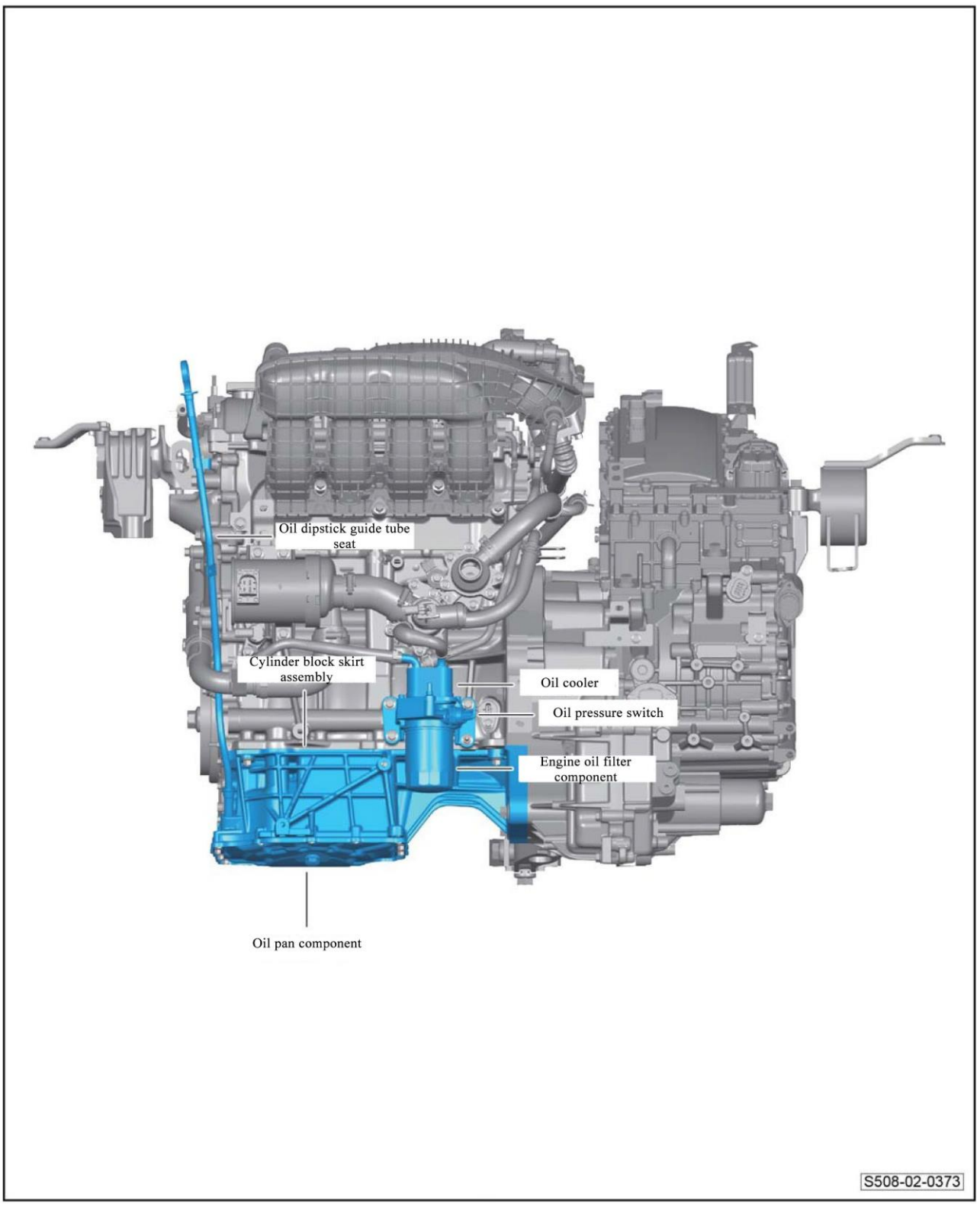
The engine oil pan is installed at the bottom of the crankcase. The oil pump draws the engine oil from the oil pan. After passing through the oil filter, the engine oil passes through two oil passages to lubricate the cylinder block and cylinder head respectively. In one oil passage, the engine oil passes through the engine oil passage in the crankshaft to the connecting rod, then to the piston and cylinder, and returns to the oil pan at the end.

Oil pump

The oil pump is driven by the crankshaft sprocket, and pumps the lubricating oil from the oil pan to the engine components to be lubricated. The oil inlet of the oil pump is equipped with a filter screen to filter the impurities in the engine lubricating oil, so as to reduce the risk of excessive wear of the oil pump caused by impurities.

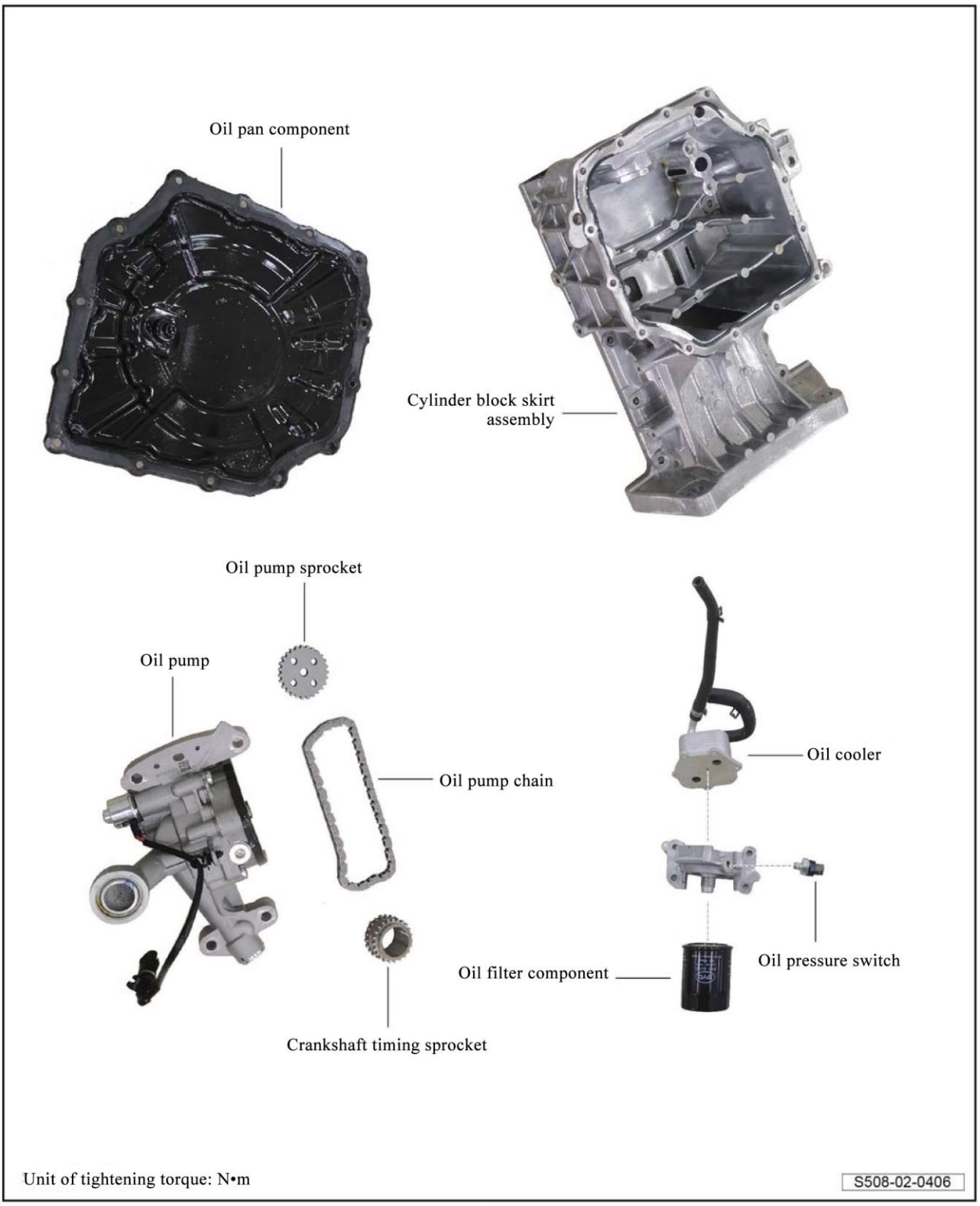
2.13.4 Component position

2.13.4.1 Component position



2.13.5 Exploded view

2.13.5.1 Exploded view



2.13.6 Diagnosis information and steps

2.13.6.1 Diagnostic instructions

Be sure to be familiar with the system functions and operations before starting system diagnostics, which will help you determine the cause of fault, and more importantly, help determine whether the symptoms described by the customer are normal.

2.13.6.2 Visual inspection

- Check whether there is any after-sales added device that may affect the operation of the lubrication system.
- Check the system components easily accessible or visible for obvious blockage or leakage. If there is any leakage, first confirm the engine oil leakage position.
- Check whether the oil filter is dirty or blocked and replace it if necessary.

2.13.6.3 Low engine oil pressure

Diagnosis steps

Step 1	Check the engine oil type.

A Check whether the type of engine oil used meets the standard.

No → Replace the engine oil with the standard one.

Yes

Step 2	Check the engine oil level.

A Check whether the engine oil level is normal.

No → Add engine oil to the normal level.

Yes

Step 3	Check the oil filter.

A Check whether the oil filter is too dirty.

Yes → Replace the oil filter.

No

Step 4	Check the oil pressure switch.

A Check whether the engine oil pressure switch works normally.

No → Replace the engine oil pressure switch.

Yes

Step 5	Check the oil pump.

A Check whether the clearance between the inner and outer rotors of the oil pump meets the standard.

B Check whether the radial clearance from the oil pump housing to the outer rotor meets the standard.

Yes → Replace the oil pump.

No

Step 6	Check the oil pump filter screen.

A Check whether the oil pump filter screen is blocked by impurities.

Yes → Clean the engine oil pump sieve.

No

Step 7	Check the crankshaft bearing clearance.

A Check whether the clearance of the crankshaft bearing is too large.

Yes → Replace the main bearing bush and the crankshaft if necessary.

Next

Step 8	The diagnosis is over.

2.13.6.4 Diagnosis process for abnormal oil consumption

Diagnosis steps

Step 1	Check whether the engine oil leaks.

A Check the engine oil seal, exhaust valve, oil pan, valve chamber cover and other connections for leakage.

Yes → Check and repair the engine oil leakage position.

No

Step 2	Check the viscosity of engine oil.

A Check whether the viscosity of engine oil is normal or whether inferior engine oil is used.

Yes → Replace the oil filter and change the engine oil.

No

Step 3	Check whether the vehicle is maintained normally.

A Check whether the vehicle's engine oil is changed regularly.

No → Please replace the engine oil on a regular basis.

Yes

Step 4	Check the positive crankcase ventilation system.

A Check positive crankcase ventilation system components for damage.

Yes → The damaged components should be replaced.

No

Step 5	Check the valve oil seal.

A Check whether the valve oil seal is worn, missing, or improperly installed.

Yes → Repair the faulty part.

No

Step 6	Check the piston and piston ring.

A Check the piston and piston ring for improper installation in the cylinder.

B Check the piston ring for fracture or wear.

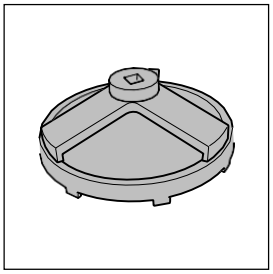
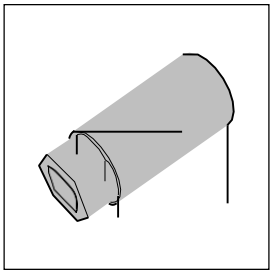
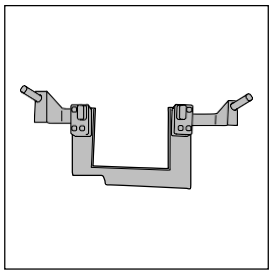
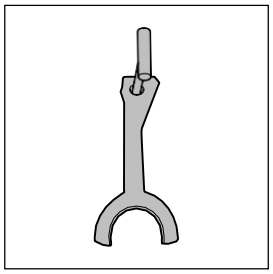
Yes → Repair the faulty part.

Next

Step 7	The diagnosis is over.

2.13.7 Special tool

2.13.7.1 List of special tools

S/N	Symbol	Tool No.	Description
1		Oil filter remover	For removing and installing the oil filter
2		Engine oil pressure switch removal and installation sleeve	For removing and installing the oil pressure switch
3		Flywheel removal and installation tool	For removal and installation of flywheel and crankshaft damping pulley
4		Special service tool for oil pump sprocket rotation prevention	Used for oil pump and sprocket

2.13.8 Removal and installation

2.13.8.1 Checking oil level

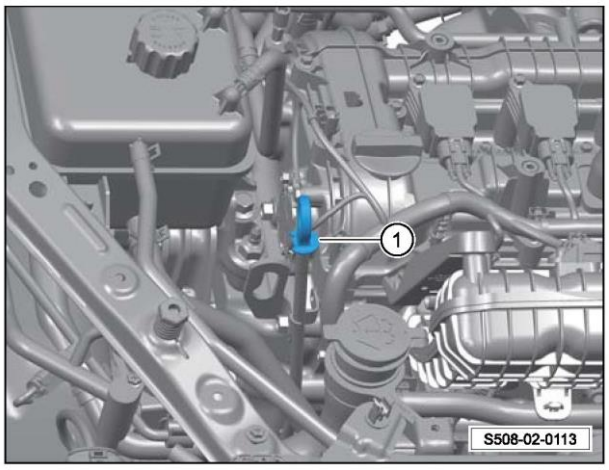
Testing procedure

1 Test conditions

- Park the car on a level ground.
- The engine oil pan is not deformed.
- Wait for 10 minutes after turning off the engine so that the engine lubricant can flow back to the oil pan.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

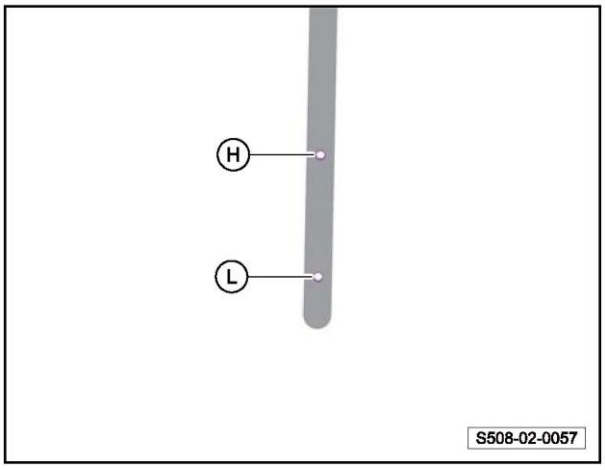
3 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)



4 Steps

a. Pull out the engine oil dipstick ①, wipe it with a piece of rag. Then reinsert and push it to the bottom. Remain this state for a while.

b. Pull out the engine oil dipstick ① again and read the engine oil level.



5 Marking of oil dipstick:

H— maximum level.

L—minimum level.

Between point H and point L normal engine oil level.

Above point H, the engine oil must be discharged in order to reach the level between point H and point L.

Below point L, the engine oil must be filled in order to reach the level between point H and point L.

Requirements for Filling Engine Lubricating Oil

Oil specifications/viscosity	First filling	Replacement and filling

SP 0W-20	3.7L	3.2L

2.13.8.2 Replacing engine lubricating oil

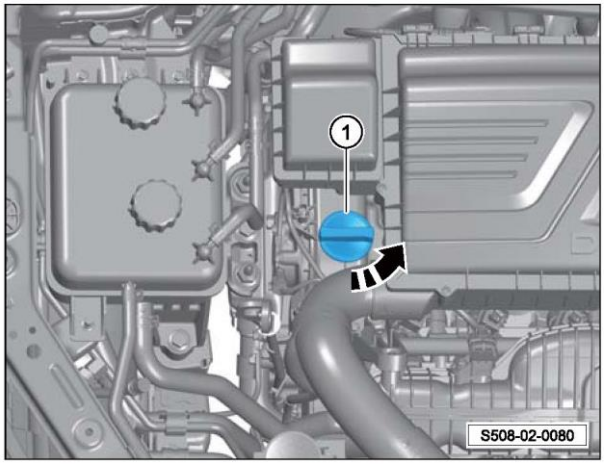
Discharging procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

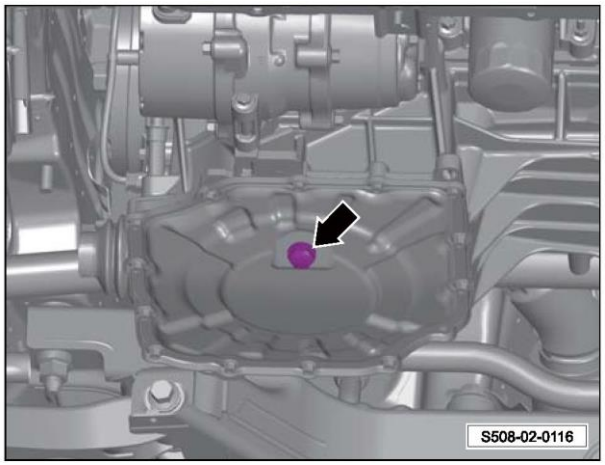
3 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

4 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



5 Replace engine lubricating oil

a. Unscrew the engine oil filler cap ① along the direction of arrow.



b. Lift the vehicle.

c. Unscrew the engine oil drain plug (see the arrow). Collect the engine lubricating oil with a container with scale.

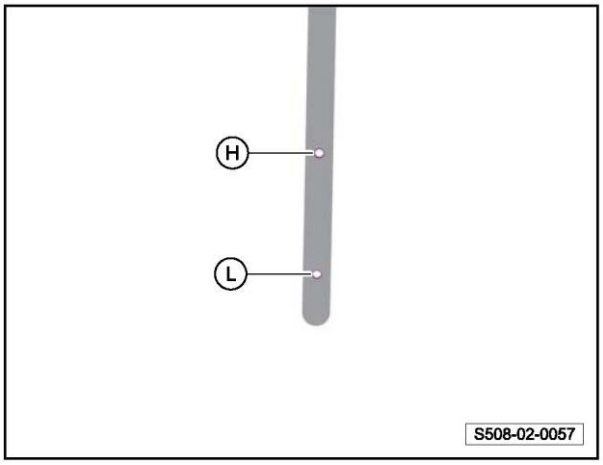
d. Tighten the engine oil drain plug (see the arrow) according to specified torque.

- Tightening torque of bolt: **35±3N·m**

Notes

Please dispose the drained engine oil according to specifications!

If the tightening torque is too large, the drain plug may leak, and even the oil pan may be damaged.



Filling procedure

1 Filling

a. Pull out the engine oil dipstick, wipe it with a piece of clean rag, and then insert it to the bottom again.

b. Pull out the engine oil dipstick again. Check that the engine oil level shall be within the range between point H and point L.

c. Start the engine, and check the engine oil filter for leakage after the engine reaches the normal temperature

d. Shut down the engine, wait for 3~5 minutes and then pull out the oil dipstick to check whether the oil level is between the maximum level mark (see arrow H) and the minimum level mark (see arrow L).

Requirements for Filling Engine Lubricating Oil

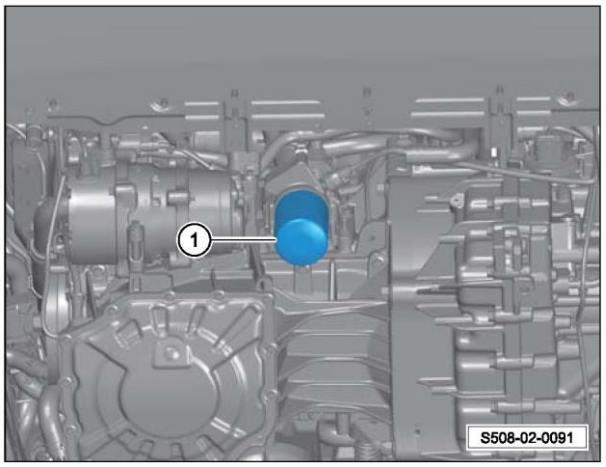
Oil specifications/viscosity	Filling amount	Replacement
SP 0W-20	3.7L	3.2L

2.13.8.3 Replacing oil filter component

Replacement procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil



3 Replace the oil filter component.

a. Remove the oil filter ① with an oil filter remover.

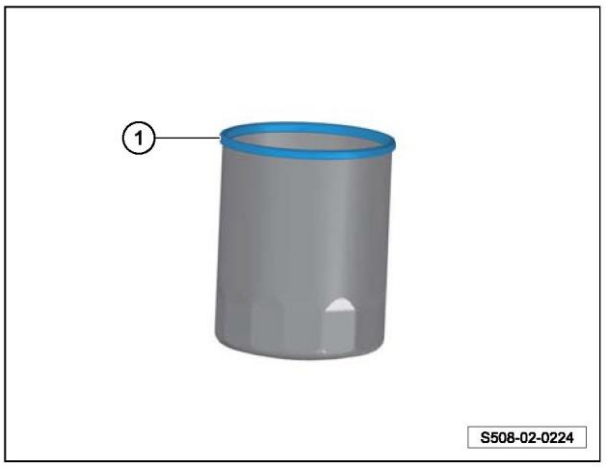
- Tightening torque of oil filter: **12±2N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Clean the contact surface of engine oil filter.

– Apply a proper amount of clean lubricating oil to the new filter seal ring ①.



2.13.8.4 Removal and installation of oil cooler

Disassembly procedures

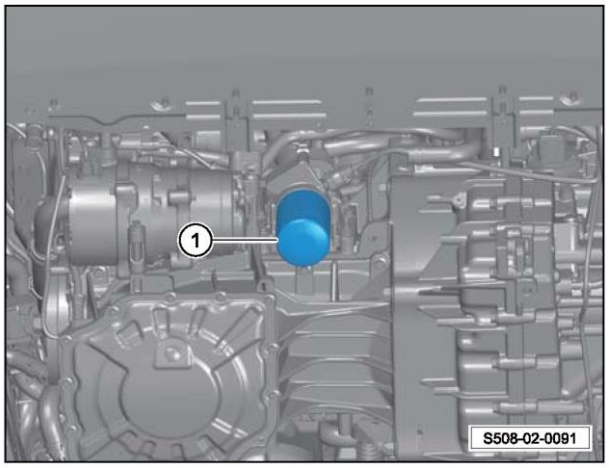
Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant



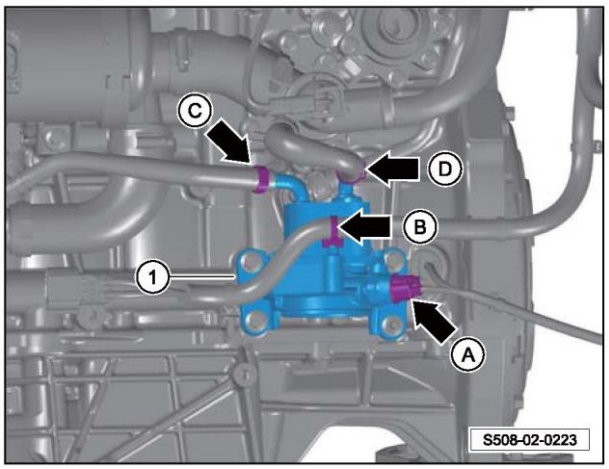
4 Remove the oil cooler

a. Remove the oil filter ① with an oil filter remover.

- Tightening torque of oil filter: **12N·m**

Tip:

Before removing the oil filter, place an appropriate container below to collect residual oil.



b. Disconnect the connector (see arrow A) of engine oil pressure switch.

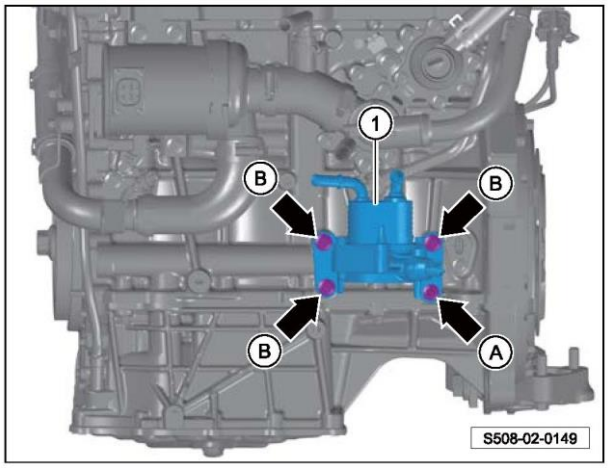
b. Disengage the fixing clip of A/C system HV harness (see arrow B).

c. Loosen the fixing clamp (see arrow C), and disengage the oil cooler component ① from the oil cooler outlet pipe.

d. Loosen the fixing clamp (see arrow D), and disengage the oil cooler component ① from the oil cooler inlet pipe.

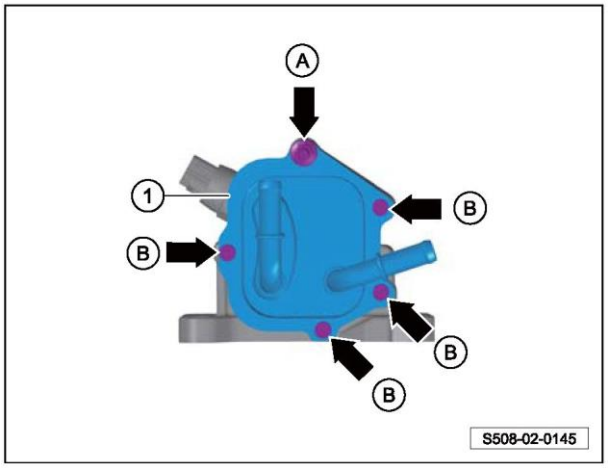
Tip:

Before disengaging the oil cooler component connecting hose, place an appropriate container below to collect residual coolant.



e. Unscrew the fixing bolt (see arrows A and B), and remove the oil cooler component ①.

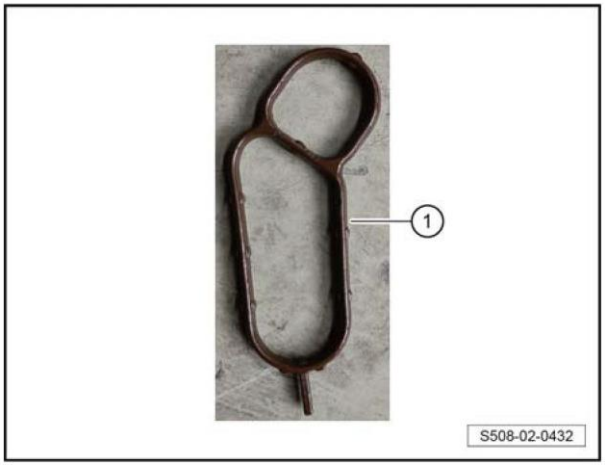
- Tightening torque of bolt (see the arrow **A**): **25 N·m**
- Tightening torque of bolt (see arrow **B**): **25N·m**



f. Unscrew the fixing bolt (see the arrow), and separate the oil cooler ①.

- Tightening torque of the connector of oil cooler: **10 N·m**

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– When installing the oil cooler, replace the oil cooler washer ①.

2.13.8.5 Removal and installation of oil pump

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

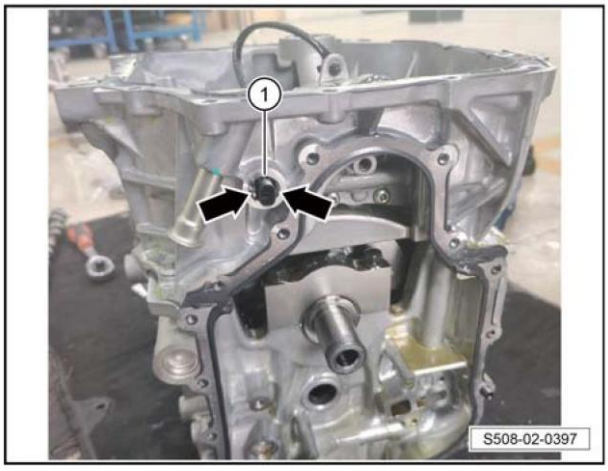
9 Remove the oil pump chain. Refer to 2.13.8.6 Removal and installation of oil pump chain

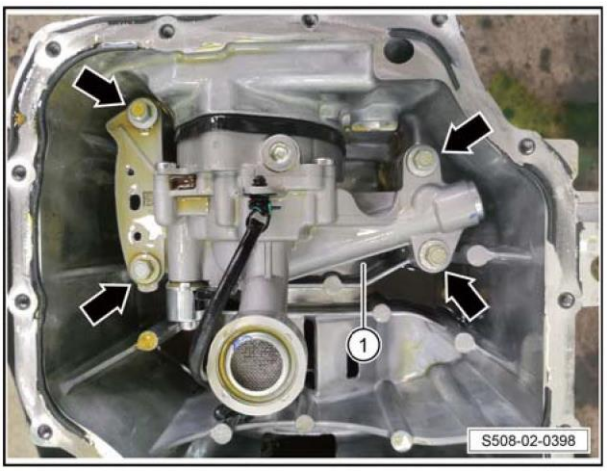
10 Remove the oil pump sprocket. Refer to 2.13.8.7 Removal and installation of oil pump sprocket

11 Remove the oil pan component. Refer to 2.13.8.11 Removal and installation of oil pan component

12 Remove the oil pump

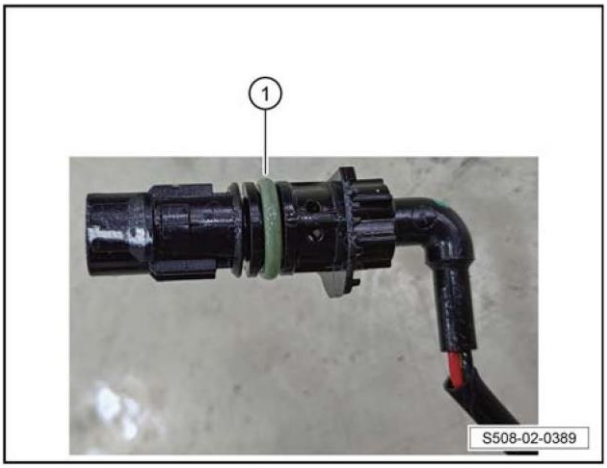
a. Press the position of (the arrow), and disengage the oil pump harness socket ①.





b. Unscrew the fixing bolts (see the arrows) and remove the oil pump ①.

- Tightening torque of bolt: **25 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Before installing the oil pump harness socket, replace with a new O-ring of oil pump harness socket ①.

2.13.8.6 Removal and installation of oil pump chain

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

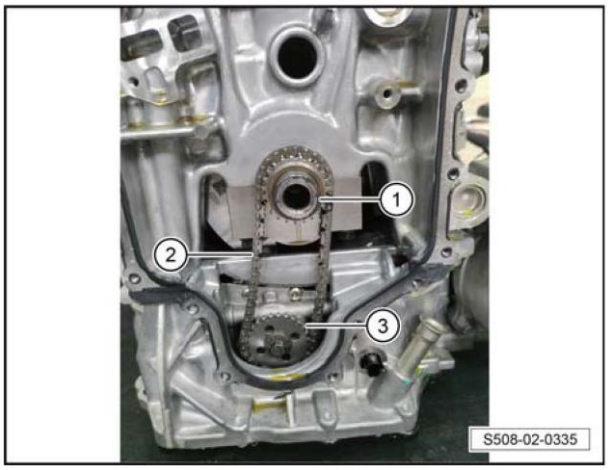
5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

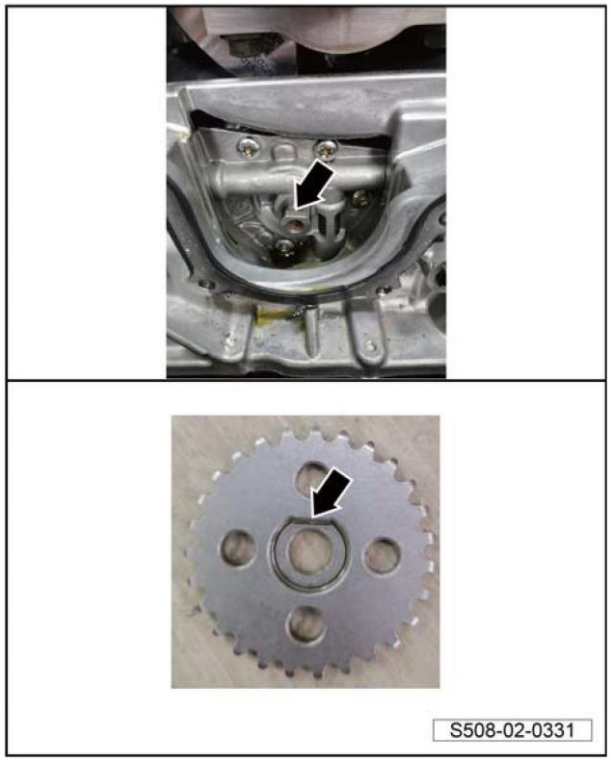


10 Removal of oil pump chain

a. Fix the anti-rotation tooling of the oil pump sprocket on the oil pump sprocket ③.

b. Loosen the fixing bolt (see the arrow), and take out the crankshaft sprocket ①, oil pump chain ② and oil pump sprocket ③ together.

- Tightening torque of bolt: **36 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- When installing the oil pump chain, install the oil pump sprocket, oil pump chain and crankshaft sprocket together in place.
- When installing the oil pump chain, align the shaft notch of the sprocket with that of the oil pump (see the arrow).

2.13.8.7 Removal and installation of oil pump sprocket

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

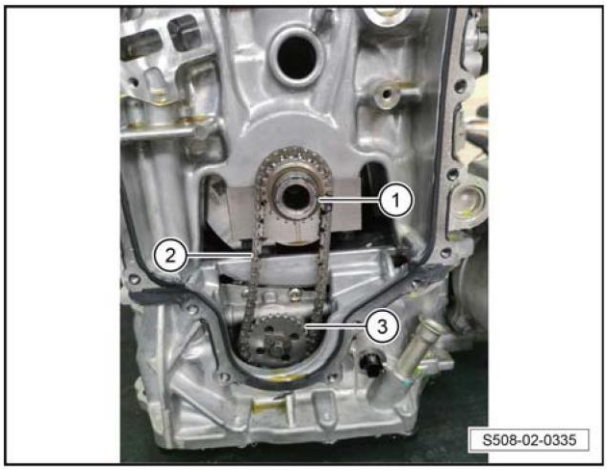
5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

9 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

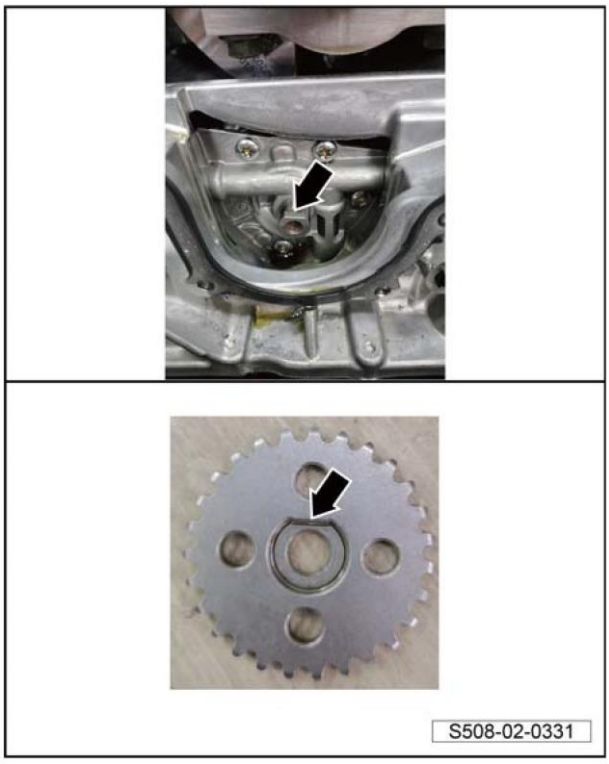


10 Remove the oil pump sprocket

a. Fix the anti-rotation tooling of the oil pump sprocket on the oil pump sprocket ③.

b. Loosen the fixing bolt (see the arrow), and take out the crankshaft sprocket ①, oil pump chain ② and oil pump sprocket ③ together.

- Tightening torque of bolt: **36 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- When installing the oil pump chain, install the oil pump sprocket, oil pump chain and crankshaft sprocket together in place.
- When installing the oil pump chain, align the shaft notch of the sprocket with that of the oil pump (see the arrow).

2.13.8.8 Removal and installation of oil pressure switch

Disassembly procedures

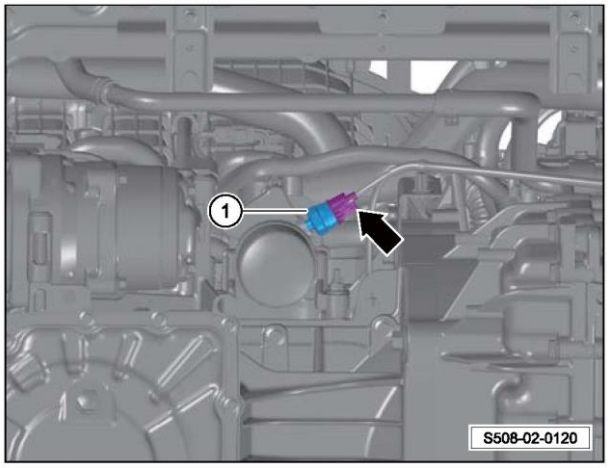
Tip:

If the engine is hot, wait until it cools down.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Remove the oil pressure switch

a. Disconnect the connector (see the arrow) of the oil pressure switch.

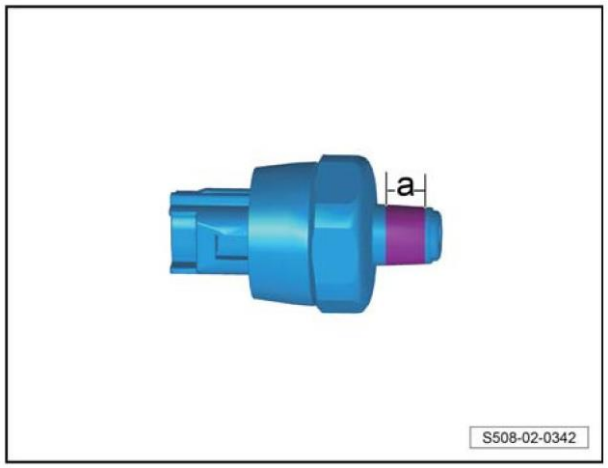
b. Unscrew the oil pressure switch ①.

- Tightening torque of oil pressure switch: **10±2N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– When installing the oil pressure switch, apply pipe thread sealant Loctite 567 within the range of thread (a).



2.13.8.9 Removal and installation of oil dipstick duct seat

Disassembly procedures

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without

the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

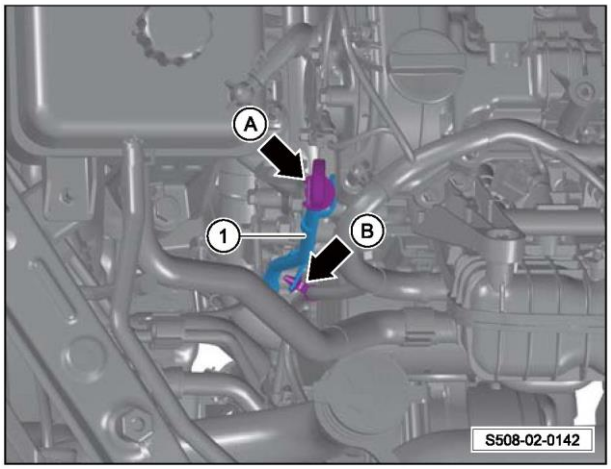
4 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment fully-wrapped cover support plate component (right). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

7 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

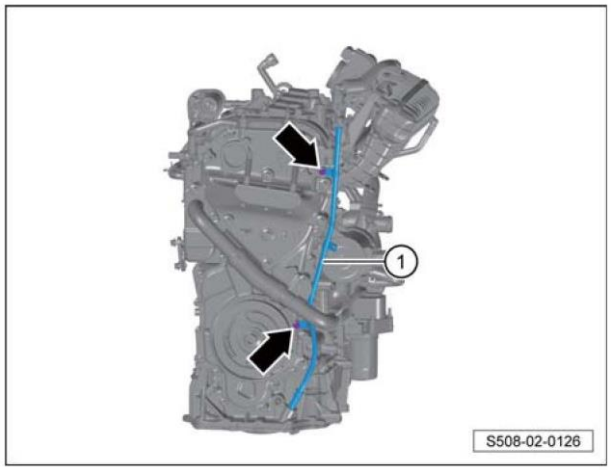
8 Remove the coolant pump outlet pipe component. Refer to 2.9.7.15 Removal and installation of coolant pump outlet pipe component



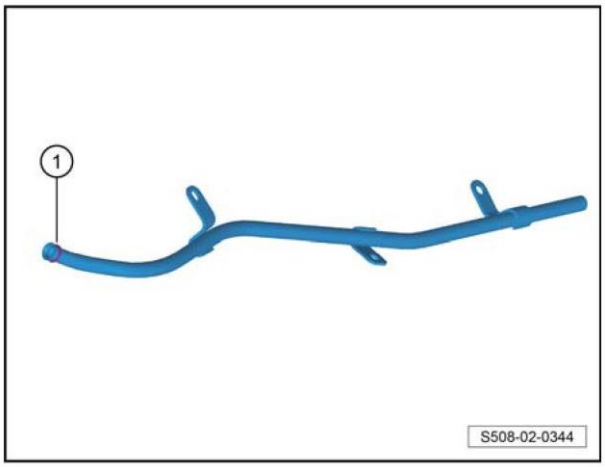
9 Removal of oil dipstick duct seat

a. Pull out the oil dipstick from the oil dipstick duct seat ① (see arrow A).

b. Disengage the fixing clips (see arrow B) of the engine harness.



c. Unscrew the fixing bolt (see the arrow), and remove the oil dipstick duct seat ①.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– When installing the oil dipstick duct seat, replace the washer of the oil dipstick duct seat ①.

2.13.8.10 Removal and installation of oil cooling nozzle

Disassembly procedures

1 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

3 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant

4 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant

5 Recover A/C refrigerant. Refer to 1.4.3.50 Recycling/filling refrigerant

6 Remove the powertrain. Refer to 2.10.2.1 Removal and installation of powertrain

7 Detach the engine and hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

8 Remove the crankshaft rear engine oil seal seat. Refer to 2.12.8.20 Removal and installation of camshaft rear oil seal component

9 Remove the cylinder head cover assembly. Refer to 2.12.8.2 Removal and installation of cylinder head cover assembly

10 Remove the timing chain. Refer to 2.12.8.4 removal and installation of timing chain

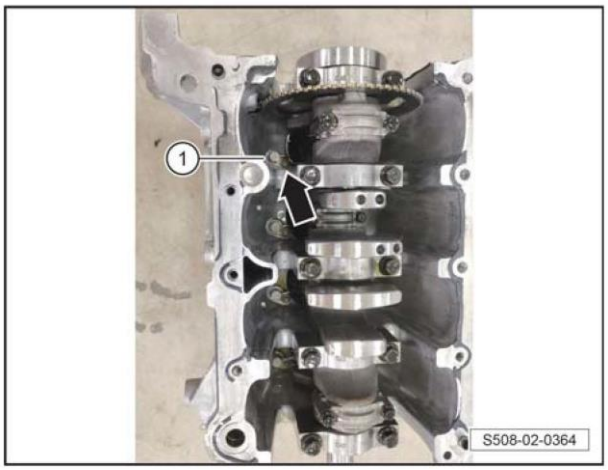
11 Remove the oil pump chain. Refer to 2.13.8.6 Removal and installation of oil pump chain

12 Remove the cylinder head. Refer to 2.12.8.11 Removal and installation of cylinder head

13 Remove the oil pan component. Refer to 2.13.8.11

Removal and installation of oil pan component

14 Remove the cylinder block skirt rack component. Refer to 2.12.8.12 Removal and installation of cylinder block skirt rack component



15 Remove the oil cooling nozzle assembly

a. Unscrew the fixing bolt (see the arrow), and remove the oil cooler nozzle assembly ①.

- Tightening torque of bolt: 7±1 N·m

Installation procedures

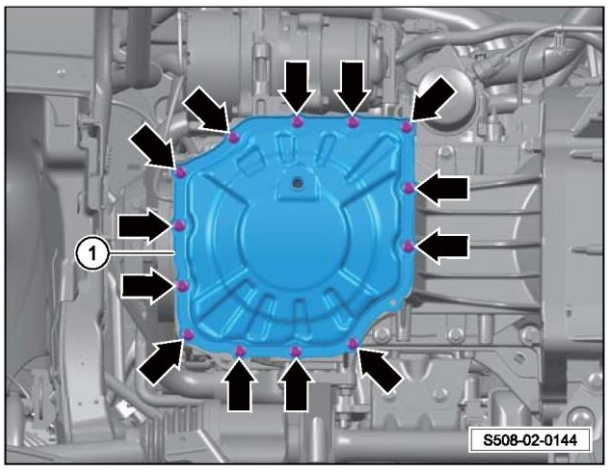
The installation procedure is to be performed basically in the reverse order:

2.13.8.11 Removal and installation of oil pan component

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the engine oil. Refer to 1.4.3.42 Replacing engine oil



3 Removal of oil pan component

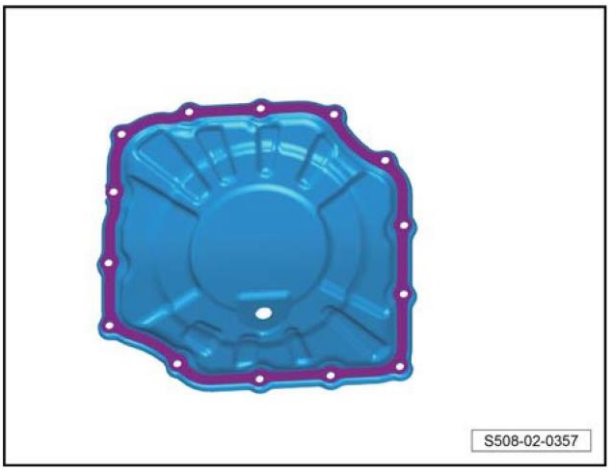
a. Unscrew the fixing bolts (see the arrows) of the oil pan component.

b. Remove the oil pan component ①.

- Tightening torque of bolt: **10 N·m**

Tip:

Before removing the oil pan, place an appropriate container below to collect dripping engine oil.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Before installing the oil pan component, check and clean the joint surface of the oil pan component and the skirt rack.
- As is shown in the figure, apply sealant evenly to the oil pan sealing surface instead of into the bolt hole. Install the oil pan within 5 minutes after applying sealant.
- Check the oil drain plug washer for damage and the oil drain plug flange edge for serious wear. if any, replace the oil drain plug washer or the oil drain plug; tightening torque: 35±3N·m.

Chassis

3.1 Warnings and notes 6
3.1.1 Warnings and notes 6
3.1.1.1 Warnings and notes 6
3.1.1.2 Warnings for operations related to HV electric control system 6
3.1.1.3 Preparations for operations related to HV electric control system.....7
3.2 Front suspension 8
3.2.1 Specification.....8
3.2.1.1 Fastener specifications 8
3.2.2 Description and operation.....9
3.2.2.1 Description and operation 9
3.2.3 Component position.....10
3.2.3.1 Component position 10
3.2.4 Exploded view.....11
3.2.4.1 Exploded view of front suspension assembly.....11
3.2.4.2 Exploded view of front strut assembly.....12
3.2.5 List of special tools.....13
3.2.5.1 List of special tools 13
3.2.6 Removal and installation 14
3.2.6.1 Removal and installation of front stabilizer bar joint assembly 14
3.2.6.2 Removal and installation of front stabilizer bar 14
3.2.6.3 Removal and installation of front transverse stabilizer bar bush 17
3.2.6.4 Removal and installation of front damper assembly.....18
3.2.6.5 Removal and installation of front damper assembly.....20
3.2.6.6 Removal and installation of front swing arm assembly.....21
3.2.6.7 Removal and installation of front hub bearing 22
3.2.6.8 Removal and installation of front steering knuckle assembly 25
3.2.6.9 Removal and installation of front subframe welding assembly.....25
3.3 Rear suspension.....29
3.3.1 Specification.....29
3.3.1.1 Fastener specifications 29
3.3.2 Description and operation.....31
3.3.2.1 Description and operation 31
3.3.3 Component position.....32
3.3.3.1 Component position 32
3.3.4 Exploded view.....33
3.3.4.1 Exploded view of rear suspension assembly 33
3.3.5 Special tool.....35
3.3.5.1 List of special tools 35
3.3.6 Removal and installation 36
3.3.6.1 Removal and installation of rear damper assembly.....36
3.3.6.2 Removal and installation of rear coil spring 38
3.3.6.3 Removal and installation of rear upper swing arm 40
3.3.6.4 Removal and installation of rear lower swing arm assembly.....41
3.3.6.5 Removal and installation of rear toe-in control arm assembly.....42
3.3.6.6 Removal and installation of rear brake caliper mounting plate.....43
3.3.6.7 Removal and installation of rear longitudinal swing arm 45
3.3.6.8 Removal and installation of rear hub bearing 47
3.3.6.9 Removal and installation of rear stabilizer bar49
3.3.6.10 Removal and installation of rear stabilizer bar bush 51
3.3.6.11 Removal and installation of rear subframe assembly.....53
3.3.6.12 Removal and installation of rear stabilizer bar joint assembly.....56
3.4 Wheels and tires.....57
3.4.1 Specification 57
3.4.1.1 Fastener specifications.....57
3.4.2 Description and operation..... 58
3.4.2.1 Tire Structure.....58
3.4.2.2 Meaning of Sidewall Identification and Description of Tire Pressure 59
3.4.2.3 Tire rotation.....60
3.4.3 Diagnosis information and steps..... 63
3.4.3.1 Wheel jumping and vibration 63
3.4.3.2 Tire side-sway 64
3.4.3.3 Excessive tire sidewall wear.....64
3.4.3.4 Excessive tire crown wear 64
3.4.3.5 Excessive tire shoulder wear 64
3.4.4 Removal and installation 65
3.4.4.1 Removal and installation of wheel assembly..... 65
3.4.4.2 Removal and installation of tire.....67
3.4.4.3 Dynamic balance for wheel 70
3.5 Four-wheel alignment.....75
3.5.1 Description and operation..... 75
3.5.1.1 Overview of four-wheel alignment.....75
3.5.1.2 Prerequisites of Alignment Inspection.....76
3.5.1.3 Preparation for Alignment Measurement 76
3.5.1.4 Wheel alignment.....76
3.5.1.5 Operating steps of four-wheel alignment.....77
3.6 Drive shaft system.....80
3.6.1 Specification 80
3.6.1.1 Fastener specifications.....80
3.6.2 Component position..... 81
3.6.2.1 Component position 81
3.6.3 Special tool 82
3.6.3.1 List of special tools.....82

3.6.4 Removal and installation 83
3.6.4.1 Removal and installation of hub locking nut 83
3.6.4.2 Removal and installation of left drive shaft assembly 84
3.6.4.3 Removal and installation of right drive shaft assembly 87
3.7 Front brake 90
3.7.1 Specification 90
3.7.1.1 Fastener specifications 90
3.7.2 Description and operation 91
3.7.2.1 Description and operation 91
3.7.3 Exploded view 92
3.7.3.1 Exploded view 92
3.7.4 Diagnosis information and steps 93
3.7.4.1 Inspection of brake pad assembly 93
3.7.4.2 Brake caliper inspection 93
3.7.4.3 Inspection of guide vane of brake pad assembly 93
3.7.4.4 Inspecting floating pin of brake caliper 93
3.7.4.5 Brake disc surface and wear inspection 93
3.7.4.6 Brake disc thickness measurement 94
3.7.4.7 Measurement of end face runout after brake disc assembling 95
3.7.5 Special tool 96
3.7.5.1 List of special tools 96
3.7.6 Removal and installation 97
3.7.6.1 Removal and installation of front brake pad assembly 97
3.7.6.2 Removal and installation of front brake hose 99
3.7.6.3 Removal and installation of front brake caliper bracket 101
3.7.6.4 Removal and installation of front brake disc 102
3.7.6.5 Removal and installation of front brake hose 104
3.8 Rear brake 106
3.8.1 Specification 106
3.8.1.1 Fastener specifications 106
3.8.2 Description and operation 107
3.8.2.1 Description and operation 107
3.8.3 Exploded view 108
3.8.3.1 Exploded view of rear brake 108
3.8.4 Special tool 109
3.8.4.1 List of special tools 109
3.8.5 Removal and installation 110
3.8.5.1 Removal and installation of rear brake pad assembly 110
3.8.5.2 Removal and installation of rear brake caliper and EPB drive motor assembly 113
3.8.5.3 Removal and installation of rear brake caliper bracket 115
3.8.5.4 Removal and installation of rear brake disc 116
3.8.5.5 Removal and installation of rear brake hose 118
3.9 Hydraulic braking system 119
3.9.1 Specification 119
3.9.1.1 Fastener specifications 119
3.9.2 Description and operation 120
3.9.2.1 Description and operation 120
3.9.3 Component position 122
3.9.3.1 Component position 122
3.9.4 Exploded view 124
3.9.4.1 Exploded view 124
3.9.5 Special tool 125
3.9.5.1 List of special tools 125
3.9.6 Removal and installation 126
3.9.6.1 Removal and installation of oil reservoir and accessory assembly 126
3.9.6.2 Removal and installation of pedal bracket assembly 127
3.9.6.3 Removal and installation of brake lamp switch 128
3.9.6.4 Removal and installation of brake pipeline 3 assembly 129
3.9.6.5 Removal and installation of brake pipeline 4 assembly 131
3.9.6.6 Removal and installation of brake pipeline 5 assembly 135
3.9.6.7 Removal and installation of brake pipeline 6 assembly 137
3.9.6.8 Removal and installation of brake pipeline 9 assembly 139
3.10 Parking system 141
3.10.1 Specification 141
3.10.1.1 Fastener specifications 141
3.10.2 Description and operation 142
3.10.2.1 Description and operation 142
3.10.2.2 Instructions for releasing EPB switch 143
3.10.3 Component position 144
3.10.3.1 Component position 144
3.10.4 Electrical schematic diagram 145
3.10.4.1 Electrical schematic diagram 145
3.10.5 Diagnosis information and steps 146
3.10.5.1 Diagnostic instructions 146
3.10.5.2 Visual inspection 146
3.10.5.3 ECU terminals 146
3.10.5.4 Data list 147
3.10.5.5 DTC list 148
3.10.5.6 DTC: B111717, B111716 155
3.10.5.7 DTC: C128304, C128013 158
3.10.5.8 DTC: C128113, C128114 161
3.10.5.9 DTC: C128313, C128301 167
3.10.5.10 DTC: C128004, C128044 170
3.10.5.11 DTC: C12801D, C12811D 172
3.10.5.12 DTC: C128407, C128507 176
3.10.5.13 DTC: C129000 177

3.10.5.14 DTC: C12A000, C12A100 181
3.10.5.15 DTC: C12B286, C12B386..... 183
3.10.5.16 DTC: C12B486, C12B586..... 186
3.10.5.17 DTC: C12B686..... 189
3.10.5.18 DTC: C12B786..... 192
3.10.5.19 DTC: C128200 195
3.10.5.20 DTC: U012287 197
3.10.5.21 DTC: U029387 200
3.10.5.22 DTC: U014087, U016487..... 203
3.10.5.23 DTC: U015187 205
3.10.5.24 DTC: U015587 208
3.10.5.25 DTC: U007488 213
3.10.6 Removal and installation 216
3.10.6.1 Removal and installation of EPB switch 216
3.10.6.2 Release of EPB emergency parking 217
3.10.6.3 Removal and installation of EPB drive motor.... 219
3.10.6.4 Removal and installation of EPB controller assembly..... 219
3.11 Brake safety control system 221
3.11.1 Specification.....221
3.11.1.1 Fastener specifications 221
3.11.2 Description and operation.....222
3.11.2.1 Overview..... 222
3.11.3 Component position.....224
3.11.3.1 Component position 224
3.11.4 Electrical schematic diagram.....225
3.11.4.1 Electrical schematic diagram 225
3.11.5 Diagnosis information and steps.....226
3.11.5.1 Diagnostic instructions..... 226
3.11.5.2 Visual inspection..... 226
3.11.5.3 ECU terminals..... 226
3.11.5.4 Data list..... 227
3.11.5.5 DTC list..... 228
3.11.5.6 DTC: B111717, B111716..... 247
3.11.5.7 DTC: C110200, C110300 249
3.11.5.8 DTC: C112900, C112A00 251
3.11.5.9 DTC: C112E00, C112F00 257
3.11.5.10 DTC: C113300, C113400 262
3.11.5.11 DTC: C113800, C113900 267
3.11.5.12 DTC: C110500, C110600 272
3.11.5.13 DTC: C111300 274
3.11.5.14 DTC: C111400 278
3.11.5.15 DTC: C111500 283
3.11.5.16 DTC: C110400, C111700 287
3.11.5.17 DTC: C113D00, C113E00 290
3.11.5.18 DTC: C111600 292
3.11.5.19 DTC: U010087 & U240000 294
3.11.5.20 DTC: U029387, U240100 299
3.11.5.21 DTC: U011087 & U240600 302
3.11.5.22 DTC: C114300 & C114500..... 306
3.11.5.23 DTC: U013187 & U240700 307
3.11.5.24 DTC: U012887 & U240800 310
3.11.5.25 DTC: U015187 & U240900 312
3.11.5.26 DTC: U014087 & U016487 314
3.11.5.27 DTC: C114400..... 316
3.11.5.28 DTC: U240B00..... 317
3.11.5.29 DTC: C114900, C114A00 319
3.11.5.30 DTC: U018687 323
3.11.5.31 DTC: U015587 327
3.11.5.32 DTC: U007488 331
3.11.5.33 DTC: C114F00 & C115000..... 332
3.11.5.34 DTC: C115100, C115200 337
3.11.6 Special tool 339
3.11.6.1 List of special tools..... 339
3.11.7 Removal and installation 340
3.11.7.1 Removal and installation of front wheel speed sensor assembly..... 340
3.11.7.2 Removal and installation of rear wheel speed sensor assembly..... 341
3.11.7.3 Removal and installation of brake safety control system..... 342
3.11.7.4 Removal and installation of yaw rate sensor 346
3.12 Tire pressure monitoring system.....347
3.12.1 Description and operation..... 347
3.12.1.1 Description and operation..... 347
3.12.2 Component position..... 349
3.12.2.1 Component position 349
3.12.3 Electrical Schematic Diagram..... 350
3.12.3.1 Electrical schematic diagram..... 350
3.12.4 Removal and installation 351
3.12.4.1 Removal and installation of tire pressure sensor 351
3.12.4.2 TPS match 352
3.13 Steering gear system.....353
3.13.1 Specification 353
3.13.1.1 Fastener specifications..... 353
3.13.2 Description and operation..... 354
3.13.2.1 Description and operation..... 354
3.13.3 Component position..... 355
3.13.3.1 Component position 355
3.13.4 Exploded view 356
3.13.4.1 Exploded view..... 356
3.13.5 Electrical Schematic Diagram..... 357
3.13.5.1 Electrical schematic diagram..... 357
3.13.6 Diagnosis information and steps..... 358
3.13.6.1 Diagnostic instructions..... 358
3.13.6.2 Visual inspection..... 358
3.13.6.3 ECU terminals..... 358
3.13.6.4 Data list..... 359
3.13.6.5 DTC list..... 360
3.13.6.6 DTC: B111716 & B111717..... 363
3.13.6.7 DTC: C118016, C118017 367
3.13.6.8 DTC: C118649, C118723 370
3.13.6.9 DTC: C118000, C118523 372
3.13.6.10 DTC: U007488 375
3.13.6.11 DTC: C119181, C119285 376
3.13.6.12 DTC: U010087 380

3.13.6.13 DTC: U018687 383
3.13.6.14 DTC: U015587 388
3.13.7 Special tool 392
3.13.7.1 List of special tools 392
3.13.8 Removal and installation 393
3.13.8.1 Removal and installation of outer tie rod ball joint 393
3.13.8.2 Removal and installation of inner tie rod ball joint 394
3.13.8.3 Removal and installation of steering gear with tie rod assembly 394
3.13.8.4 Removal and installation of steering input shaft dirt proof trunk 398
3.13.8.5 Removal and installation of steering column assembly 399
3.13.8.6 Removal and installation of steering wheel assembly 401
3.13.8.7 Removal and installation of steering gear heat shield 402

3.1 Warnings and notes

3.1.1 Warnings and notes

3.1.1.1 Warnings and notes

Assistant driving warning

Warning!

An assistant should drive the vehicle while the technician checks for the location of the reported condition. Failure to do so could result in injury.

Warning about battery disconnection

Warning!

Unless otherwise stated in the operating procedures, power off all electrical appliances and turn off the start switch before repairing electrical components. If the tool or equipment is likely to be in touch with the exposed live electrical terminal easily, disconnect the negative terminal of battery. If these safety warnings are violated, it may cause severe personal injury or damage to vehicles.

Warnings for road test

Warning!

Road test a vehicle under safe conditions while obeying all traffic laws. Do not attempt any operation that may cause the vehicle out of control. Violation of the above safety instructions may result in serious personal injury and vehicle damage.

Precautions for vehicle lifting

Notes

Check whether the lift is working well before lifting the vehicle, whether the vehicle is parked in a suitable position, and whether the lifting point on the vehicle is tuned properly for the lifting arm. Make sure that there is no person or irrelevant objects under the vehicle when lifting or lowering the vehicle.

3.1.1.2 Warnings for operations related to HV electric control system

Warning!

The vehicle is a hybrid power system and is equipped with 393.1V HV power battery.

Be sure to operate the system correctly according to the instructions in this Manual. Otherwise, serious injury or electrocution may be caused.

Do not touch any HV cable and HV component. If necessary, follow the instructions below:

- Do wear HV protective articles such as: HV insulated gloves, insulated shoes and special insulated tools for HV operation.
- During the use of the vehicle, the HV system may be in a state of high voltage and high temperature. Please follow the warning sign instructions to avoid high voltage and high temperature injury.
- Insulate the removed cable with insulating tapes.

When the HV system is repaired, the following precautions must be noted to prevent possible personal injuries:

Turn off all the electrical appliances and turn off the Start switch.

Disconnect the 12V battery negative terminal.

During operation of the HV system, HV protective articles such as HV insulated gloves, insulated shoes and special tools for HV insulation must be worn.

HV electricians shall ensure that the power supply is cut off and wait for 10min before operation.

Relevant HV electricians shall be consulted in case of any doubt. Before performing any operation of the HV system and repairing the vehicle body, HV electricians must cut off the power supply of the system.

If the power supply of the HV system cannot be cut off, only professional electricians can carry out the maintenance.

Notes for inspection and repair of HV circuit:

Technicians must be professionally trained before they can repair and inspect HV systems.

The "Warning: High Voltage! Do Not Touch" sign shall be used to inform other technicians of that the HV system is being inspected or repaired.

All HV harnesses and connectors shall be orange. Power battery and other HV parts are provided with "High Voltage" warning labels. Please do not touch these harnesses or parts without permission.

Do not lean your body or put the tools against any HV circuit and its components. Never use any cutting-formed and sharp tools near HV components and circuits.

Do not use any power supply, such as those for fusion welding, brazing, thermal bonding and operations with hot air, near HV components and circuits.

Do not seriously twist or bend the HV circuits. In case of any abnormality or doubt, consult the HV electrician or professional electrician.

No attempt shall be made to repair any harness or connector if such harness or connector of the HV circuit is faulty. Please directly replace the damaged or faulty HV cable or connector.

The one wearing an artificial cardiopulmonary aid is not allowed to work on vehicles equipped with HV systems. Artificial cardiopulmonary aids include built-in analgesic pump, implantable defibrillator, cardiac pacemaker, insulin pump, hearing-aid, etc.

3.1.1.3 Preparations for operations related to HV electric control system

Personal preparations:

- •Before operation of the HV system, do wear HV protective articles such as HV insulated gloves, insulated shoes, etc.
- Do not carry metal articles during operation.
- Confirm breakage before using 1000V durable insulated gloves.

Site inspections:

- Put a triangular warning sign "warning: high voltage, do not touch" in a visible position (such as vehicle roof) to warn other personnel.
- Before parking the vehicle to be repaired in the repair work area, make sure that there is no water on the ground, and do not operate in humid environment.
- Make sure that the work area is equipped with carbon dioxide fire extinguishers.

Preparation of maintenance tools:

- Use special insulated tools for HV operation or the tools with insulation treatment.

Cutting off power supply of HV system:

- Turn off all the electrical appliances and turn off the Start switch.
- Disconnect the 12V battery negative terminal.

3.2 Front suspension

3.2.1 Specification

3.2.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Front stabilizer bar bracket and subframe welding assembly	Hexagon head flange bolt M10×1.25×20	50±4
Front stabilizer bar joint assembly and front stabilizer bar	Hexagon flange locking nut with non-metallic insert M12×1.25	100±5
Stabilizer bar joint assembly and front damper assembly	Hexagon flange locking nut with non-metallic insert M12×1.25	100±5
Battery pack HV wiring harness and subframe welding assembly	Cross recessed hexagon flange screw M6×12	10±1
Front damper assembly and body	Hexagon flange nut M10×1.25	70±4
Front damper assembly and brake	Hexagon head flange bolt c/w plain washer cluster M17×1.5×65	300±15
	Hexagon flange nut M17×1.5	
Front swing arm assembly and subframe	Hexagon head flange bolt M12×1.25	140±7
	Hexagon head flange bolt with washer cluster M14×1.5	200±10
	Hexagon flange nut M14×1.5	
Front swing arm assembly and brake	All-metal hexagon flange locking nut M12×1.25	90±5
Steering gear and subframe	Hexagon head bolt c/w spring washer and plain washer component M12×1.25	110±6
Subframe and body	Guide hexagon head flange bolt c/w plain washer cluster M14×1.5	200±10
	Hexagon flange nut M14×1.5	

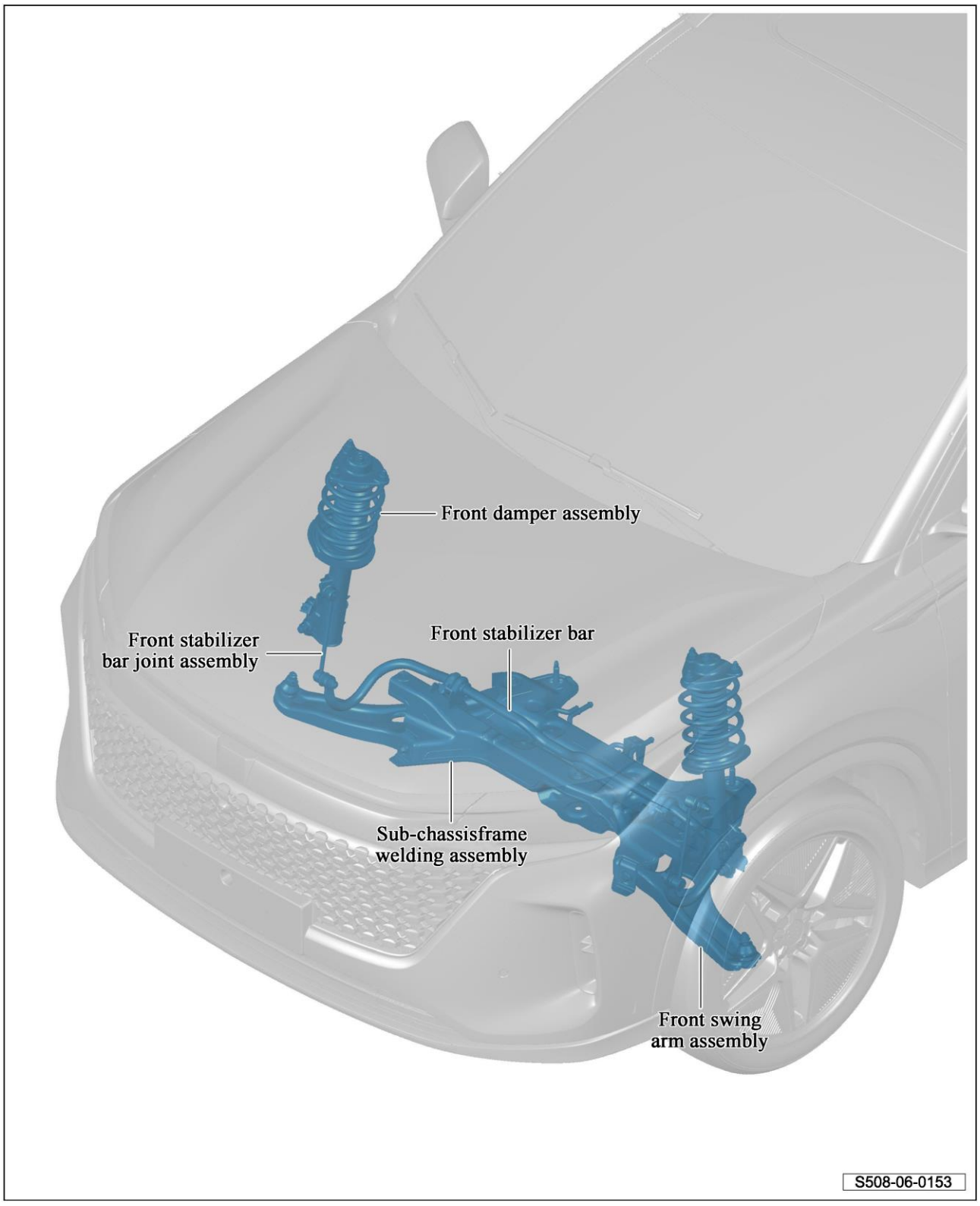
3.2.2 Description and operation

3.2.2.1 Description and operation

The front suspension system is mainly to isolate vibration and guarantee the ride comfort and handling stability during vehicle traveling. The main components of the front suspension include front subframe, front damper and coil spring assembly, front swing arm and front stabilizer bar, etc. The front shock absorber and coil spring assembly is connected to the body at the upper end, and provided with a bearing to enable it to rotate. The vibration during traveling is absorbed through joint effort between damper and coil spring. The brake steering knuckle is between front damper and coil spring assembly and swing arm, and connected to the swing arm with ball joint to enable it to rotate under the effect of steering linkage, driving the wheels to rotate. The other two ends of the swing arm are connected with the subframe through rubber bush. The stabilizer shaft can control the independent displacement of the suspension when the vehicle turns, which ensures the handling stability during turning.

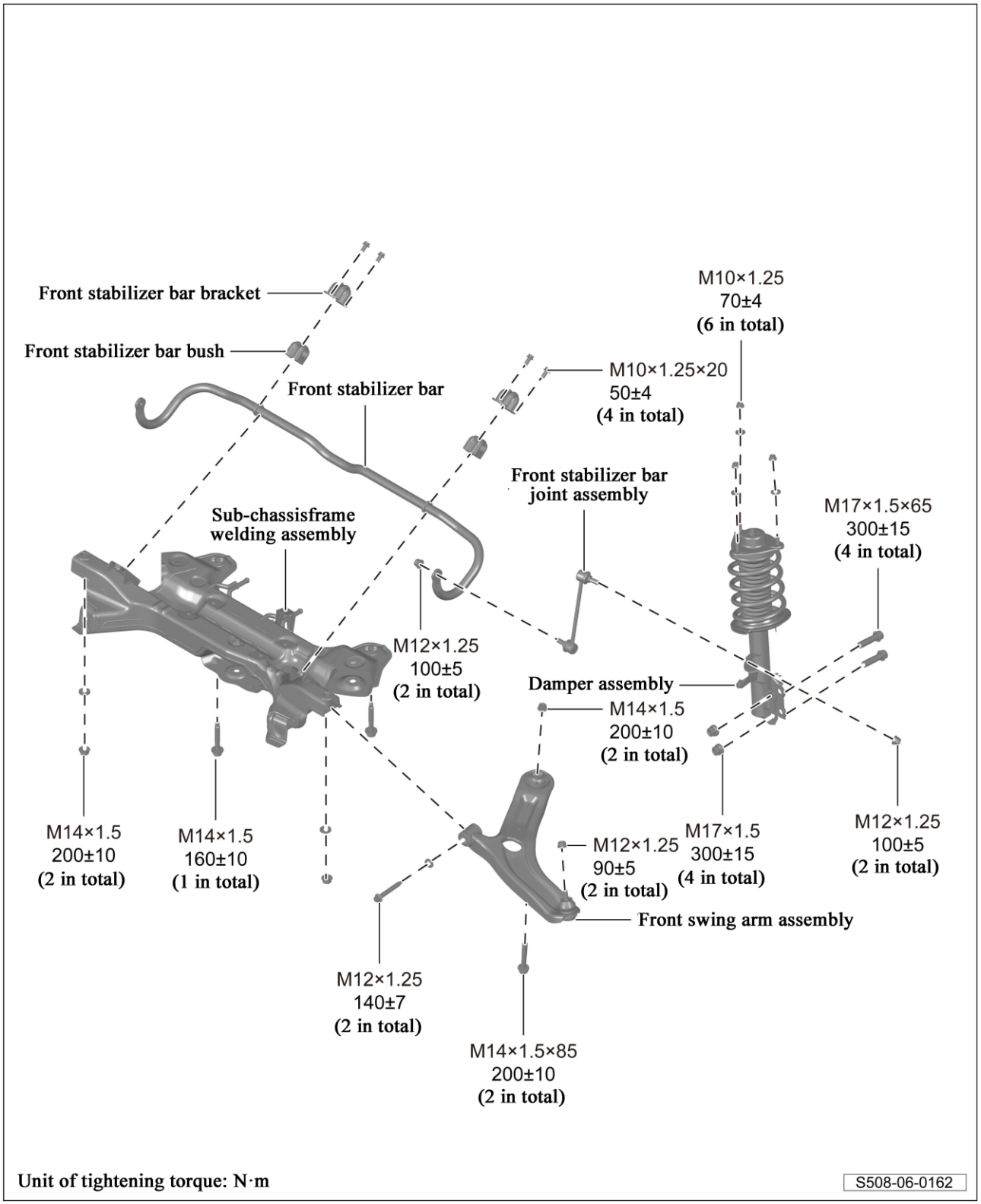
3.2.3 Component position

3.2.3.1 Component position

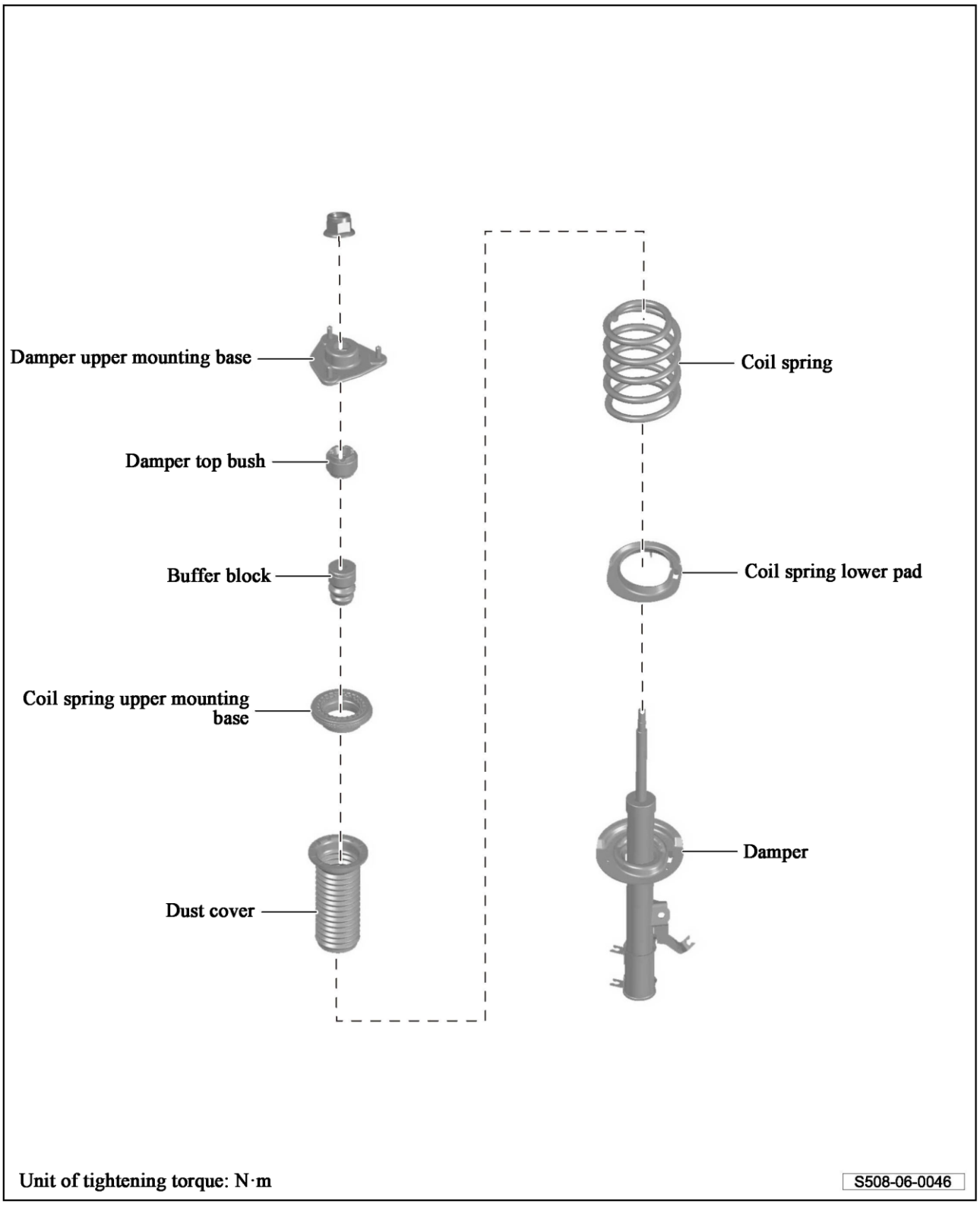


3.2.4 Exploded view

3.2.4.1 Exploded view of front suspension assembly

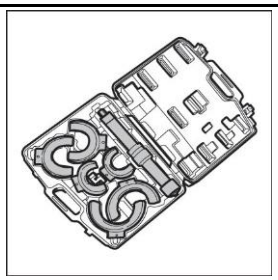
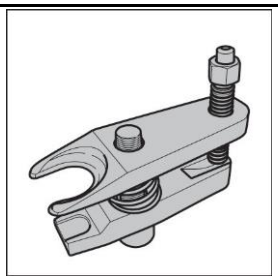
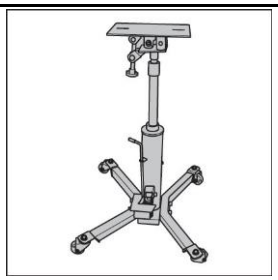
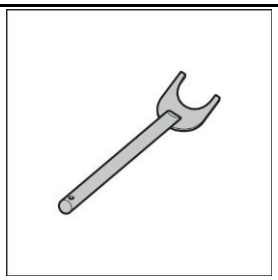


3.2.4.2 Exploded view of front strut assembly



3.2.5 List of special tools

3.2.5.1 List of special tools

S/N	Symbol	Description	Function
1		Damper spring compression tool set	Compression damper spring
2		Removal tool for ball joint	For separating the ball joint from the steering knuckle assembly
3		Damper seat sleeve remover	For disassembling and assembling the front damper assembly
4		Transmission lifting device	For aiding in removing or holding other parts during removal of the front subframe welding assembly and other accessories.
5		Axle shaft remover	For separating the reducer from the drive axle shaft

3.2.6 Removal and installation

3.2.6.1 Removal and installation of front stabilizer bar joint assembly

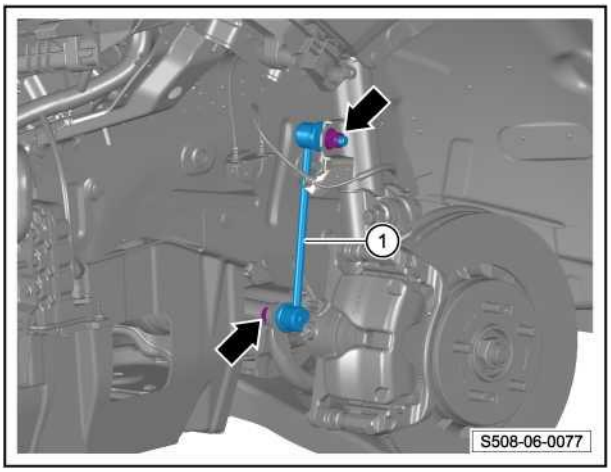
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left stabilizer bar joint assembly, which can be basically referred to for the front right one.

When removing the fixing nut, fix the back part of the ball pin with an open-end wrench to prevent the ball pin and nut from rotating at the same time.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the front stabilizer bar joint assembly

a. Unscrew fixing nuts (see arrows), and remove the front stabilizer bar joint assembly ①.

- Tightening torque of nut: **100±5 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

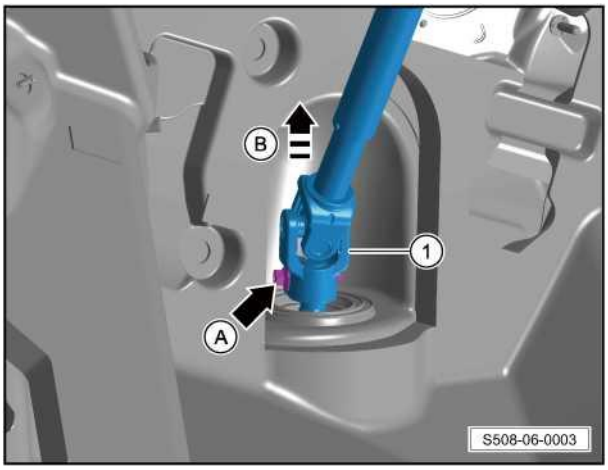
3.2.6.2 Removal and installation of front stabilizer bar

Disassembly procedures

1 Remove the front left and right side wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Remove the power suspension assembly (rear), refer to 2.11.4.4 Removal and installation of power suspension assembly (rear)

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

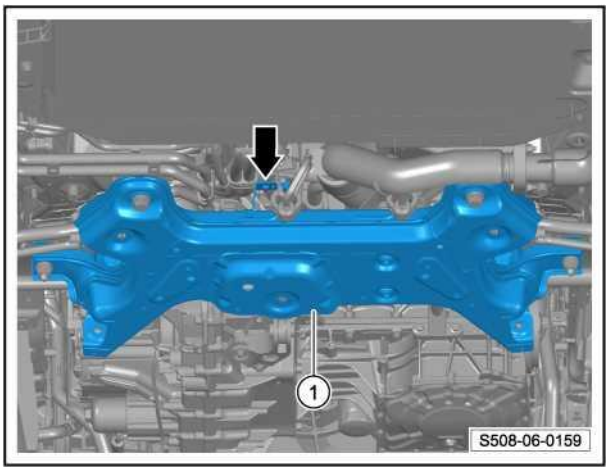


4 Remove the front stabilizer bar

a. Rotate the steering wheel so that it faces straight ahead. Turn off the start switch, and lock the steering wheel.

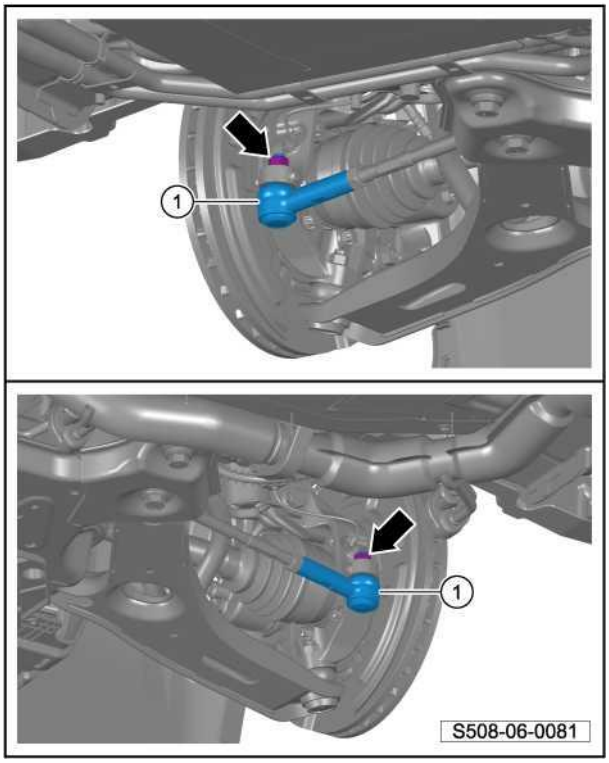
b. Unscrew the fixing bolt (see arrow A) between the lower steering shaft and steering box assembly, and disengage the lower steering shaft ① from the steering box assembly along the direction of arrow B.

- Tightening torque of bolt: 32±2N·m



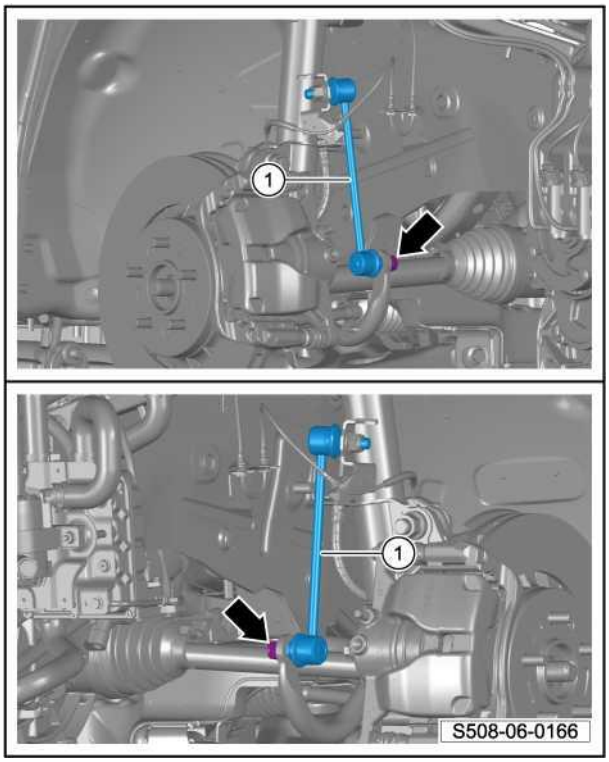
c. Unscrew the fixing bolt (see arrows), and disengage the Battery pack HV wiring harness from the subframe welding assembly ①.

- Tightening torque of bolt: **10±1 N·m**



d. Unscrew fixing nuts (see arrows) between left and the right outer tie rod ball joints and the front steering knuckle. Press left and the right outer tie rod ball joints ① out of the front steering knuckle with the special tool for ball joint removal (refer to 3.2.5.1 List of special tools), and disengage them from the front steering knuckle.

- Tightening torque of nut: **60±6 N·m**

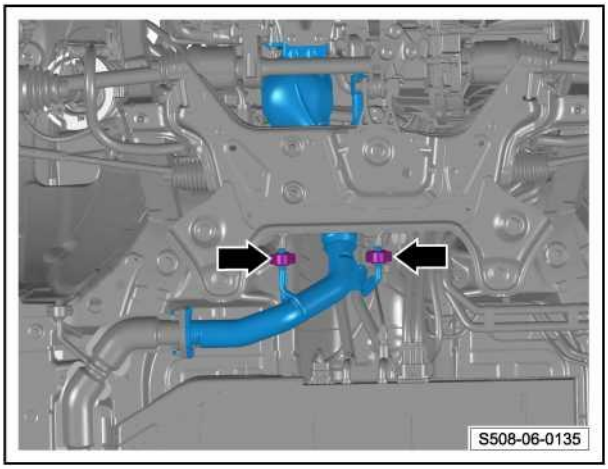


e. Unscrew fixing nuts between left and right front stabilizer bar joint assemblies ① and the front stabilizer bar.

- Tightening torque of nut: **100±5 N·m**

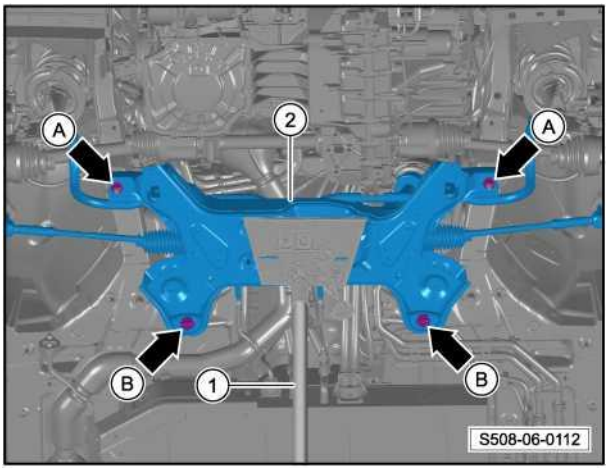
Tip:

When removing the fixing nut of the front stabilizer bar joint, the back of the ball pin shall be fixed with an open-end wrench to avoid rotation of ball pin and nut at the same time.



f. Remove the front left/right swing arm assembly. Refer to 3.2.6.6 Removal and installation of front swing arm assembly

g. Disengage connectors (see arrows) between the silencer connector and the front subframe welding assembly.

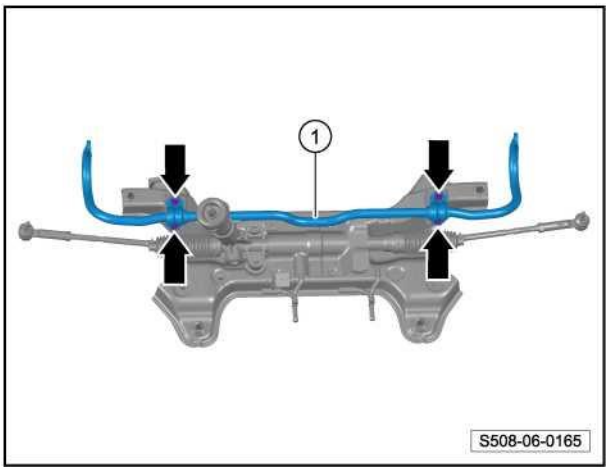


h. Support the subframe welding and accessory assembly ② with the transmission lifting device ①.

i. Unscrew the nuts (see arrow A) and bolts (see arrow B) connecting the subframe welding assembly and the body.

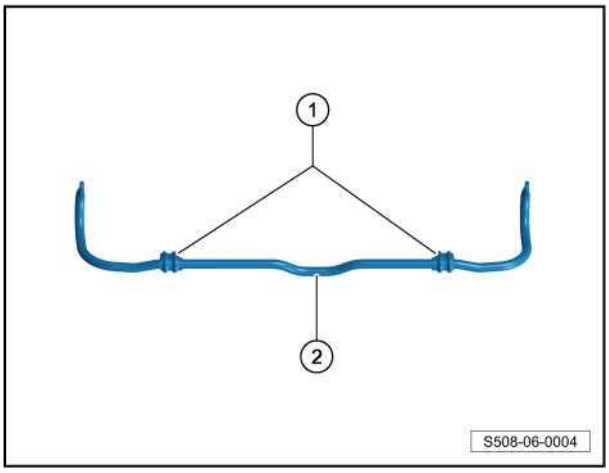
g. Slowly lower the transmission lifting device ①, and remove the subframe welding and accessory assembly ②.

- Tightening torque of nut (see arrow **A**): **200±10N·m**
- Tightening torque of bolt (see arrow **B**): **200±10Nm**



k. Unscrew fixing bolts (see arrows), disengage the front stabilizer bar bracket from the subframe welding assembly, and remove the front stabilizer bar and the front stabilizer bar bush ①.

- Tightening torque of bolt: **50±4 N·m**



l. Remove the front stabilizer bar bush ① and the front stabilizer bar ②.

Notes

Locate the front stabilizer bar bush based on the position of stop block on the front stabilizer bar.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–When installing the steering universal joint, be sure to align the bolt hole of the steering universal joint with the plane part of the steering shaft.

–When installing, turn the steering wheel to make it face straight ahead, and lock the steering wheel.

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

- Calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

3.2.6.3 Removal and installation of front transverse stabilizer bar bush

Disassembly procedures

1 Remove the front stabilizer bar bushes. Refer to 3.2.6.2 Removal and installation of front stabilizer bar.

3.2.6.4 Removal and installation of front damper assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left damper assembly, which can be basically referred to for the front right one.

1 Remove the wiper arm and blade component. Refer to 8.7.6.5 Removal and installation of front wiper arm and blade component

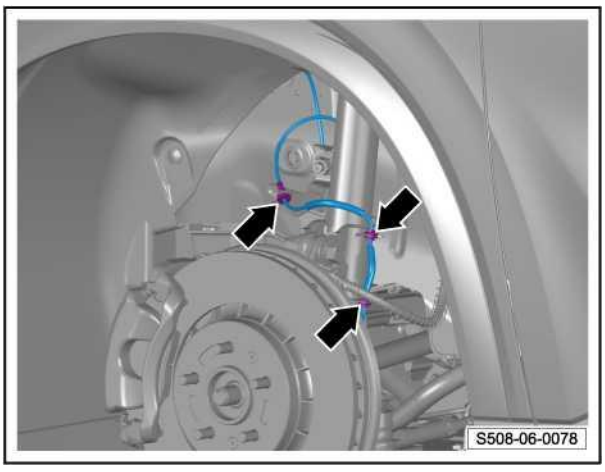
2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

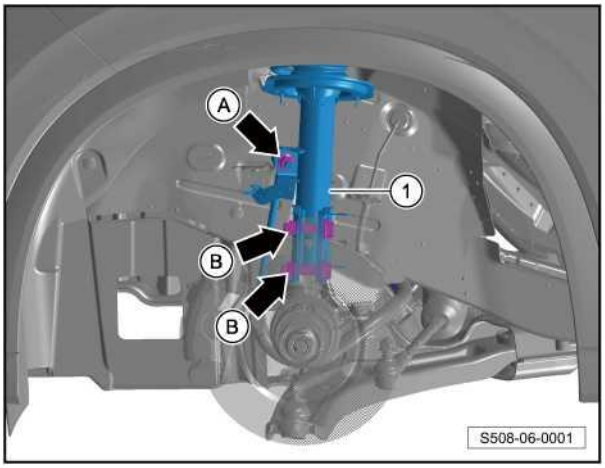
5 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component.

6 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



7 Remove the front damper assembly

a. Disengage the main fixing rubber sleeve (see the arrow) of front wheel speed sensor.



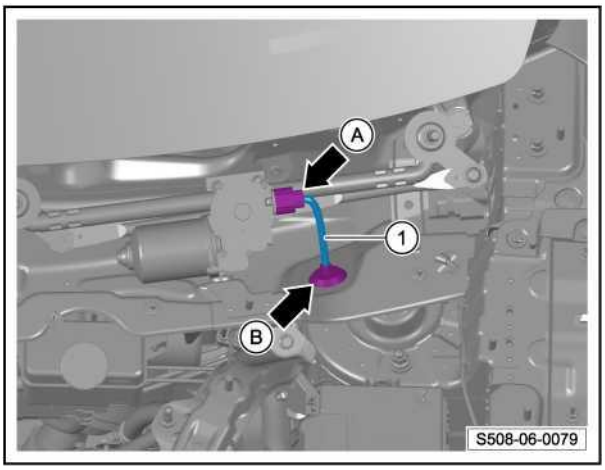
b. Unscrew the fixing nut (see arrow A), and disengage the front stabilizer bar joint assembly from the front damper assembly ①.

c. Unscrew the fixing bolt/nut (see arrow B), and disengage the front damper assembly ① from the steering knuckle.

- Tightening torque of nut (see arrow **A**): **100±5N·m**
- Tightening torque of bolt/nut (see arrow **B**): **300±15 N·m**

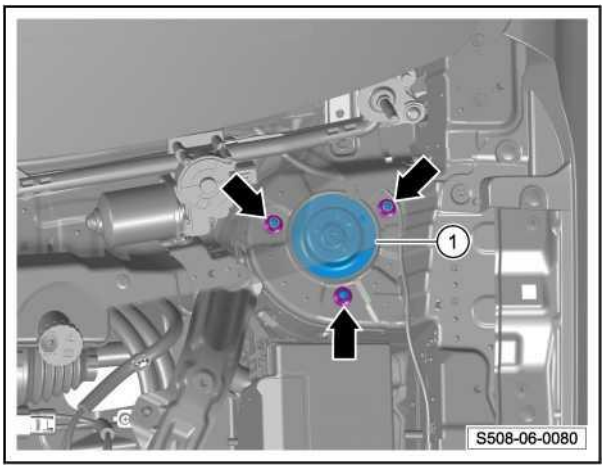
Tip:

When removing the fixing nut of the front stabilizer bar joint assembly, the back of the ball pin shall be fixed with an open-end wrench to avoid rotation of ball pin and nut at the same time.



d. Disconnect the fixing connector (see arrow A) of wiper motor.

e. Disengage the protective jacket of the wiper motor harness ① (see arrow B).



f. Unscrew fixing nuts (see arrows) between the front damper assembly ① and the body, and remove the front damper assembly ①.

- Tightening torque of nut: **70±4 N·m**

Notes

During removal, another technician shall hold the front damper assembly below to avoid it from falling off.

When taking out the front damper assembly, try to avoid collision between the front damper assembly and other components or vehicle body; otherwise, it is easy to damage other components or scratch the paint.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

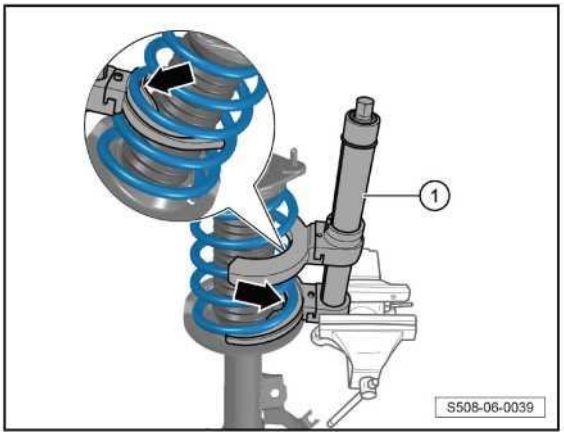
3.2.6.5 Removal and installation of front damper assembly

Disassembly procedure

Tip:

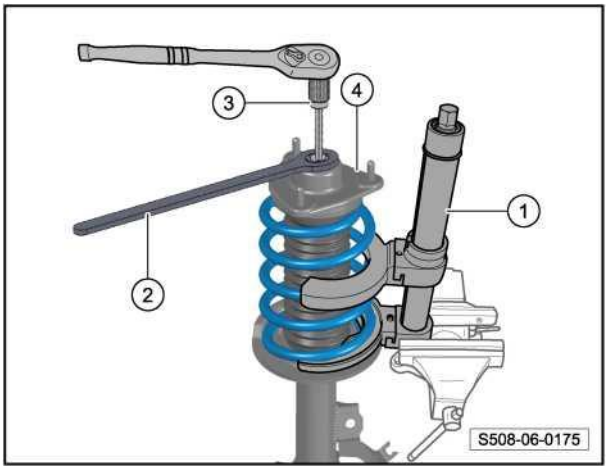
Before decomposing the front damper assembly, attention shall be paid to the relative position between the damper upper mounting base and the end of front coil spring, and make installation marks.

1 Remove the front damper assembly. Refer to 3.2.6.4 Removal and installation of front damper assembly.



2 Disassemble the front damper assembly

a. When installing the damper spring compression tool set ①, pay attention to the correct position (see the arrow) of the front coil spring on the damper spring compression tool set bracket.

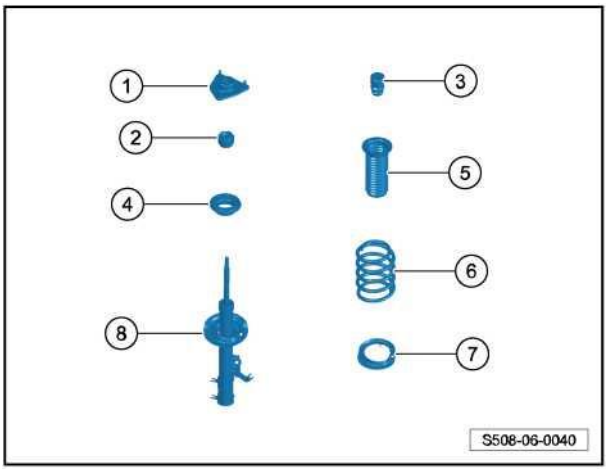


b. Install tools as illustrated: tighten the screw rod of the damper spring compression tool set ①, and press the front coil spring tightly until there is no load on the damper upper mounting base.

c. Fix the stud with the special tool ③.

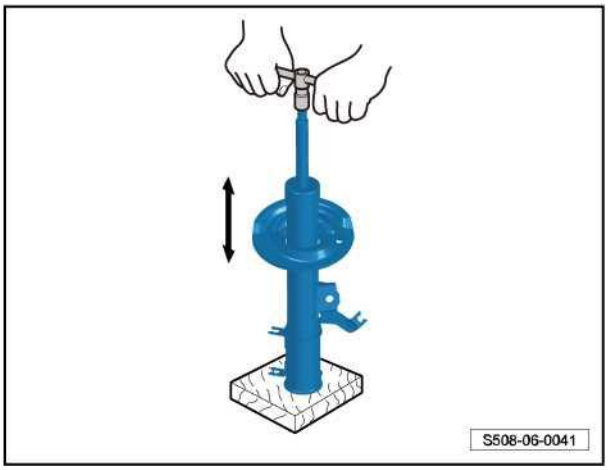
d. Unscrew the fixing nut of the damper upper mounting base along the counter-clockwise direction with the special tool ②.

e. Remove the damper upper mounting base ④.



f. Remove the damper upper mounting base ①, damper top bush ②, buffer block ③, coil spring upper mounting base ④, dust cover ⑤, coil spring ⑥, coil spring lower pad ⑦ and damper ⑧ in turn.

Test procedure



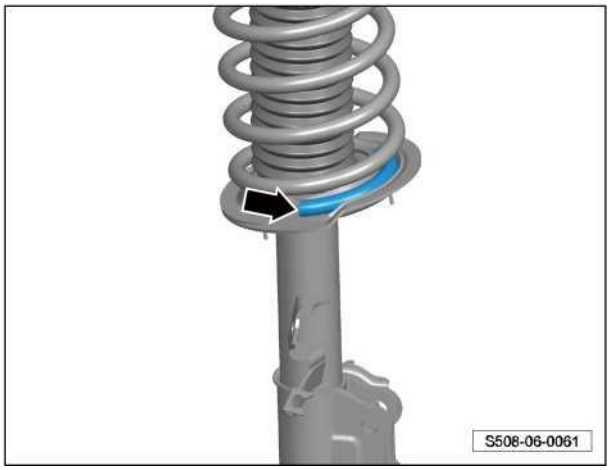
3 Test the damper

a. Mount the mounting nut of the damper at the shaft end of the damper and fix it with socket spanner.

b. Manually compress the damper and check whether it is compacted and then extend steadily within a complete cycle. Ensure that the damper extends steadily and continuously when the compression is released. Otherwise, replace the damper.

c. During the test, replace the damper if it leaks oil, makes an abnormal noise and is blocked.

Assembly procedure



Perform the assembly procedures in the reverse order of removal procedures and pay attention to the following items:

– Compress the front coil spring with damper spring compression tool and install it on lower strut mounting bracket.

– The end of the coil spring must be close to the limit position (see the arrow).

3.2.6.6 Removal and installation of front swing arm assembly

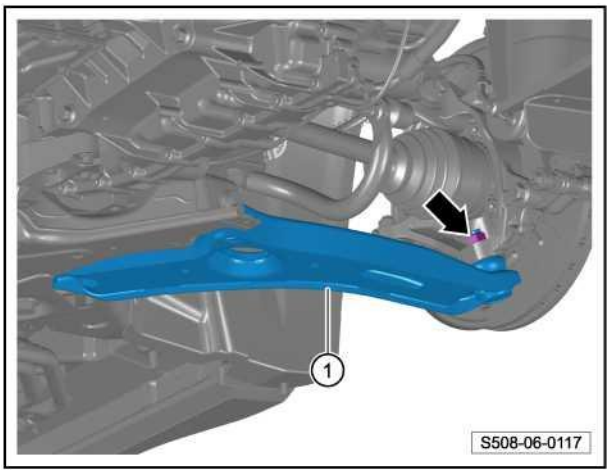
Disassembly procedures

Tip:

The removal and installation procedures are only

for the front left swing arm assembly, which can be basically referred to for the front right one.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

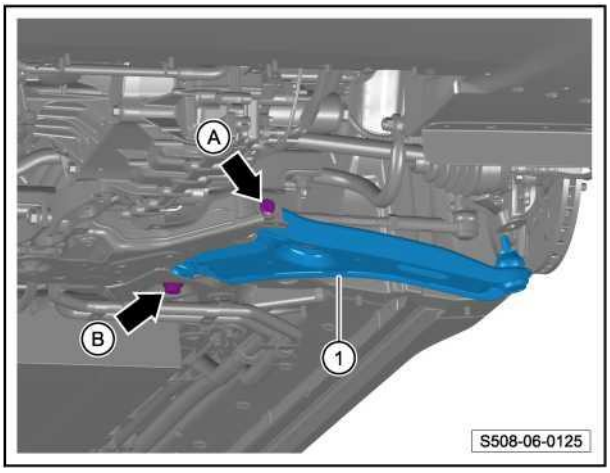


2 Remove the front swing arm assembly

a. Unscrew the nut connecting (see arrow) front swing arm assembly to front steering knuckle.

b. Press the front lower swing arm assembly ① out of the front steering knuckle with the special tool for ball joint removal (refer to 3.2.5.1 List of special tools), and disengage it from the steering knuckle.

- Tightening torque of nut: 90±5 N·m



c. Unscrew the fixing bolt (see arrow A) and bolt/nut (see arrow B) of the front swing arm assembly.

d. Remove the front swing arm assembly ①.

- Tightening torque of bolt (see arrow **A**): **140±7 N·m**
- Tightening torque of bolt/nut (see arrow B): **200±10 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

3.2.6.7 Removal and installation of front hub bearing

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left hub bearing, which can be basically referred to for the front right one.

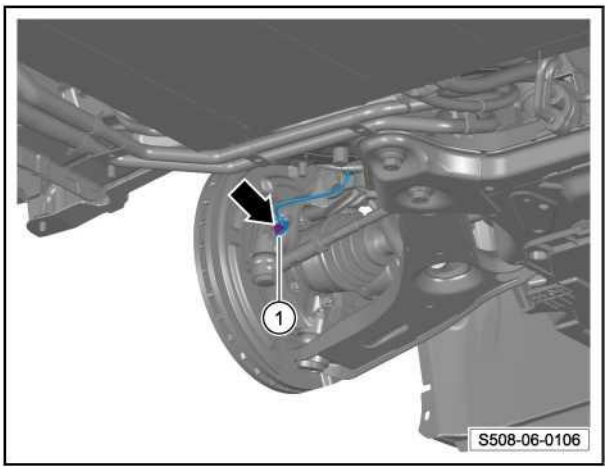
1 Turn off all the electrical appliances and turn off

the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

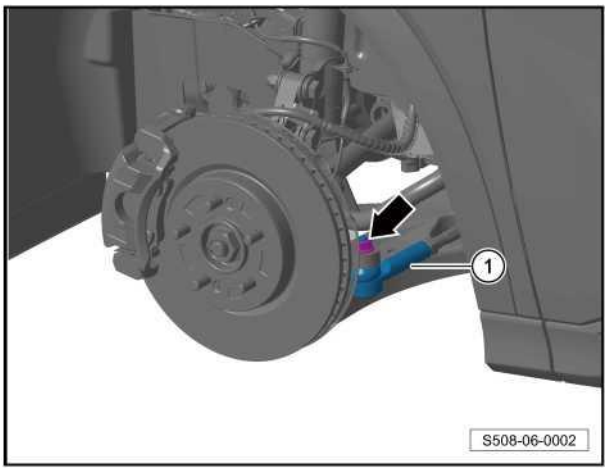
4 Remove the front left drive shaft nut. Refer to 3.6.4.1 Removal and installation of hub locking nut.



5 Remove front left hub bearing

a. Unscrew the fixing bolt of the front wheel speed sensor (see the arrows), and remove the front wheel speed sensor ①.

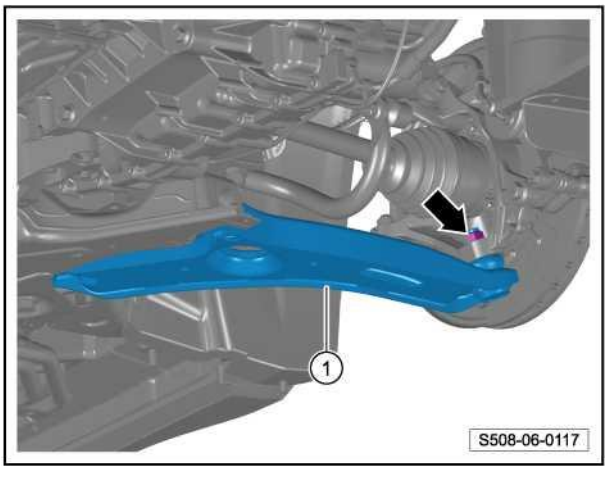
- Tightening torque of bolt: **10±1 N·m**



b. Unscrew the fixing nut (see arrow) connecting the outer tie rod ball joint with front steering knuckle assembly.

c. Press the outer tie rod ball joint ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.2.5.1 List of special tools), and disengage it from the steering knuckle assembly.

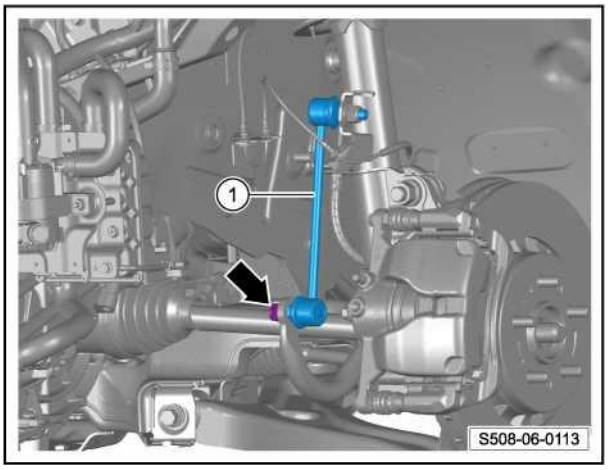
- Tightening torque of nut: **60±6 N·m**



d. Unscrew the nut (see arrow) connecting lower swing arm assembly to front steering knuckle assembly.

e. Press the lower swing arm assembly ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.2.5.1 List of special tools), and disengage it from the steering knuckle assembly.

- Tightening torque of nut: 90±5 N·m

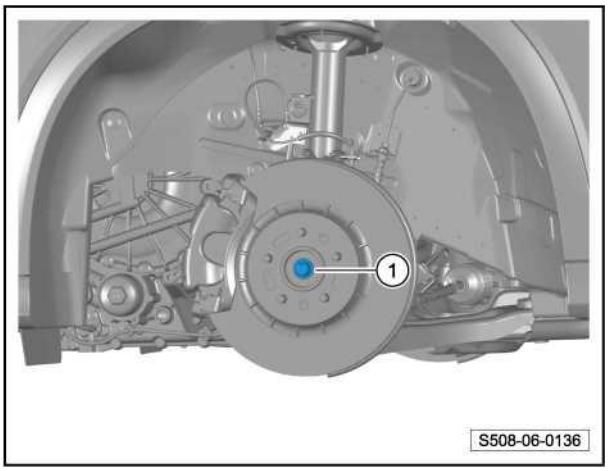


f. Unscrew the fixing nut (see arrow) between the front stabilizer bar joint assembly ① and the front stabilizer bar.

- Tightening torque of nut: **100±5 N·m**

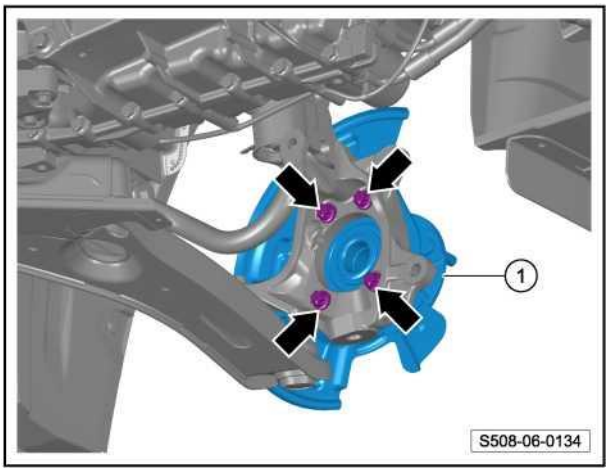
Tip:

When removing the fixing nut of the front stabilizer bar joint, the back of the ball pin shall be fixed with an open-end wrench to avoid rotation of ball pin and nut at the same time.



g. Press the front left drive shaft assembly ① out of the front steering knuckle assembly with the drive shaft removal tool (refer to 3.2.5.1 List of special tools).

h. Remove the front brake disc. Refer to 3.7.6.4 Removal and installation of front brake disc



i. Unscrew the fixing bolts (see arrows) and remove the front hub bearing ①.

Tip:

When removing the front wheel hub bearing, if it cannot be removed because of corrosion, knock to release it from the front steering knuckle assembly with rubber hammer.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel

alignment

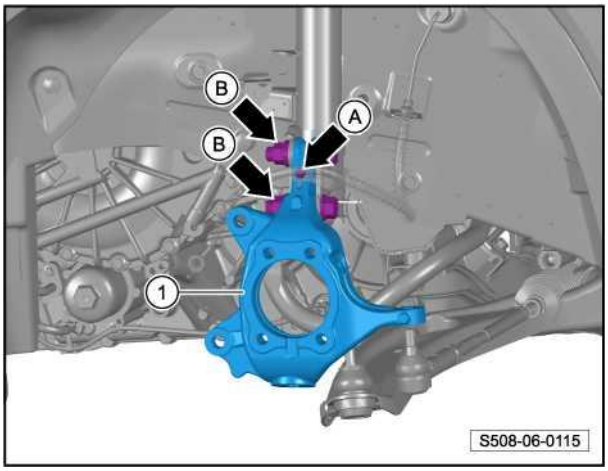
3.2.6.8 Removal and installation of front steering knuckle assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left steering knuckle assembly, which can be basically referred to for the front right one.

1 Remove the front left hub bearing. Refer to 3.2.6.7 Removal and installation of front hub bearing



2 Remove the front knuckle assembly

a. Unscrew the fixing bolt (see arrow A), and disengage the front brake hose bracket from the front steering knuckle assembly.

b. Unscrew the fixing bolt/nut (see arrow B), and disengage the front damper assembly from the front steering knuckle assembly.

c. Remove the front lower knuckle assembly ①.

- Tightening torque of bolt (see arrow **A**): **10±1 N·m**
- Tightening torque of bolt/nut (see arrow **B**): **300±15 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

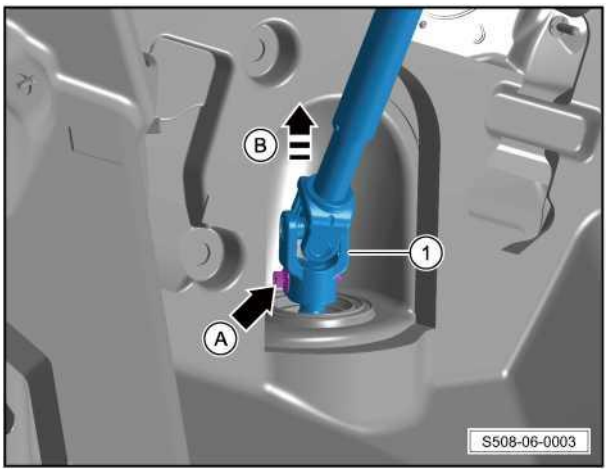
3.2.6.9 Removal and installation of front subframe welding assembly

Disassembly procedures

1 Remove the front left/right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

3 Remove the power suspension assembly (rear), refer to 2.11.4.4 Removal and installation of power suspension assembly (rear)

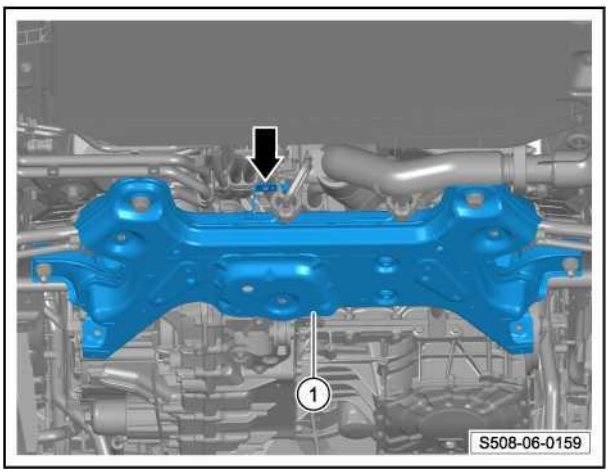


4 Remove the front subframe welding assembly

a. Rotate the steering wheel so that it faces straight ahead. Turn off the start switch, and lock the steering wheel.

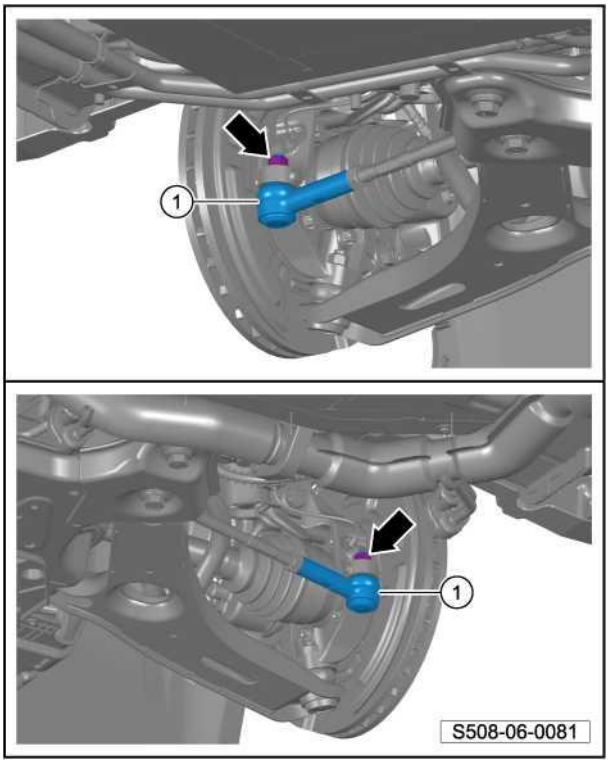
b. Unscrew the fixing bolt (see arrow A) between the lower steering shaft and steering box assembly, and disengage the lower steering shaft ① from the steering box assembly along the direction of arrow B.

- Tightening torque of bolt: 32±2N·m



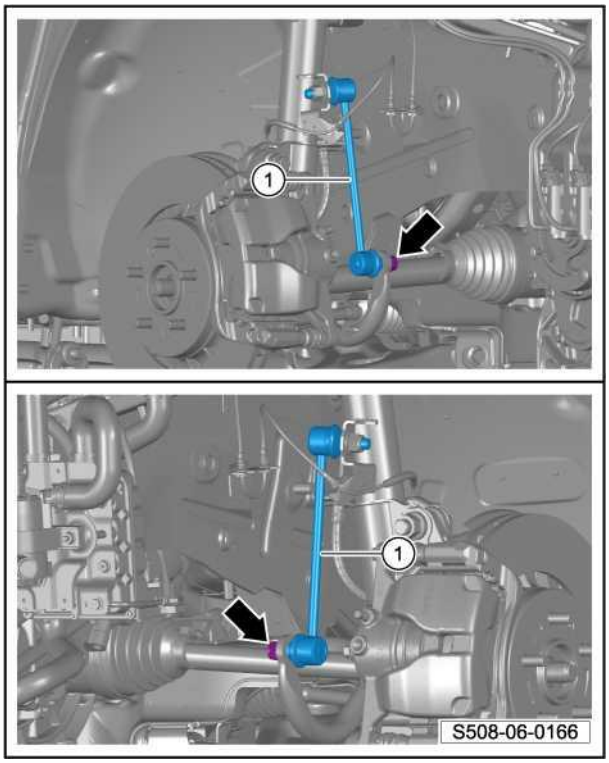
c. Unscrew the fixing bolt (see arrows), and disengage the Battery pack HV wiring harness from the subframe welding assembly ①.

- Tightening torque of bolt: **10±1 N·m**



d. Unscrew fixing nuts (see arrows) between left and the right outer tie rod ball joints and the front steering knuckle assembly. Press left and the right outer tie rod ball joints ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.2.5.1 List of special tools), and disengage them from the front steering knuckle assembly.

- Tightening torque of nut: **60±6 N·m**

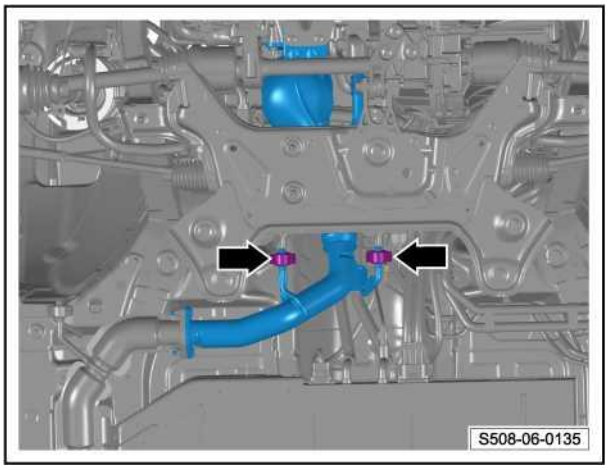


e. Unscrew fixing nuts between left and right front stabilizer bar joint assemblies ① and the front stabilizer bar.

- Tightening torque of nut: **100±5 N·m**

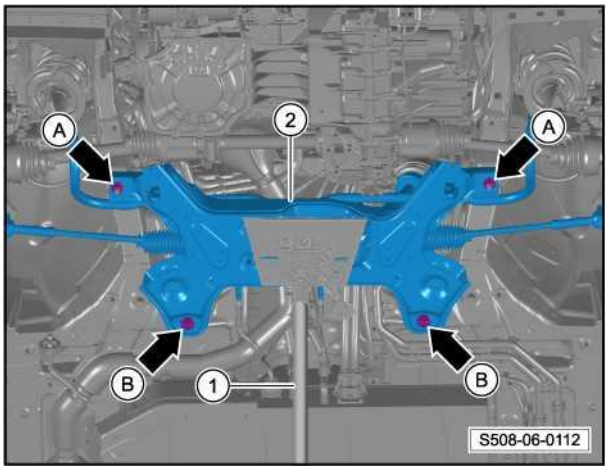
Tip:

When removing the fixing nut of the front stabilizer bar joint assembly, the back of the ball pin shall be fixed with an open-end wrench to avoid rotation of ball pin and nut at the same time.



Remove the front swing arm assembly. Refer to 3.2.6.6 Removal and installation of front swing arm assembly

f. Disengage connectors (see arrows) between the silencer connector and the front subframe welding assembly.

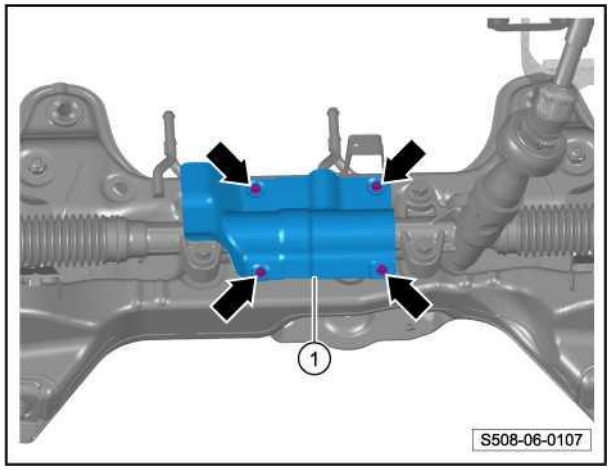


g. Support the subframe welding and accessory assembly ② with the transmission lifting device ①.

h. Unscrew the nuts (see arrow A) and bolts (see arrow B) connecting the front subframe welding assembly and the body.

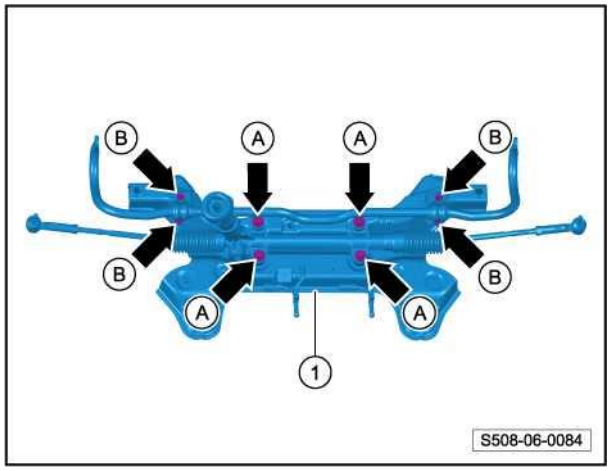
i. Slowly lower the transmission lifting device ①, and remove the subframe welding and accessory assembly ②.

- Tightening torque of nut (see arrow **A**): **200±10 N·m**
- Tightening torque of bolt (see arrow **B**): **200±10 N·m**



g. Unscrew the fixing bolts (see arrows) of the steering box heat shield and front subframe welding assembly, and remove the steering box heat shield ①.

- Tightening torque of bolt: **10±1 N·m**



k. Unscrew the fixing bolts (see arrow A) between the steering box c/w tie rod assembly and the front subframe welding assembly, and remove the steering box c/w tie rod assembly.

l. Unscrew fixing bolts (see arrow B) between the front stabilizer bar bracket and the front subframe welding assembly, and remove the front stabilizer bar.

m. Separate the front subframe welding assembly ①.

- Tightening torque of bolt (see arrow **A**): **110±6 N·m**
- Tightening torque of bolt (see arrow **B**): **50±4 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– When installing the steering universal joint, be sure to align its bolt hole with the plane part of the steering shaft.

–When installing, turn the steering wheel to make it face straight ahead, and lock the steering wheel.

– Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

- Calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

3.3 Rear suspension

3.3.1 Specification

3.3.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Rear longitudinal swing arm connecting bracket and body	Glued hexagon head flange bolt c/w plain washer cluster M12×1.25	110±6
Rear subframe and body	Glued guide hexagon head flange bolt c/w plain washer cluster M14×1.5	200±10
	Hexagon flange nut M14×1.5	
Rear stabilizer bar bracket and rear subframe	Hexagon flange locking nut M12×1.25	110±6
Rear stabilizer bar joint assembly and rear stabilizer bar	Hexagon flange locking nut with non-metallic insert M12×1.25	100±5
Rear stabilizer bar joint assembly and rear lower swing arm	Hexagon flange locking nut with non-metallic insert M12×1.25	100±5
Rear damper assembly and rear subframe	Hexagon head flange bolt with plain washer cluster M12×1.25	110±6
	Hexagon flange nut M12×1.25	
Rear damper assembly and brake	Hexagon head flange bolt with plain washer cluster M12×1.25	110±6
	Hexagon flange nut M12×1.25	
Rear lower swing arm assembly and rear subframe	Eccentric bolt M12×1.25	130±5
	Hexagon flange nut M12×1.25	
Rear lower swing arm assembly and brake	Hexagon head flange bolt c/w with guide c/w plain washer cluster M12×1.25	110±6
Rear upper swing arm and rear subframe	Hexagon head flange bolt c/w plain washer cluster M12×1.25	110±6
	Hexagon flange nut M12×1.25	
Connection of rear upper swing arm and brake	Hexagon head flange bolt c/w plain washer cluster M12×1.25	110±6
	Hexagon flange nut M12×1.25	
Rear toe-in control arm assembly and rear subframe	Eccentric bolt M12×1.25	130±5
	Hexagon flange nut M12×1.25	
Rear toe-in control arm assembly and rear brake	All-metal hexagon flange locking nut M12×1.25	90±5
Rear longitudinal swing arm and rear brake	Hexagon head flange bolt M16×1.5×55	300±15
Rear wheel speed sensor and rear brake (left/right)	Hexagon head flange bolt M6×12	10±1
Rear wheel speed sensor and rear upper arm (left/right)	Hexagon head flange bolt M8×20	25±2
	Hexagon head flange nut M8	
Rear longitudinal swing arm and longitudinal swing arm mounting	Hexagon head flange bolt M14×1.5	200±10
	Hexagon head flange nut M16×1.5	

Tightening position	Specification	Tightening torque: N·m
bracket		

3.3.2 Description and operation

3.3.2.1 Description and operation

Suspension system refers to the whole supporting system composed of springs between the body and tires and dampers. The function of suspension system is to transfer the torque between wheel and frame. It can improve riding comfort by relieving the impact from road surface to vehicle frame or body and reducing body vibration. Different suspension systems will bring to the driver different driving experience. As one of the key components of modern vehicle, the suspension system will determine the stability, comfort and safety in driving.

Generally, the suspension is composed of elastic element, damper, guide mechanism and transverse stabilizer bar:

– The elastic element is used to bear and transfer vertical load. It can relieve the impact on the body and reduce vibration, keep the tire contacting with road surface and maintain vehicle tracking.

– The type of elastic elements includes: leaf spring, coil spring, torsion spring, hydro-pneumatic spring, air spring and rubber spring.

– The damper is used to reduce the vibration caused by elastic system. Its types include: telescopic damper, adjustable damper and inflatable damper.

– The guide mechanism is used to transfer the torque between wheels and body and to keep the wheels bouncing with the body following a certain motion track. The guide mechanism consists of swing arm connecting rods, including single-link and multi-link connecting rods.

– When the leaf spring is used as elastic element, it also plays a role of guidance; therefore, the guide mechanism may not be set. Some suspension systems are equipped with transverse stabilizer bar to increase the transverse stiffness. When the vehicle understeers, it can improve the handling stability and riding comfort.

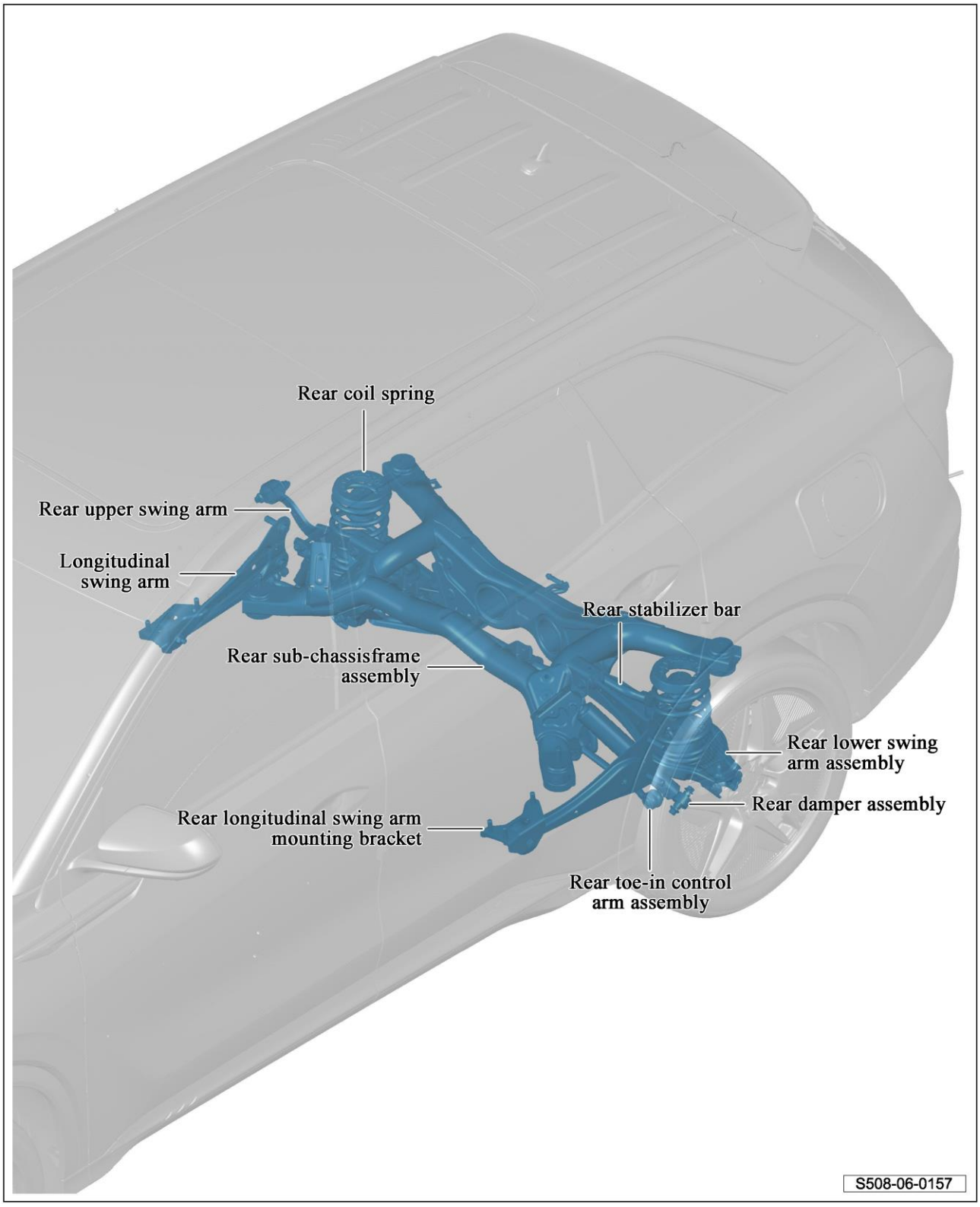
The rear suspension adopted for this model is of the multi-link independent type, which makes the wheel span and toe-in have little changes when a wheel runs out, and enable the driver make the wheel rotate stably by his/her attention no matter the vehicle is in the drive or brake status.

The rear suspension system mainly consists of the subframe welding assembly, coil spring, damper assembly, rear upper swing arm, rear lower swing arm, toe-in control arm assembly, rear longitudinal swing arm, rear hub bearing, rear brake caliper mounting plate, rear stabilizer bar, etc.

The coil spring is fixed between the underbody spring seat and the lower swing arm spring seat, and the upper and lower parts are separated by buffer respectively. Connect the upper end of damper with the subframe welding assembly, the lower end of it with the rear brake, and the brake with the subframe. It is to transfer the force and torque between wheel and body. It mitigates the impact load transferred to the vehicle body due to uneven road surface and attenuates vibration, thus ensuring the smooth running of the vehicle.

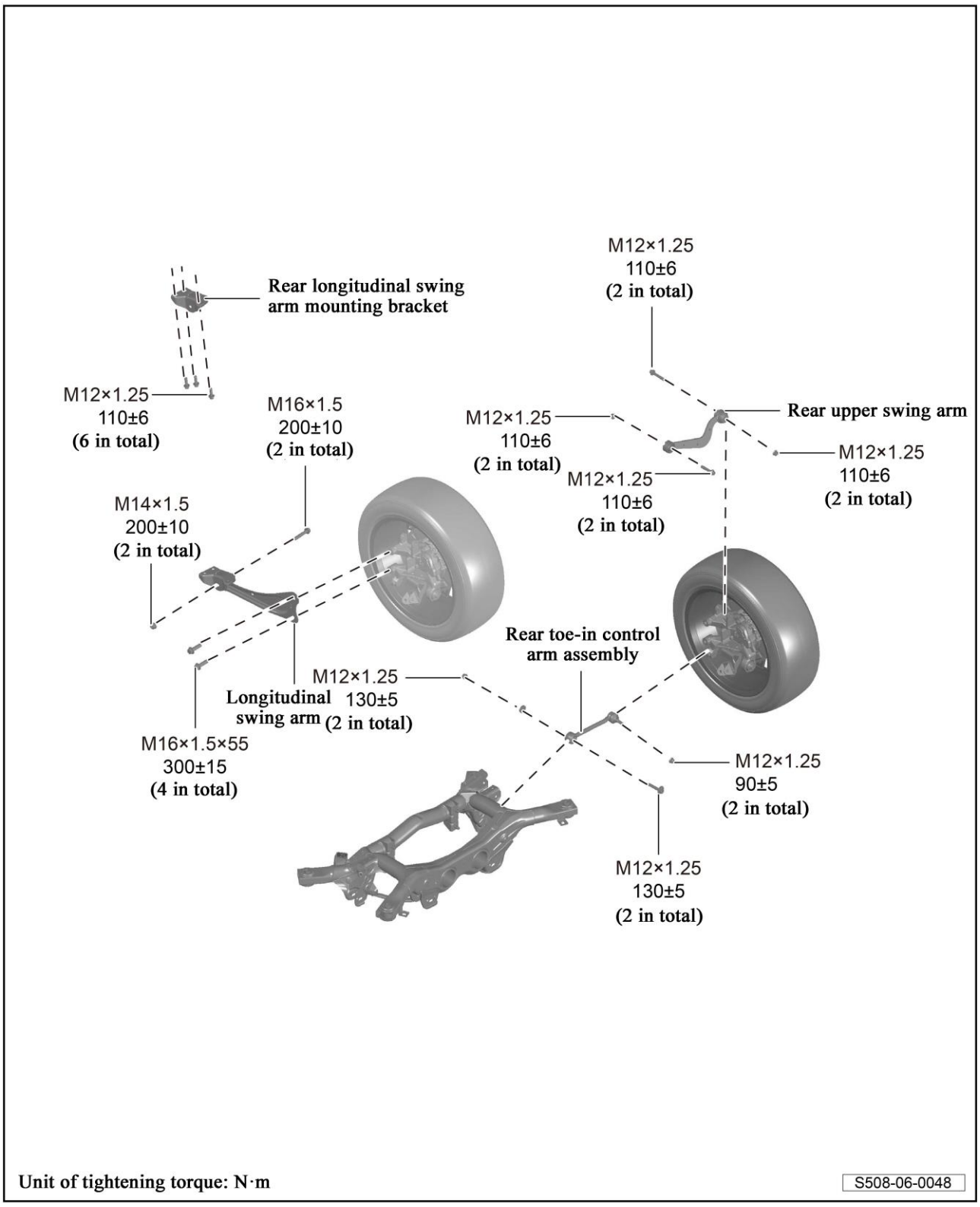
3.3.3 Component position

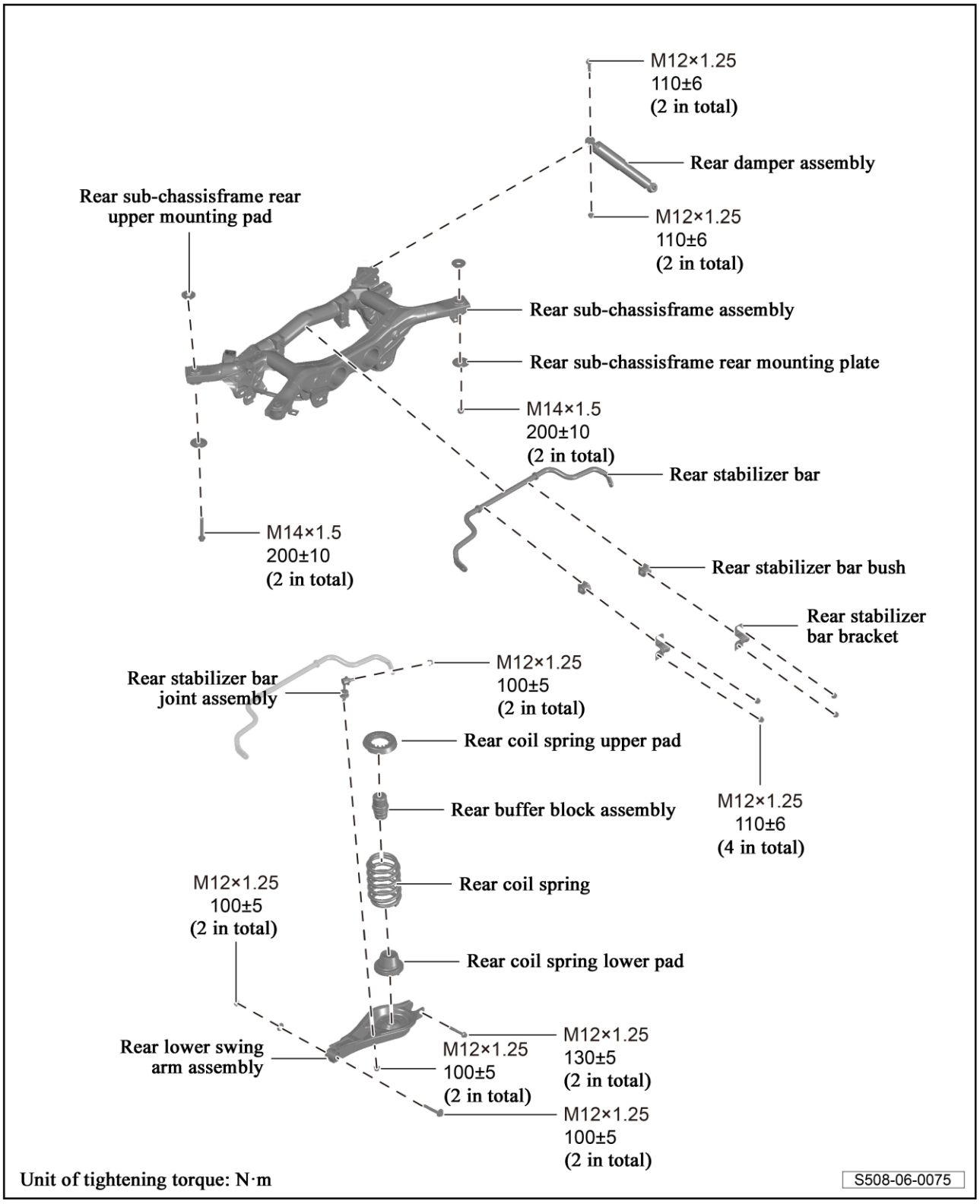
3.3.3.1 Component position



3.3.4 Exploded view

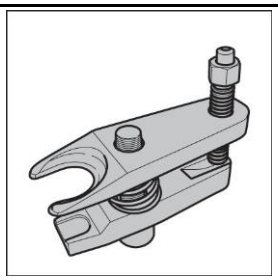
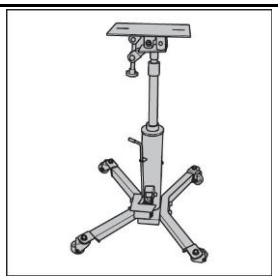
3.3.4.1 Exploded view of rear suspension assembly




M12×1.25
110±6
(2 in total)
Rear damper assembly
M12×1.25
110±6
(2 in total)
Rear sub-chassisframe rear upper mounting pad
Rear sub-chassisframe assembly
Rear sub-chassisframe rear mounting plate
M14×1.5
200±10
(2 in total)
Rear stabilizer bar
M14×1.5
200±10
(2 in total)
Rear stabilizer bar bush
Rear stabilizer bar bracket
Rear stabilizer bar joint assembly
M12×1.25
100±5
(2 in total)
Rear coil spring upper pad
Rear buffer block assembly
M12×1.25
110±6
(4 in total)
M12×1.25
100±5
(2 in total)
Rear coil spring
Rear coil spring lower pad
Rear lower swing arm assembly
M12×1.25
100±5
(2 in total)
M12×1.25
130±5
(2 in total)
M12×1.25
100±5
(2 in total)
Unit of tightening torque: N·m
S508-06-0075

3.3.5 Special tool

3.3.5.1 List of special tools

S/N	Symbol	Description	Function
1		Removal tool for ball joint	For separating the ball joint from the rear brake caliper mounting plate
2		Transmission lifting device	For aiding in removing or holding other parts during removal of the rear subframe assembly and other accessories.

3.3.6 Removal and installation

3.3.6.1 Removal and installation of rear damper assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

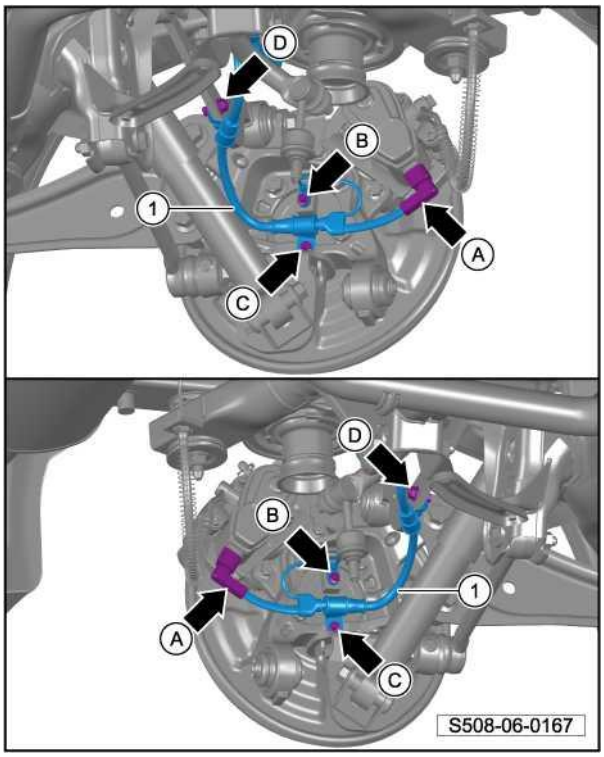
4 Remove the left and right rear tires. Refer to 3.4.4.1 Removal and installation of wheel assembly

5 Remove the front silencer assembly. Refer to 2.5.8.5 Removal and installation of front silencer assembly

6 Remove the rear coil spring. Refer to 3.3.6.2 Removal and installation of rear coil spring

7 Remove the rear left/right lower swing arm assembly. Refer to 3.3.6.4 Removal and installation of rear lower swing arm assembly

8 Remove the rear left/right brake hose. Refer to 3.8.5.5 Removal and installation of rear brake hose



9 Remove the rear damper assembly

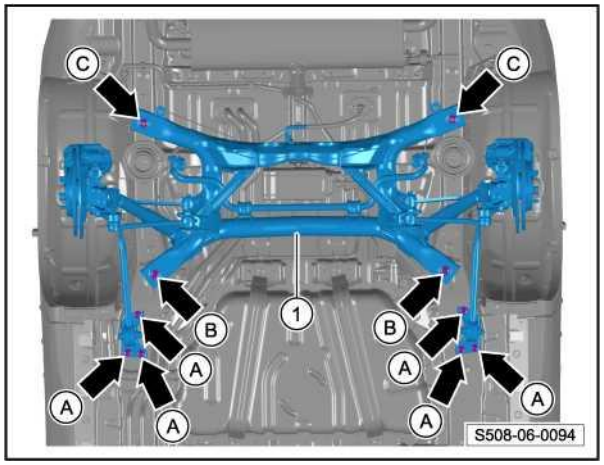
a. Disconnect the left and right EPB drive motor connectors (see arrow A).

b. Unscrew the fixing bolts (see arrow B) of the left and right rear wheel speed sensors.

c. Unscrew the fixing bolts (see arrow C) of the left and right rear wheel speed sensor harness supports.

d. Unscrew the fixing bolts/nuts (see arrow D) of the left and right rear wheel speed sensor assemblies and the rear upper swing arm, and remove the left and right rear wheel speed sensor assembly ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**
- Tightening torque of bolt (see arrow **C**): **10±1 N·m**
- Tightening torque of nut (see arrow **D**): **25±2 N·m**



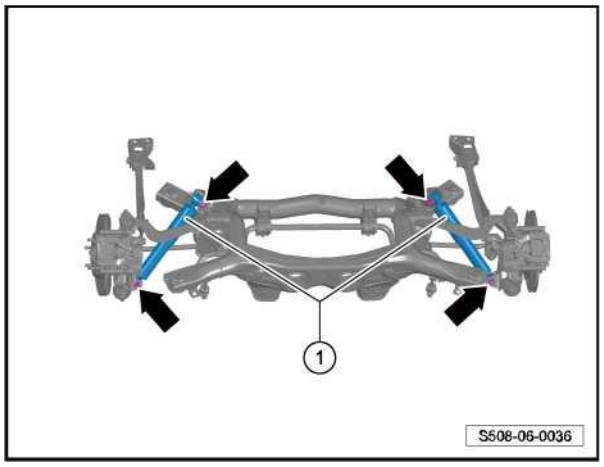
e. Put the transmission lifting device below the rear subframe assembly to support it and its accessory ①.

f. Unscrew the fixing bolts (see arrow A), and disengage the rear longitudinal swing arm from the body.

g. Unscrew fixing bolts (see arrow B) and nuts (see arrow C), and disengage the rear subframe assembly and its accessory ① from the body.

h. Slowly lower the transmission lifting device, and remove the rear subframe assembly and its accessory ①.

- Tightening torque of bolt (see arrow **A**): **110±6 N·m**
- Tightening torque of bolt (see arrow **B**): **200±10Nm**
- Tightening torque of nut (see arrow **C**): **200±10 N·m**



i. Unscrew fixing bolts/nuts (see arrows), and remove the rear damper assembly ①.

- Tightening torque of bolt/nut: **110±6N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

-After installation, add the brake fluid. See 1.4.3.10 Brake fluid inspection.

-After installation, bleed the four tires. See 1.4.3.53 Brake system bleeding.

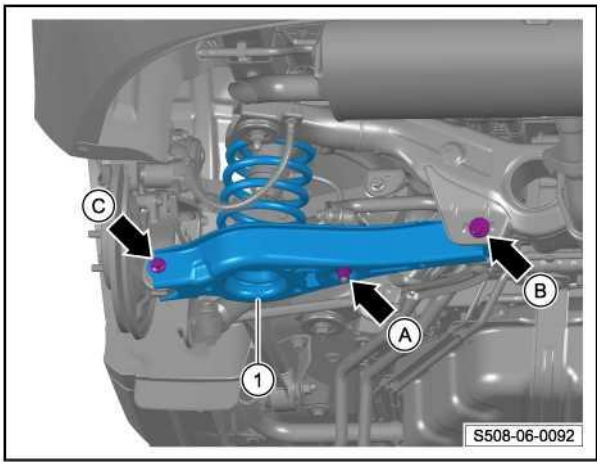
3.3.6.2 Removal and installation of rear coil spring

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left coil spring, which can be basically referred to for the rear right one.

1 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the rear coil spring

a. Put the transmission lifting device (refer to 3.3.5.1 List of special tools) below the rear lower swing arm assembly and support it.

b. Unscrew the fixing nut (see arrow A), and disengage the rear stabilizer bar joint assembly from the rear lower swing arm assembly ①.

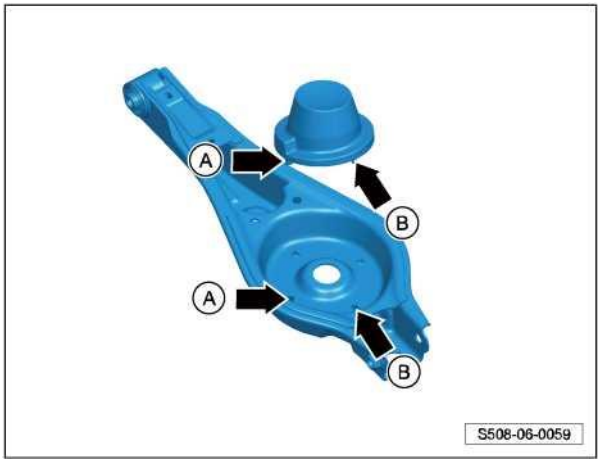
c. Loosen the eccentric bolt/nut (see arrow B) of the rear lower swing arm assembly.

d. Unscrew the fixing bolt/nut (see arrow C), and disengage the rear lower swing arm assembly ① from the rear brake caliper mounting plate.

e. Slowly lower the transmission lifting device, and remove the rear coil spring ②.

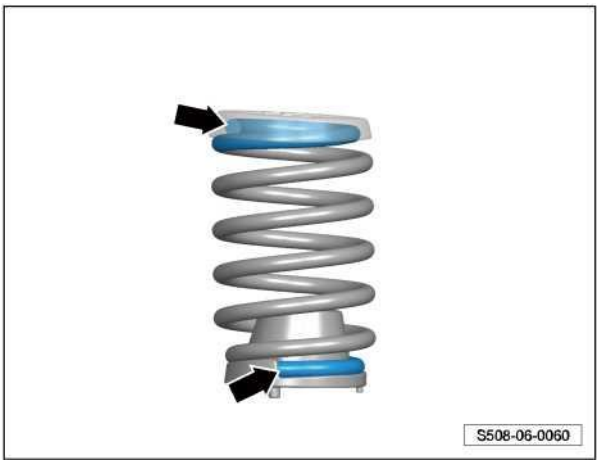
- Tightening torque of nut (see arrow **A**): **100±5N·m**
- Tightening torque of bolts/nuts (see arrow **B**): **130±5Nm**
- Tightening torque of bolt/nut (see arrow **C**): **110±6N·m**

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

Align location pins (see arrows A and B) of the rear coil spring lower pad with small holes (see arrows A and B) in forward and backward directions of the complete vehicle; otherwise, unpredictable consequences will be caused.



-When installing the rear coil spring, align both ends of it with protruding parts (see arrows) of the upper/lower pad of the rear coil spring.

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

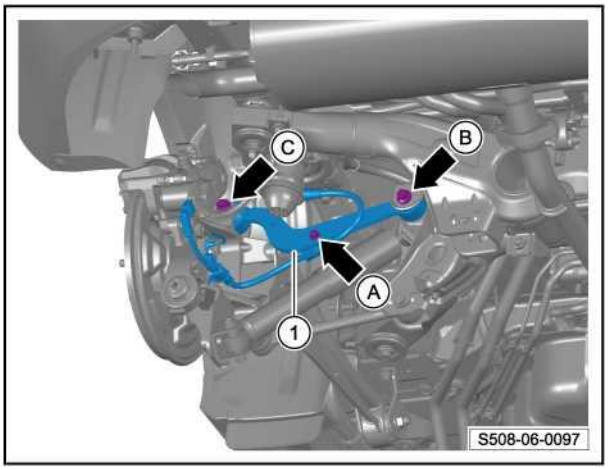
3.3.6.3 Removal and installation of rear upper swing arm

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left upper swing arm, which can be basically referred to for the rear right one.

1 Remove the rear left coil spring. Refer to 3.3.6.2 Removal and installation of rear coil spring



2 Remove the rear upper swing arm

a. Put the transmission lifting device (refer to 3.3.5.1 List of special tools) below the rear brake caliper mounting plate and support it.

b. Unscrew the fixing bolt/nut (see arrow A), and disengage the rear wheel speed sensor harness support from the rear upper swing arm.

c. Unscrew the fixing bolts/nuts (see arrow B) of the rear upper swing arm and the rear subframe assembly.

d. Unscrew the fixing bolts/nuts (see arrow C) of the rear upper swing arm and rear brake caliper mounting plate, and remove the rear upper swing arm ①.

- Tightening torque of bolt/nut (see arrow **A**): **25±2 N·m**
- Tightening torque of bolt/nut (see arrow **B**): **110±6N·m**
- Tightening torque of bolt/nut (see arrow **C**): **110±6N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

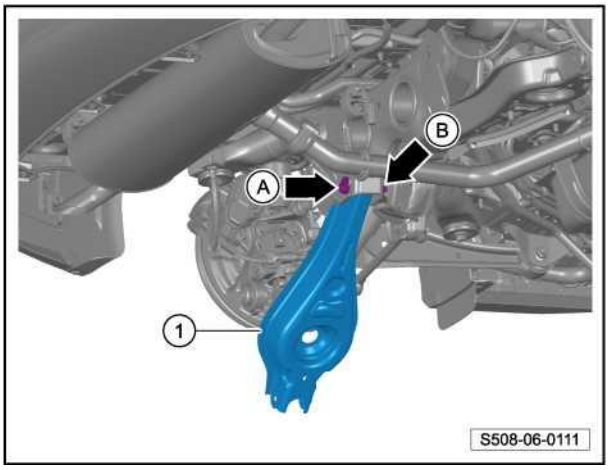
3.3.6.4 Removal and installation of rear lower swing arm assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left lower swing arm assembly, which can be basically referred to for the rear right one.

1 Remove the rear left coil spring. Refer to 3.3.6.2 Removal and installation of rear coil spring



2 Remove the rear lower swing arm assembly

a. Unscrew eccentric fixing bolts/nuts (see arrows A and B), remove the washer, and remove the rear lower swing arm assembly ①.

- Tightening torque of bolt/nut: **130±5N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

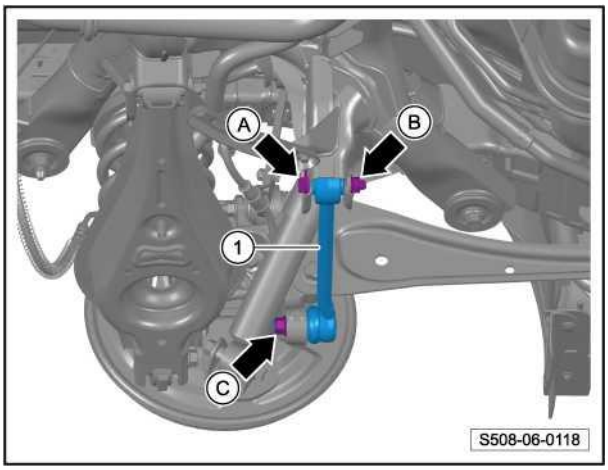
–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

3.3.6.5 Removal and installation of rear toe-in control arm assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left toe-in control arm assembly, which can be basically referred to for the rear right one.



1 Remove the rear toe-in control arm assembly

a. Unscrew the eccentric fixing bolts (see arrow A) and nuts (see arrow B), remove the washer, and disengage the rear toe-in control arm assembly from the rear subframe.

b. Unscrew the fixing nut (see arrow C), and disengage the rear toe-in control arm ball joint from the rear brake caliper mounting plate with the special tool for ball joint removal (refer to 3.3.5.1 List of special tools).

c. Remove the rear toe-in control arm assembly ①.

- Tightening torque of bolt (see arrow **A**): **130±5 N·m**
- Tightening torque of nut (see arrow B): 130±5 N·m
- Tightening torque of nut (see arrow C): 90±5 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

3.3.6.6 Removal and installation of rear brake caliper mounting plate

Disassembly procedures

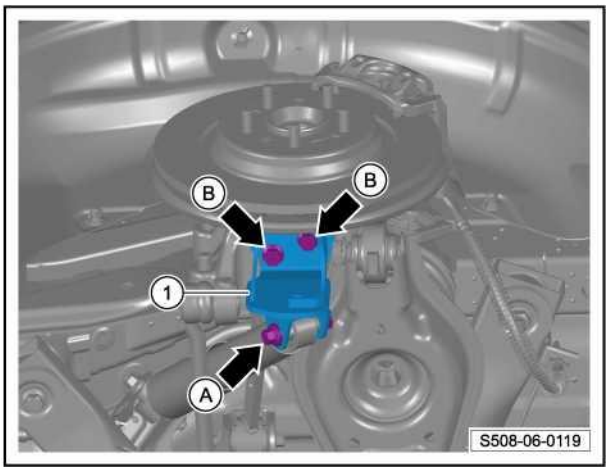
Tip:

The removal and installation procedures are only for the rear left brake caliper mounting plate, which can be basically referred to for the rear right one.

1 Remove the rear left coil spring. Refer to 3.3.6.2 Removal and installation of rear coil spring

2 Remove the rear left hub bearing. Refer to 3.3.6.8 Removal and installation of rear hub bearing

3 Remove the rear left toe-in control arm assembly. Refer to 3.3.6.5 Removal and installation of rear toe-in control arm assembly.

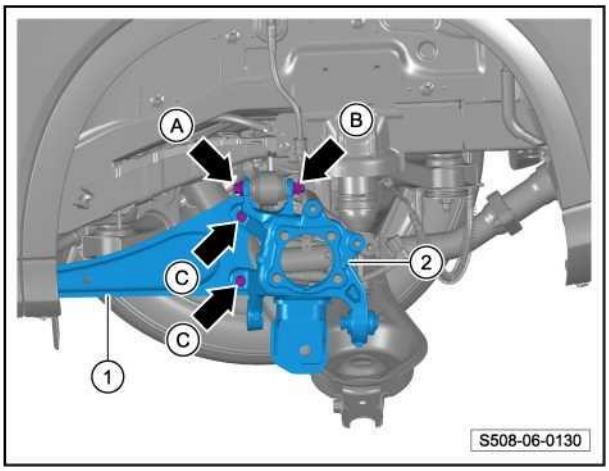


4 Remove the rear brake caliper mounting plate

a. Unscrew the fixing bolt/nut (see arrow A) of the rear damper assembly.

b. Unscrew fixing bolts (see arrow B), and disengage the rear damper mounting plate ① from the rear brake caliper mounting plate.

- Tightening torque of bolt/nut (see arrows **A**): **110±6 N·m**



c. Unscrew the fixing bolts (see arrow A) and nuts (see arrow B), and disengage the rear upper swing arm from the rear brake caliper mounting plate.

d. Unscrew the fixing bolts (see arrow C), and disengage the rear longitudinal swing arm from the rear brake caliper mounting plate.

e. Remove the rear brake caliper mounting plate ①.

- Tightening torque of bolt (see arrow **A**): **110±6N·m**
- Tightening torque of nut (see arrow **B**): **110±6N·m**
- Tightening torque of bolt (see arrow **C**): **300±15N·m**

Installation procedures

Perform the installation procedures in the reverse

order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

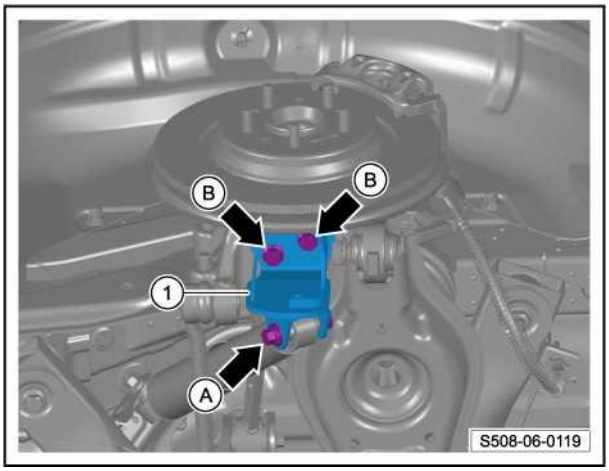
3.3.6.7 Removal and installation of rear longitudinal swing arm

Disassembly procedures

Tip:

The removal and installation procedures are only for the left longitudinal swing arm, which can be basically referred to for the rear right one.

1 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



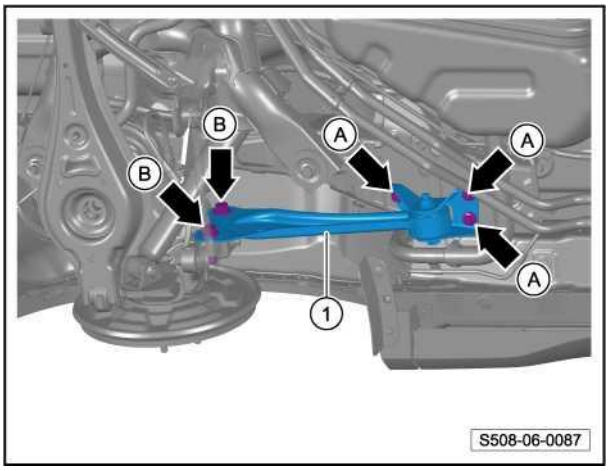
2 Remove the longitudinal swing arm

a. Put the transmission lifting device (refer to 3.3.5.1 List of special tools) below the rear brake caliper mounting plate and support it.

b. Unscrew the fixing bolt/nut (see arrow A) of the rear damper assembly.

c. Unscrew the fixing bolts (see arrow B), and disengage the rear damper assembly mounting plate ① from the rear brake caliper mounting plate.

- Tightening torque of bolt/nut (see arrows **A**): **110±6 N·m**

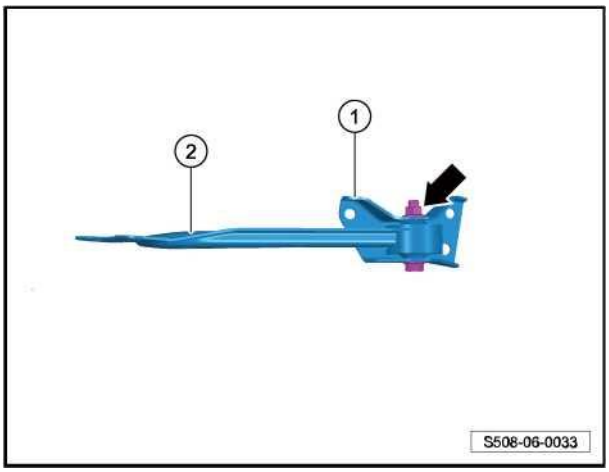


d. Unscrew bolts (see arrow A) connecting the longitudinal swing arm and the rear brake caliper mounting plate.

e. Unscrew bolts (see arrow B) connecting the rear longitudinal swing arm mounting bracket and the body.

f. Remove the longitudinal swing arm and the rear longitudinal swing arm mounting bracket assembly ①.

- Tightening torque of bolt (see arrow **A**): **110±6 N·m**
- Tightening torque of bolt (see arrow B): 300±15 N·m



g. Unscrew the fixing bolt/nut (see arrow), and remove the rear longitudinal swing arm mounting bracket ① and the longitudinal swing arm ②.

• Tightening torque of bolt/nut (see arrow A): **200±10Nm**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

3.3.6.8 Removal and installation of rear hub bearing

Disassembly procedures

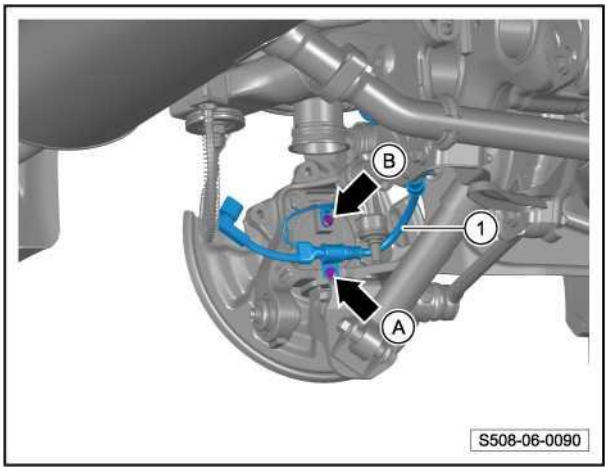
Tip:

The removal and installation procedures are only for the rear left hub bearing, which can be basically referred to for the rear right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

3 Remove the rear left brake disc. Refer to 3.8.5.4 Removal and installation of rear brake disc

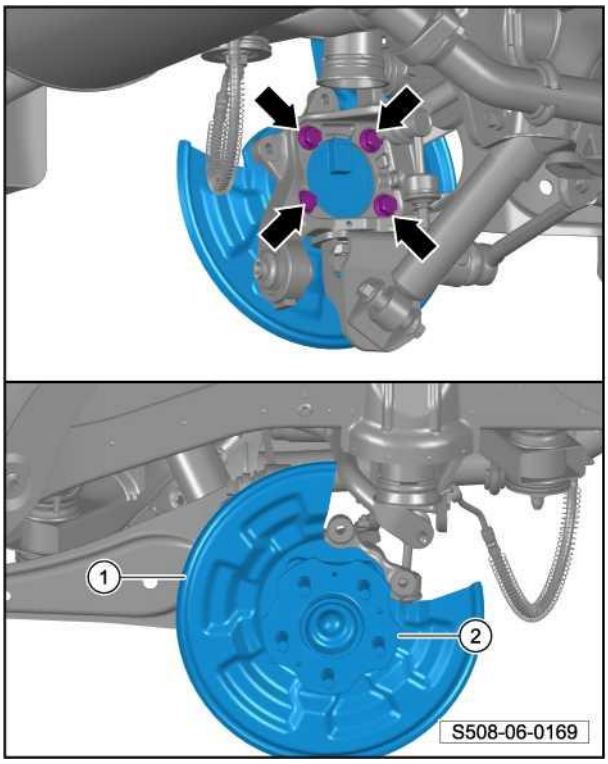


4 Remove the rear hub bearing

a. Unscrew the fixing bolt (see arrow A), and disengage the rear wheel speed sensor from the rear brake caliper mounting plate.

b. Unscrew fixing bolt (see arrow B), and remove the rear wheel speed sensor assembly ①.

- Tightening torque of bolt (see arrow **A**): **10±1 N·m**
- Tightening torque of bolt (see arrow **B**): **10±1 N·m**



c. Unscrew the fixing bolts (see arrows), and remove the rear brake disc dirt proof trunk ① and rear hub bearing ②.

Tip:

When removing the rear wheel hub bearing ②, if it cannot be removed because of corrosion, knock to release it with a rubber hammer.

Installation procedures

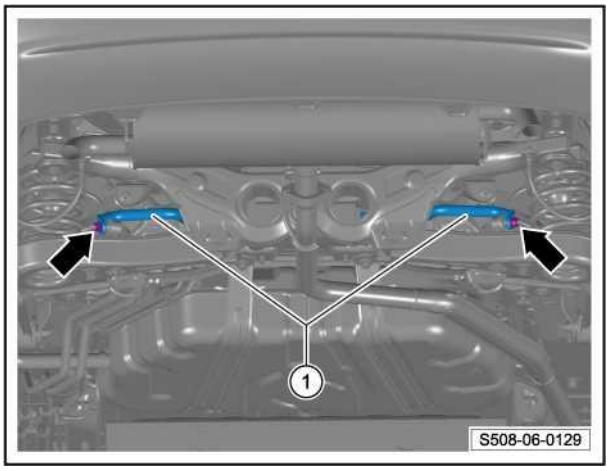
The installation procedure is to be performed basically in the reverse order:

3.3.6.9 Removal and installation of rear stabilizer bar

Disassembly procedures

Tip:

When removing the rear stabilizer bar joint, the ball pin of the rear stabilizer bar joint shall be fixed with an Allen wrench to avoid rotation of ball pin and nut at the same time.

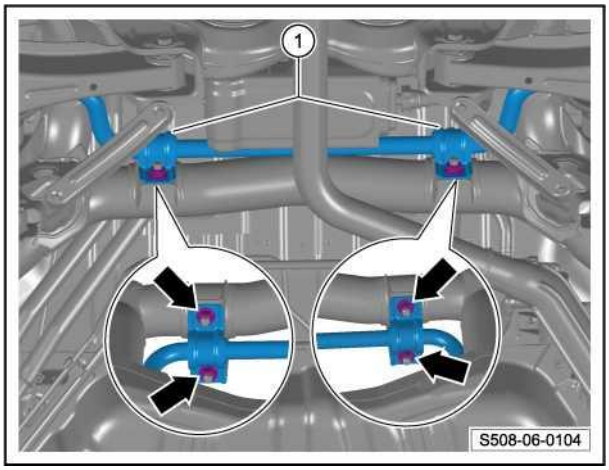


1 Remove the rear stabilizer bar

a. Lift the vehicle.

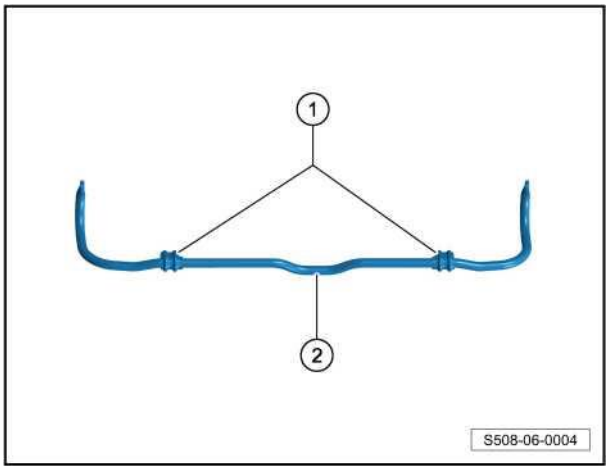
b. Unscrew nuts (see arrows) connecting the left and right rear stabilizer bar joint assemblies ① and the rear stabilizer bar, and disengage them from the rear stabilizer bar.

- Tightening torque of nut: **100±5 N·m**



c. Unscrew fixing nuts (see arrows), and remove the rear stabilizer bar and stabilizer bar bushes ①.

- Tightening torque of nut: **110±6 N·m**



d. Disengage stabilizer bar bushes ① from the stabilizer bar ②.

Installation procedures

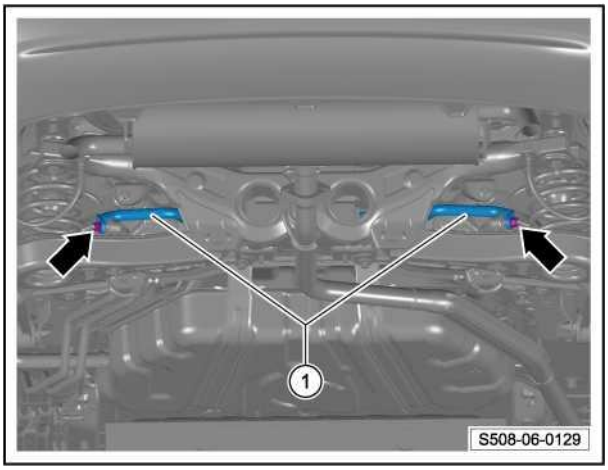
The installation procedure is to be performed basically in the reverse order:

3.3.6.10 Removal and installation of rear stabilizer bar bush

Disassembly procedures

Tip:

When removing the rear stabilizer bar joint, the ball pin of the rear stabilizer bar joint shall be fixed with an Allen wrench to avoid rotation of ball pin and nut at the same time.

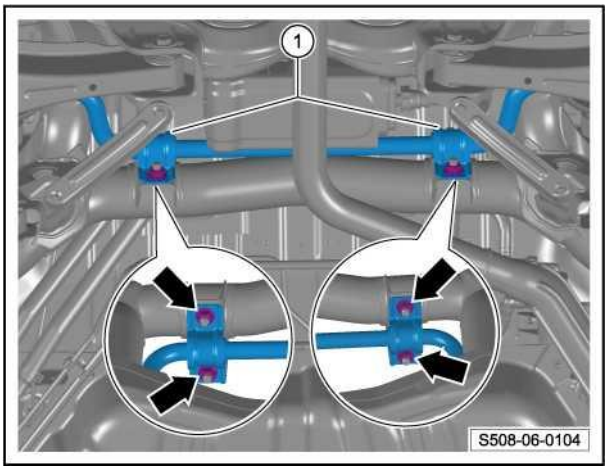


1 Remove the rear stabilizer bar bush

a. Lift the vehicle.

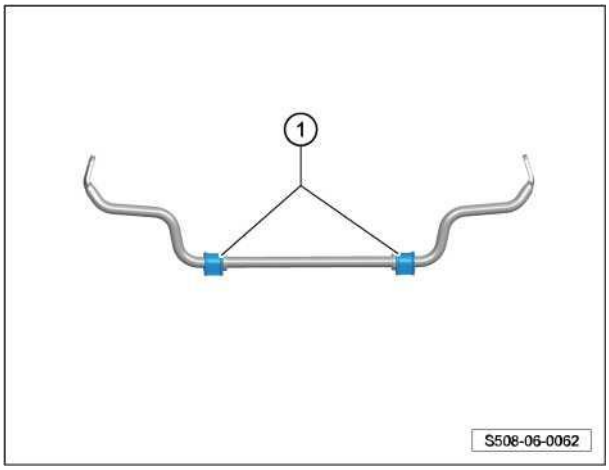
b. Unscrew nuts (see arrows) connecting the left and right rear stabilizer bar joint assemblies and the rear stabilizer bar ①, and disengage them from the rear stabilizer bar.

- Tightening torque of nut: **100±5 N·m**



c. Unscrew fixing nuts (see arrows), and remove the rear stabilizer bar mounting brackets ①.

- Tightening torque of nut: **110±6 N·m**



d. Remove the rear stabilizer bar bush ①.

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

3.3.6.11 Removal and installation of rear subframe assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

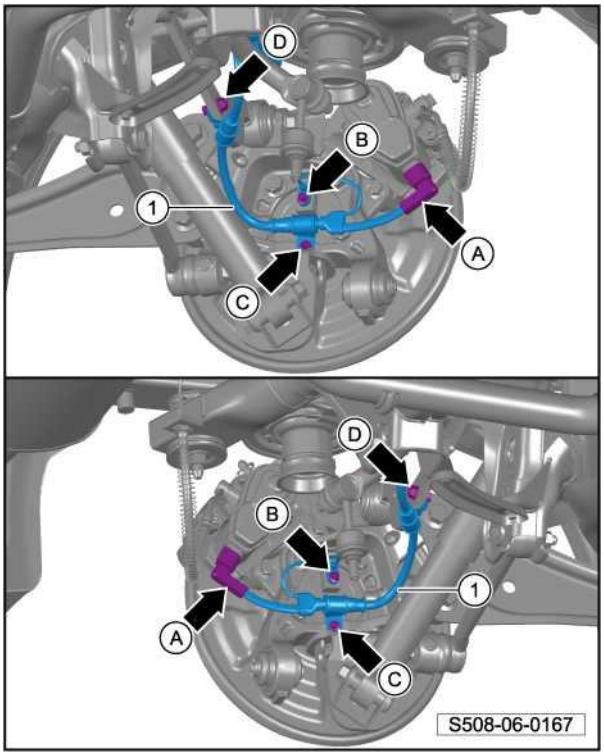
4 Remove the rear left/right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

5 Remove the front silencer assembly. Refer to 2.5.8.5 Removal and installation of front silencer assembly

6 Remove the rear coil spring. Refer to 3.3.6.2 Removal and installation of rear coil spring

7 Remove the rear left/right lower swing arm assembly. Refer to 3.3.6.4 Removal and installation of rear lower swing arm assembly

8 Remove the rear left/right brake hose. Refer to 3.8.5.5 Removal and installation of rear brake hose



9 Remove the rear subframe assembly

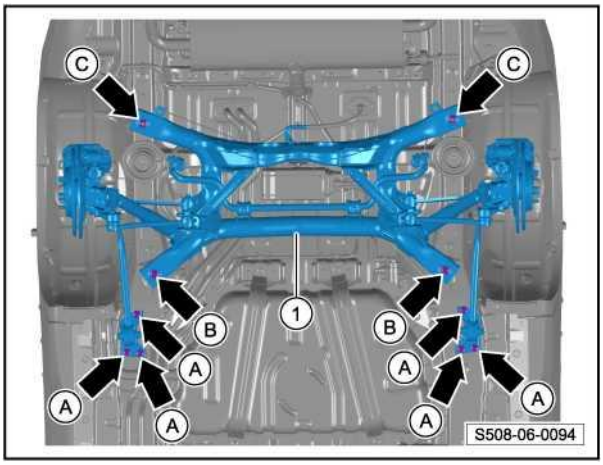
a. Disconnect the left and right EPB drive motor connectors (see arrow A).

b. Unscrew the fixing bolts (see arrow B) of the left and right rear wheel speed sensors.

c. Unscrew the fixing bolts (see arrow C) of the left and right rear wheel speed sensor harness supports.

d. Unscrew the fixing bolts/nuts (see arrow D) of the left and right rear wheel speed sensor assemblies and the rear upper swing arm, and remove the left and right rear wheel speed sensor assembly ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**
- Tightening torque of bolt (see arrow **C**): **10±1 N·m**
- Tightening torque of nut (see arrow **D**): **25±2 N·m**



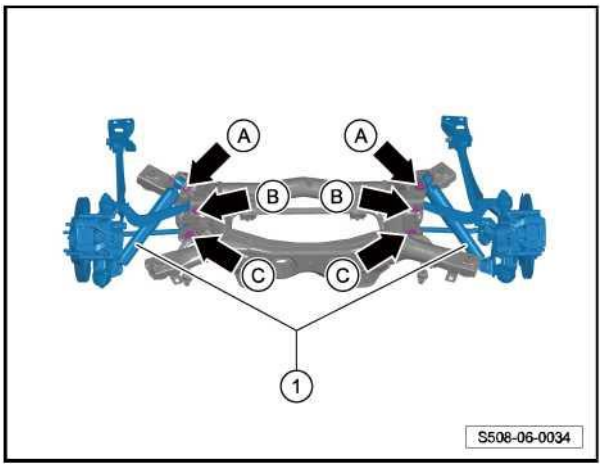
e. Put the transmission lifting device (refer to 3.3.5.1 List of special tools) below the rear subframe assembly to support it and its accessory ①.

f. Unscrew fixing bolts (see arrow A), and disengage the rear longitudinal swing arm from the body.

g. Unscrew the fixing bolts (see arrow B) and nuts (see arrow C), and disengage the rear subframe assembly and its accessory ① from the body.

h. Slowly lower the transmission lifting device, and remove the rear subframe assembly and its accessory ①.

- Tightening torque of bolt (see arrow **A**): **110±6 N·m**
- Tightening torque of bolt (see arrow **B**): **200±10Nm**
- Tightening torque of nut (see arrow **C**): **200±10 N·m**



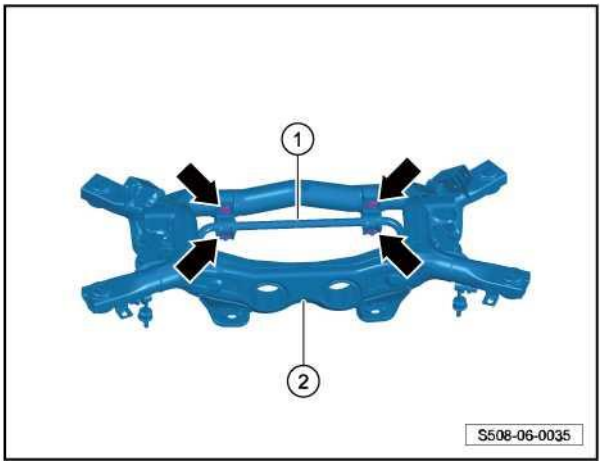
i. Unscrew the fixing bolts/nuts (see arrow A), and disengage the rear damper from the rear subframe assembly.

g Unscrew the fixing bolts/nuts (see arrow B), and disengage the rear upper swing arm from the rear subframe assembly.

k. Unscrew the eccentric fixing bolts/nuts (see arrow C), and disengage the rear toe-in control arm assembly from the rear subframe assembly.

l. Remove the rear brake assembly and its accessory ①.

- Tightening torque of bolt/nut (see arrows **A**): **110±6 N·m**
- Tightening torque of bolt/nut (see arrow **B**): **110±6N·m**
- Tightening torque of bolt/nut (see arrow **C**): **130±5 N·m**



m. Unscrew the fixing nuts (see arrows), and remove the rear stabilizer bar ① and the rear subframe assembly ②.

- Tightening torque of nut: **110±6 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

-After installation, add the brake fluid. See 1.4.3.10 Brake fluid inspection.

-After installation, bleed the four tires. See 1.4.3.53 Brake system bleeding.

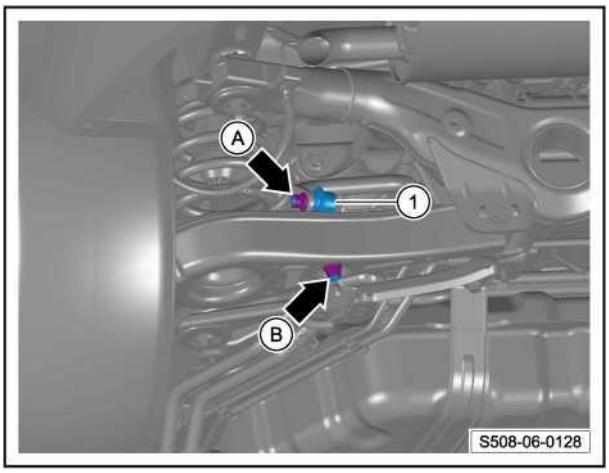
3.3.6.12 Removal and installation of rear stabilizer bar joint assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left stabilizer bar joint assembly, which can be basically referred to for the rear right one.

When removing the rear stabilizer bar joint, the ball pin of the rear stabilizer bar joint shall be fixed with an Allen wrench to avoid rotation of ball pin and nut at the same time.



1 Remove the rear stabilizer bar joint assembly

a. Lift the vehicle.

b. Unscrew the nut (see arrow A) connecting the rear transverse stabilizer bar assembly and the rear stabilizer bar.

c. Unscrew the nut (see arrow B) connecting the rear lower swing arm assembly and the rear stabilizer bar joint assembly.

d. Remove the rear stabilizer bar joint assembly ①.

• Tightening torque of nut (see arrow **A**): **100±5N·m**

• Tightening torque of nut (see arrow **B**): **100±5 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

3.4 Wheels and tires

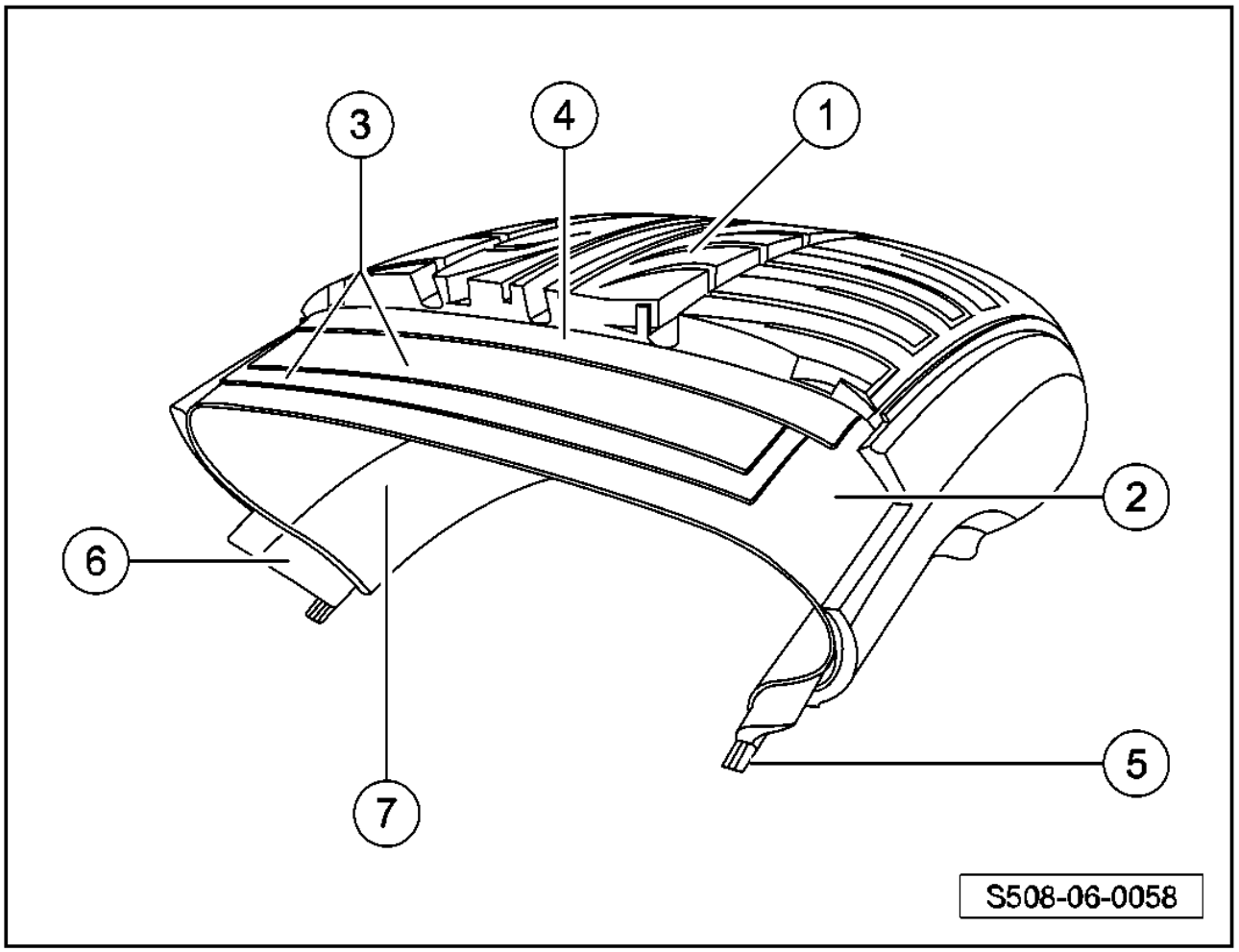
3.4.1 Specification

3.4.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Installation of wheel	Wheel nut M12×1.25	120±6

3.4.2 Description and operation

3.4.2.1 Tire structure



1. Tread

a. Tire tread is the place where the tire contacts the road. Wheel drive, braking, etc. is realized by means of friction. The tire tread shall perform well in respect of resistance to wear, puncture and impact, and heat dissipation.

2. Tire body

a. It refers to tire ply which is the main stressed tire member. It shall be highly impact-resistant and flexible.

3. Belt ply

a. It refers to the wirecord fabric between tire tread and body. It is used to protect the tire body, keep the road-contacting tread from deformation and improve wear resistance of the tire as well as riding stability.

4. Cap ply

a. It refers to a special ply over the belt. It restrains the belt from moving as the wheel runs and in this way maintains the belt in place and the tire stable when the wheel runs at high speed.

5. Tire bead

a. It is made of glued wires intertwined to form certain shape (quadrangle or hexagon). It is used to facilitate tire installation to and fixing on the wheel.

6. Triangle strip

a. It refers to the filler on the bead ring and it is used to prevent the bead from rupture, reduce bead impact, protect the bead and stop air from entering during tire forming.

7. Inner liner

a. It refers to an airtight component used on tubeless tires which is made of special rubber. It plays a role the same as inner tube.

3.4.2.2 Meaning of sidewall identification and description of tire pressure

Meaning of Sidewall Identification

Example: 235/50 R19 99 V

235—Nominal section width (unit: mm)

50—Flatness ratio (height-width ratio: %)

R—Radial structure

19—Nominal diameter of rim (unit: in)

99—Load index

V—Speed grade (240 km/h)

List of Common Speed Grades

Speed level	Maximum speed (km/h)
Q	160
R	170
S	180
W	270
Y	300
ZR	Above 240

Description of tire pressure

As the tire pressure plays a decisive role in tire abrasion, fault and damage, the tire pressure must be maintained at the standard value and checked regularly to ensure driving safety.

– As load capacity of a tire is commensurate with its inflation pressure, a reasonable tire pressure must be determined based on load condition of the vehicle. Climate and seasonal changes should not be a reason to adjust tire pressure.

– In the early stage of use, the rim dimension of a new tire may change due to heat caused by flexing movement, resulting in reduction of tire pressure. Therefore, check and adjust the tire pressure after driving for 2,000-3,000 km.

– Increase the tire pressure by 10%-15% when driving at high speed for a long time.

1. Hazards of insufficient pressure

Insufficient pressure will result in aggravated deformation, increased heat and significantly shortened service life of the tire as well as the following problems and potential safety hazards:

a. Excessive wear of tire shoulder

b. Higher risk of tire bulge under impact

c. Reduced adhesive force among tire components which could cause ply separation

d. Side wall grinding and damage if the case is serious

e. Excessive wear between tire bead and rim, and rim damage due to excessive tire runout

f. Higher fuel consumption as rolling resistance increases

2. Hazards of excessive pressure

Excessive pressure will result in reduced area of tread - ground contact face, increased stiffness of tire body and degraded buffer performance as well as the following problems and potential safety hazards:

a. Excessive wear at tread center

b. Higher risk of tire crack or even flat tire under external impact

c. Reduced vehicle controllability and higher risk of swerving, coasting, etc. due to decrease of road-contacting area

d. Reduced riding comfort

e. Poor ride control and chassis damage due to long-time driving under over-inflated state

3. Uneven pressure of the tires on the same suspension may result in:

a. Uneven braking force on the left and right sides

b. Steering deviation

c. Reduced maneuverability.

d. Deviation during acceleration

e. Vehicle drifting during running

3.4.2.3 Tire rotation

Notes

In case of obvious uneven abrasion on any tire, find the reason or such abrasion fault. It is suggested to simultaneously check the balancing conditions of tire and wheel assemblies at tire rotation.

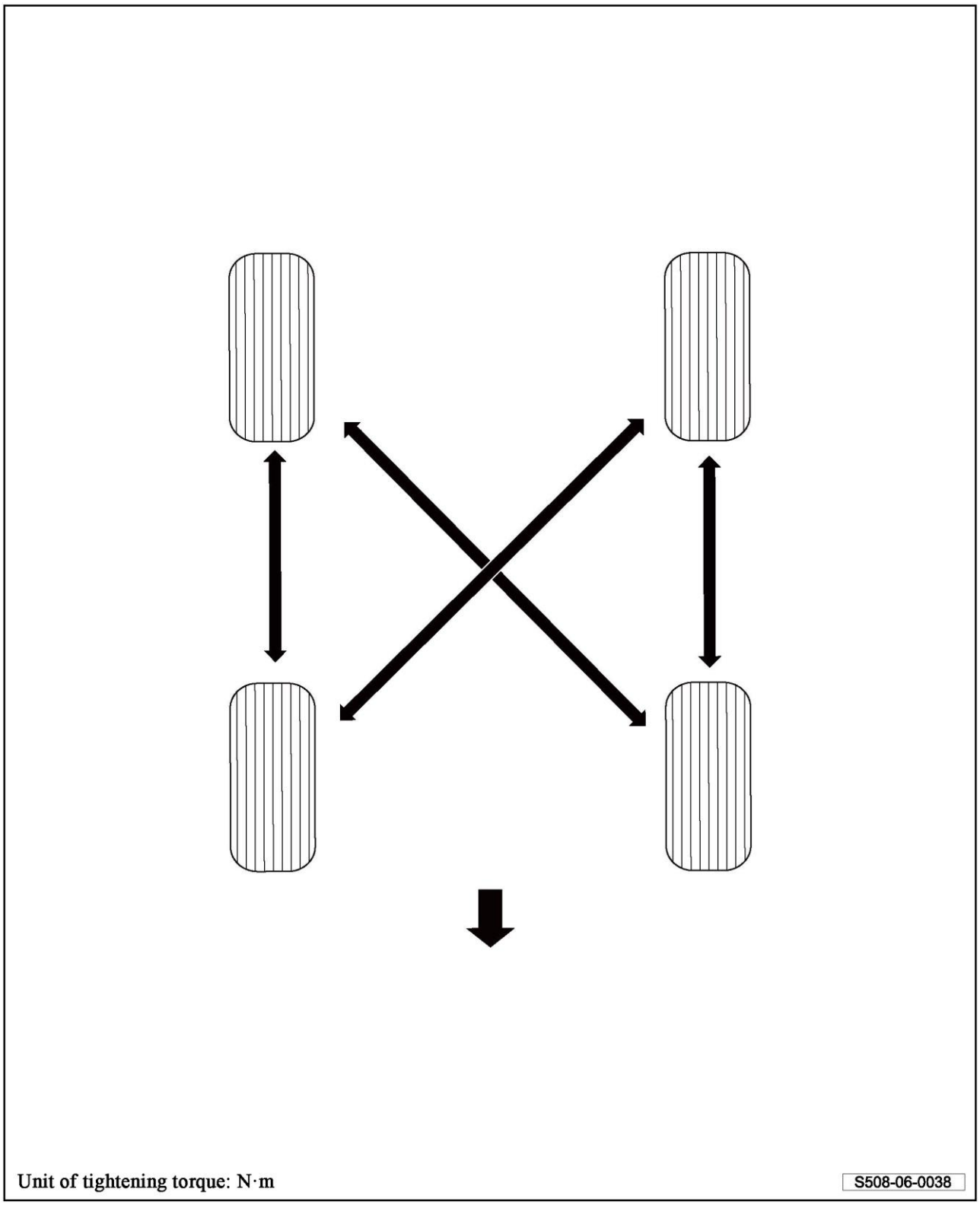
1 The front wheels differ greatly from the rear wheels in abrasion as the load on them is different. To avoid unidirectional abrasion, the tire shall be rotated regularly as appropriate to ensure even abrasion and prolong the service life of tires. It is suggested to carry out tire rotation every 10,000km. The main purposes of tire rotation are as follows:

   a. Ensure even tire wear and average tire fatigue as well as guarantee vehicle stability and high fuel economy.

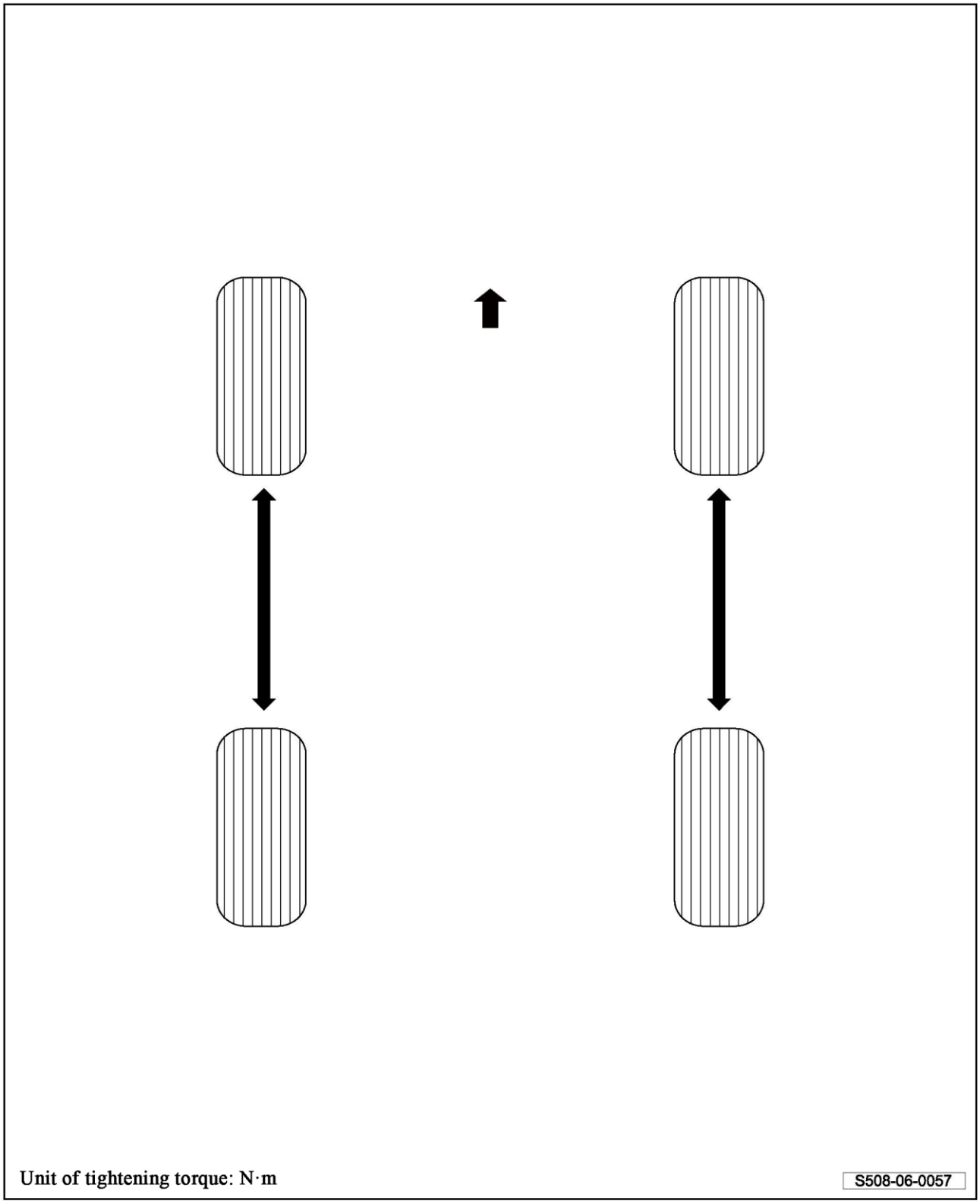
   b. Inspect tire condition and find out damages (if any) in time to prevent accidents.

2 Rotate the wheel assembly as shown in the figure below.

Swap the wheel assembly "without rotation direction" crosswise as shown below.



Swap the wheel assembly "without rotation direction" in parallel as shown below.



3.4.3 Diagnosis information and steps

3.4.3.1 Wheel jumping and vibration

The following table shows the component which may have fault. Check each component, and replace the component if necessary.

Symptom	Inspection	Operation
Wheel jumping and vibration	1. Check whether the tire surface has any obvious bulge.	Replace the tire. Refer to 3.4.4.2 Removal and installation of wheel tire
	2. Check whether the unbalance of wheel and tire assembly exceeds the limits.	Perform the proper dynamic balance of the wheel and tire assembly. Refer to 3.4.4.3 Wheel dynamic balance.
	3. Check whether the wheel radial runout exceeds the specified value.	Replace the wheel. Refer to 3.4.4.1 Removal and installation of wheel assembly
	4. Check whether the damper is worn down or failed.	Replace the front damper assembly. Refer to 3.2.6.4 Removal and installation of front damper assembly. Replace the rear damper assembly. Refer to 3.3.6.1 Removal and installation of rear damper assembly.

3.4.3.2 Tire side-sway

The following table shows the component which may have fault. Check each component, and replace the component if necessary.

Symptom	Inspection	Operation
Tire side-sway	1. Check whether the wheel transverse runout exceeds the specified value.	Replace the wheel. Refer to 3.4.4.1 Removal and installation of wheel assembly
	2. Check whether the unbalance of wheel and tire assembly exceeds the limits.	Perform the proper dynamic balance of the wheel and tire assembly. Refer to 3.4.4.3 Wheel dynamic balance.
	3. Check whether the internal steel belt of the tire is not straight.	Replace the tire. Refer to 3.4.4.2 Removal and installation of wheel tire

3.4.3.3 Excessive tire sidewall wear

The following table shows the component which may have fault. Check each component, and replace the component if necessary.

Symptom	Inspection	Operation
Excessive tire sidewall wear	1. Whether the front wheel alignment is correct	Realign the front wheels. Refer to 3.5.1.5 Operating steps of four-wheel alignment.
	2. Check whether the tires are regularly rotated.	Rotate the tires according to regulations. Refer to 3.4.2.3 Tire rotation.

3.4.3.4 Excessive tire crown wear

The following table shows the component which may have fault. Check each component, and replace the component if necessary.

Symptom	Inspection	Operation
Excessive tire crown wear	1. Check whether the tire pressure is too high.	Deflate the tire to the specified pressure
	2. Check whether the tires are regularly rotated.	Rotate the tires according to regulations. Refer to 3.4.2.3 Tire rotation.

3.4.3.5 Excessive tire shoulder wear

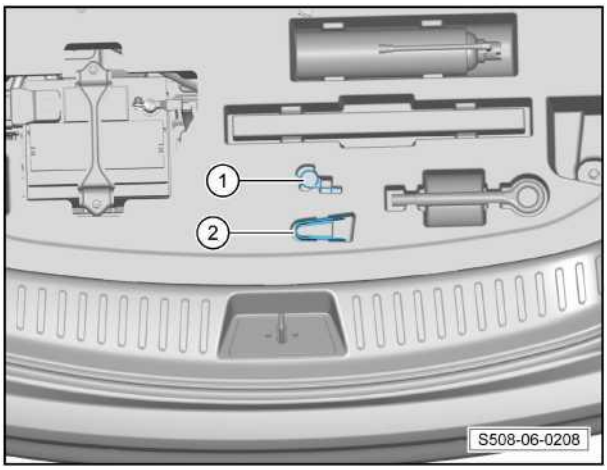
The following table shows the component which may have fault. Check each component, and replace the component if necessary.

Symptom	Inspection	Operation
Excessive tire shoulder wear	1. Check whether the tire pressure is not enough.	Inflate the tire to the specified pressure
	2. Check whether the tires are regularly rotated.	Rotate the tires according to regulations. Refer to 3.4.2.3 Tire rotation.

3.4.4 Removal and installation

3.4.4.1 Removal and installation of wheel assembly

Disassembly procedures



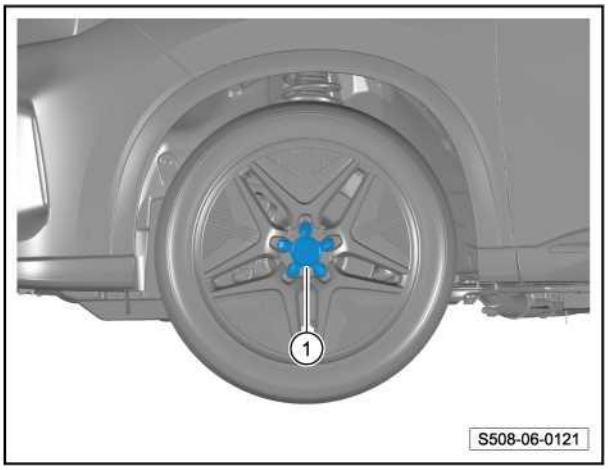
1 Remove the wheel assembly.

a. Take out the wheel trim cover pull ring from the driver's tools box ①.

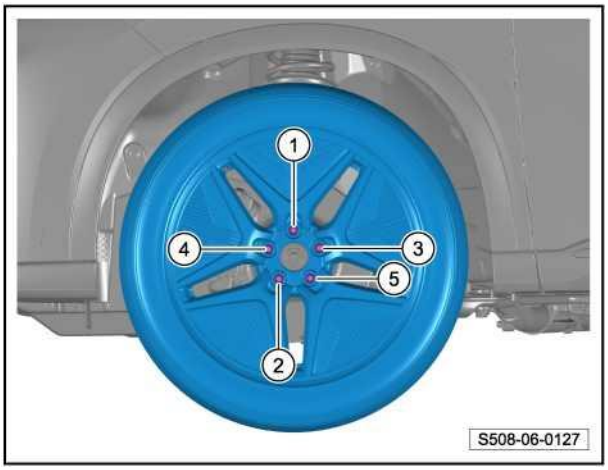
Tip:

The wheel nut trim cover clip ② is required for the low-end configuration 18-inch wheels.

The removal and installation procedures are only for the high-end configuration 19-inch wheel assembly, which can be referred to for the low-end configuration 18-inch wheel assembly.



b. Remove the wheel trim cover with the wheel trim cover pull ring ①.



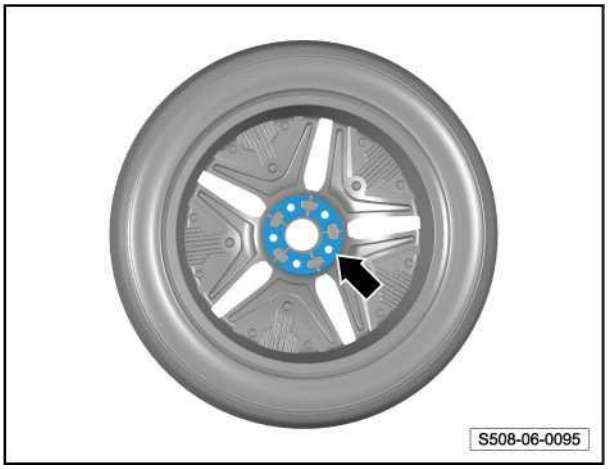
c. Unscrew fixing nuts ①-⑤ of the wheel in turn in sequence.

d. Lift the vehicle.

e. Unscrew fixing nuts of the wheel, and remove the wheel.

- Tightening torque of nut: **120±6N·m**

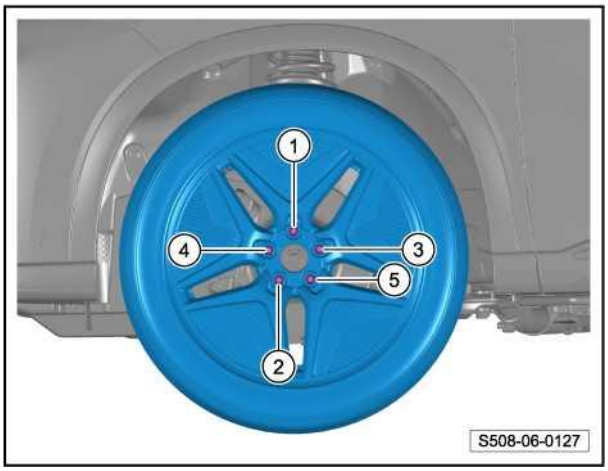
Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Conduct anti-corrosion treatment to the centering part (see arrow) of wheel centering seat.

– Do not wax the contact surface of wheel/hub. It is forbidden to use lubricant or preservative for treatment of wheel nut threads.

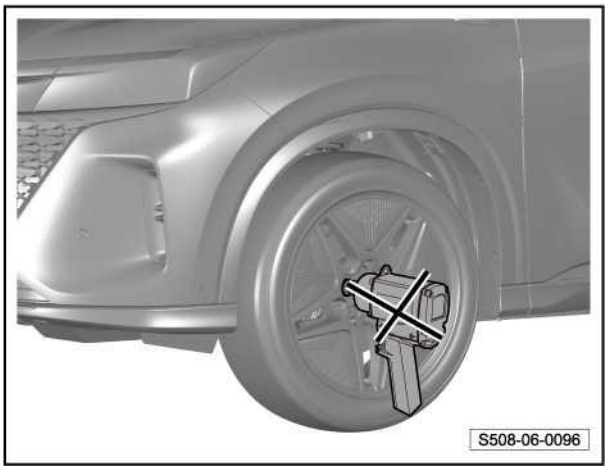


– When assembling the wheel, firstly screw in all wheel nuts by hand.

– Tighten the wheel fixing nuts successively and diagonally from ① to ⑤ with a torque of 30N·m.

– With the car free of load, tighten the wheel bolt to a specified torque by using a torque wrench.

- Tightening torque of nut: **120±6N·m**



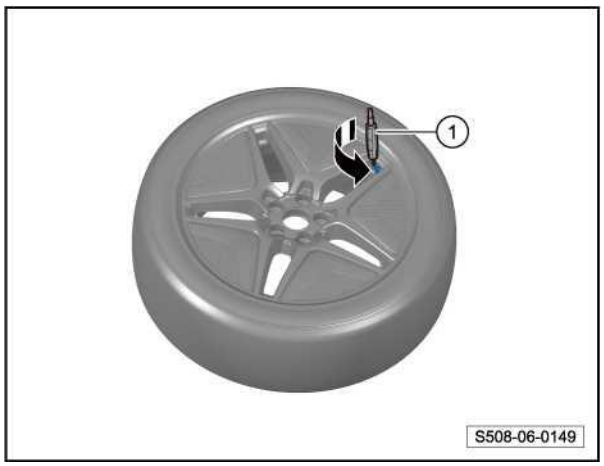
Tip:

Never use impact wrench to tighten the wheel nut.

3.4.4.2 Removal and installation of tire

Disassembly procedures

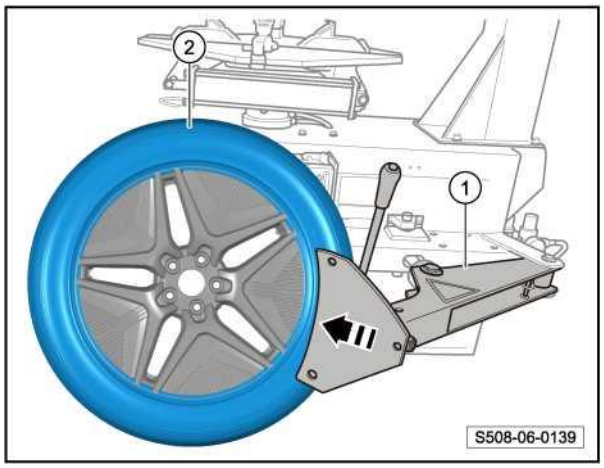
1 Remove the wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the tire

a. Unscrew the valve cap.

b. Use an air discharging tool ① to unscrew the valve core in the direction of arrow and completely discharge the air.

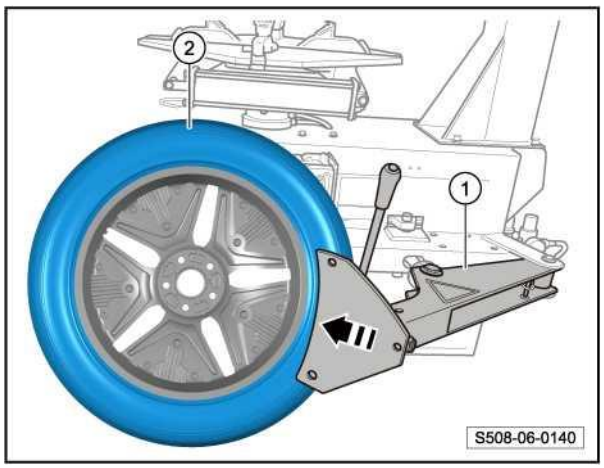


c. Use the tire changer ① to press out the tire ② from the rim groove in direction of the arrow.

Tip:

When using the tire changer, do not touch the rim to avoid damage to the rim.

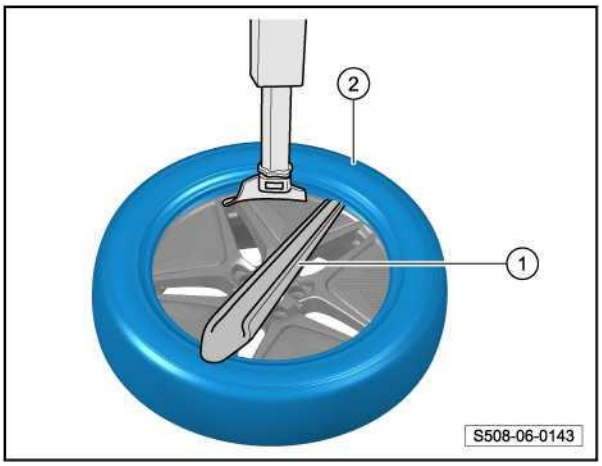
When using the tire changer, bypass the valve position to avoid damage to the tire pressure sensor.



d. Rotate the tire ②, use the tire changer ① to press the tire ② out of steel rim groove in the direction of arrow.

Tip:

When using the tire changer, do not touch the rim to avoid damage to the rim.



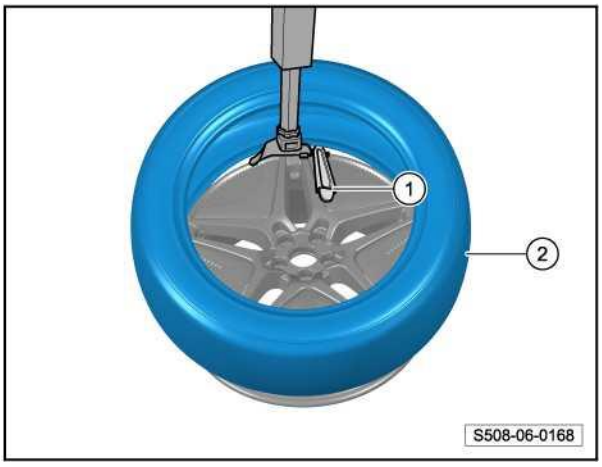
e. Use a tire iron ① to prize out the tire ②. The tire ② can be removed by pressing the rotation switch.

Tip:

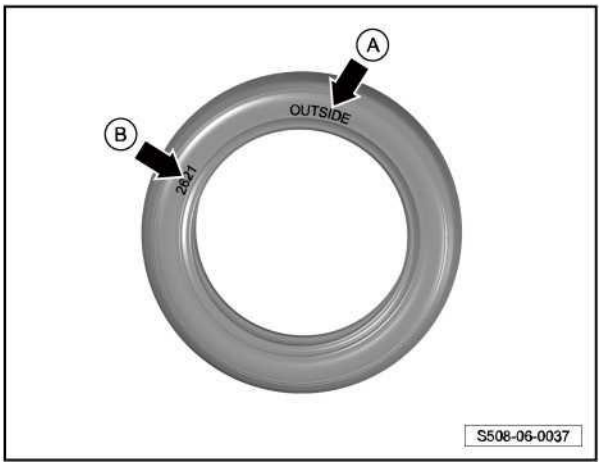
Pay attention to the distance between the head of tire changer and the rim during the process of removal to avoid damage to the rim surface.

Clamp the rim securely when removing the tire. Start operation after proper checking. Never separate the tire by hand when the wheel is rotating.

When removing and installing the tire, take care not to damage the lip of tire in order to prevent air leakage.



f. Use a tire iron ① to prize out the tire ②. The tire ② can be removed by pressing the rotation switch.

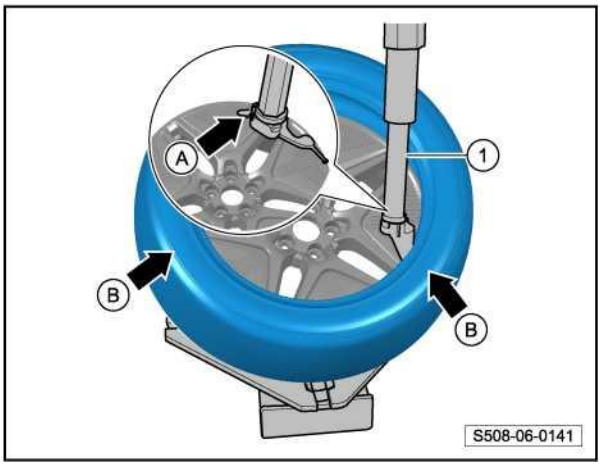


Installation procedures

1 Install tires

a. Before installing a tire, apply glycerin or soapy water on the bead - rim contact surface along the circumference.

b. When assembling the wheel, make the side of it marked with “OUTSIDE” (see arrow A) or the production cycle face outward.



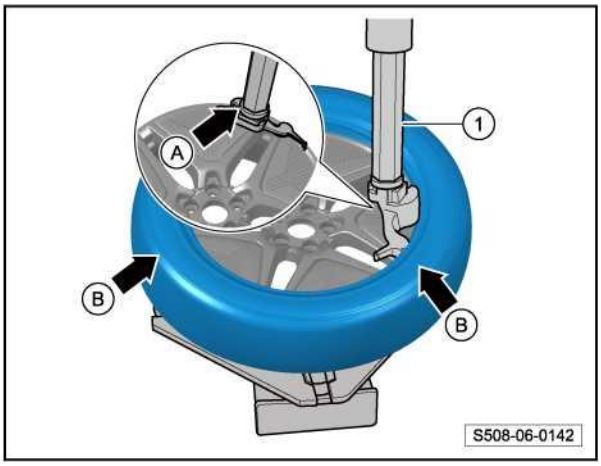
c. Place the tire above the position (see arrow A) of the tire changer ①.

d. Press the position (see arrow B) of the tire and tramp the rotary switch to press the inner side of the tire onto the rim.

Tip:

Note the distance between the head of tire changer and the rim during tire installation to avoid damage to the rim surface.

Clamp the rim securely when pressing the tire, and start operation after proper checking.



e. Place the tire above the position (see arrow A) and below the position (see arrow B) of the tire changer ①.

f. Press the position (see arrow B) of the tire and tramp the rotary switch to press the outer side of the tire onto the rim.

g. Remove the wheel assembly from the tire changer ①, inflate the tire to a pressure between 100kPa and 200kPa until you hear the sound of the tire bead slipping over the rim dome, and tighten the valve core.

h. Adjust the inflation pressure to specified value.

i. Balance the wheel assembly dynamically.

j. Install the wheel assembly.

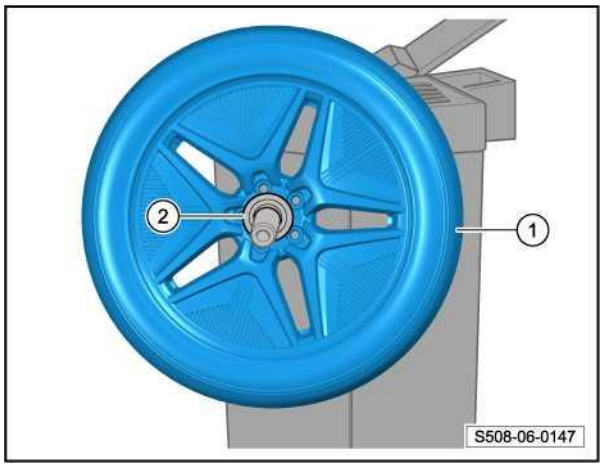
k. After installing the wheel assembly, match the tire pressure sensor.

Tip:

Pay attention to the distance between the head of tire changer and the rim during the process of installation to avoid damage to the rim surface.

3.4.4.3 Dynamic balance for wheel

Step



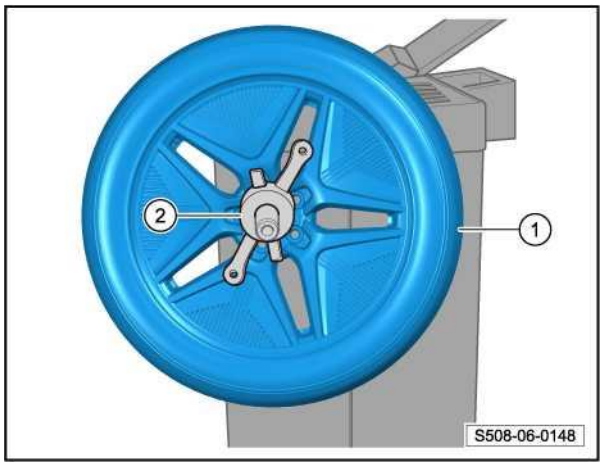
1 Dynamic balance for wheel

a. Install the wheel assembly ① onto the dynamic balancer.

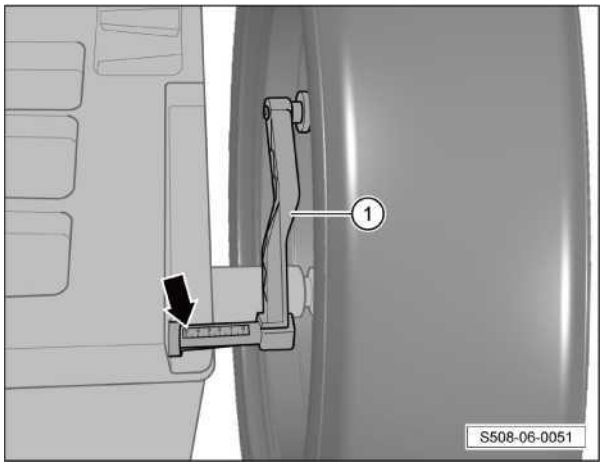
b. Choose an appropriate cone ②, and install it into the center hole of the wheel assembly.

Notes

Align the cone with the center hole; otherwise, incorrect data may be obtained.

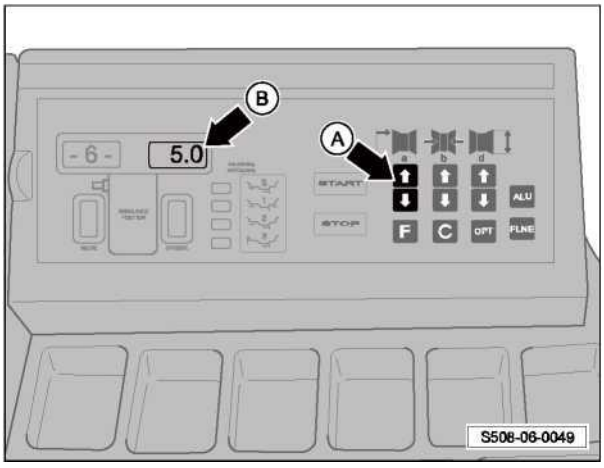


c. Lock the wheel assembly ① with the locking device ②.

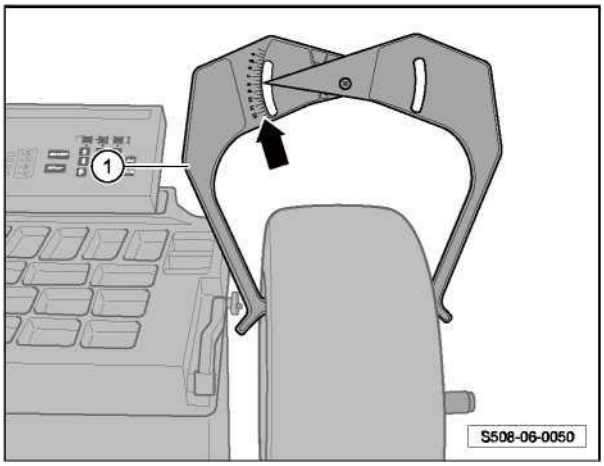


d. Turn on the power supply of the balancer.

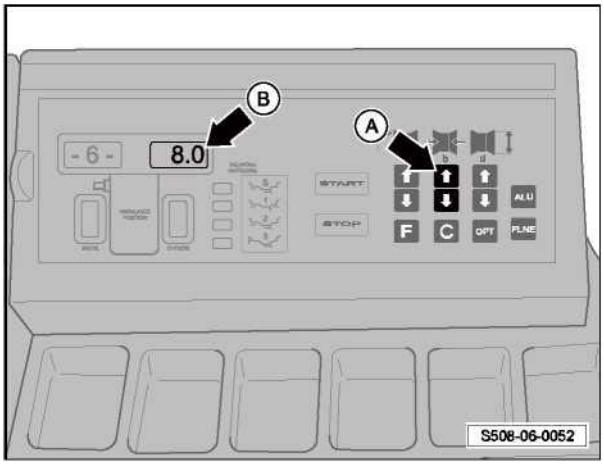
e. Pull the ruler ① to measure the distance between the rim and the balancer, so as to obtain the corresponding distance data (see arrow).



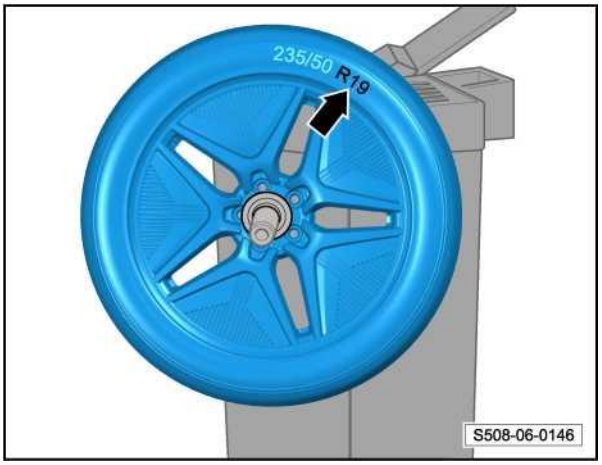
f. Operate on the balancer panel (see arrow A) to set the distance data between the rim and the balancer, and then the input value displays (see arrow B).



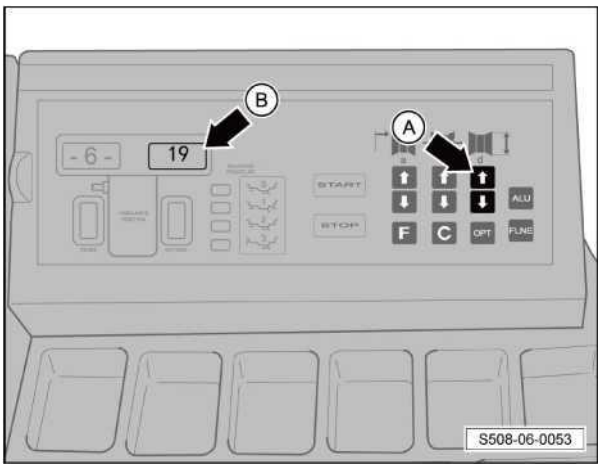
g. Measure the rim width with the ruler ①, to obtain the corresponding width data (see arrow).



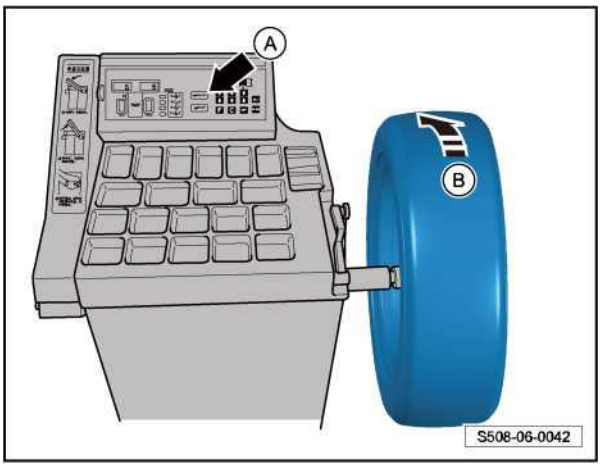
h. Operate on the balancer panel (see arrow A) to set the width data of the rim, and then the input value displays (see arrow B).



i. Check the diameter of the tire rim (see arrow).



j. Operate on the balancer panel (see arrow A) to set the diameter data of the rim, and then the input value displays (see arrow B).

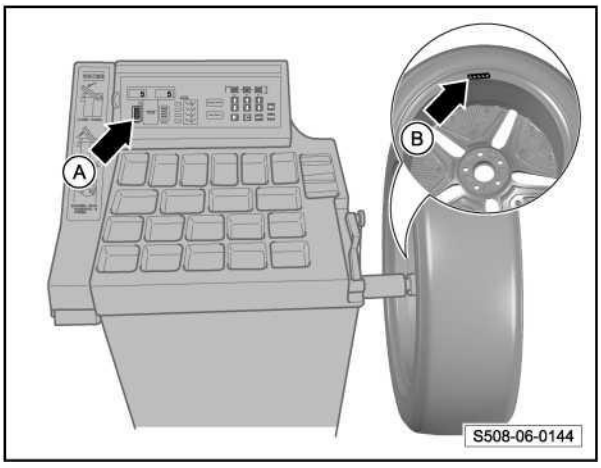


k. Press “START” (see arrow A), the balancer starts to drive the wheel to rotate along the direction of arrow B, and the measurement begins.

l. After the wheel stops automatically, the deviation value of it displays on the panel.

Notes

When the wheel is rotating, do not approach it to avoid danger.

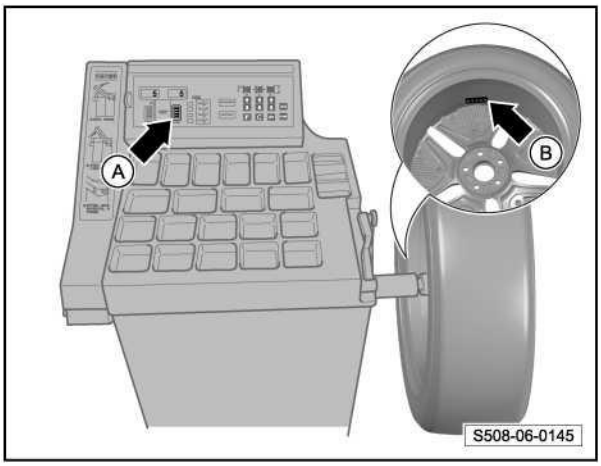


m. Rotate the wheel with a hand. When the right progress bar on the balancer panel is full (see arrow A), add the corresponding counterbalance internally (see arrow B).

Notes

Before pasting the counterbalance, remove the dust on the rim to avoid accidents when the counterbalance falls off due to loose pasting when the wheel rotates at a high speed.

When pasting the counterbalance, take the rotating shaft of the balancer as the center, and paste the counterbalance on the rim right above the rotating shaft.

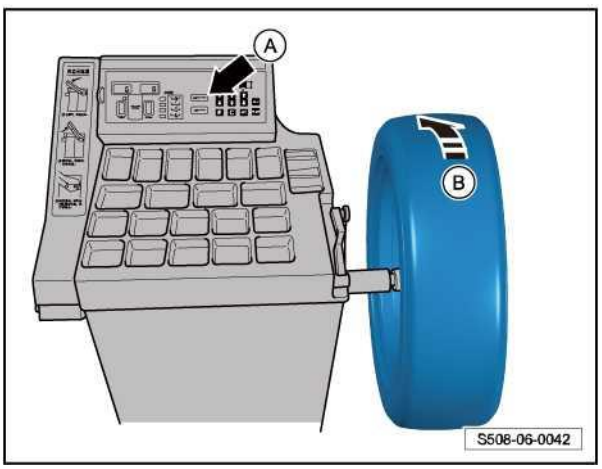


n. Rotate the wheel with a hand. When the left progress bar on the balancer panel is full (see arrow A), add the corresponding counterbalance externally (see arrow B).

Notes

Before pasting the counterbalance, remove the dust on the rim to avoid accidents when the counterbalance falls off due to loose pasting when the wheel rotates at a high speed.

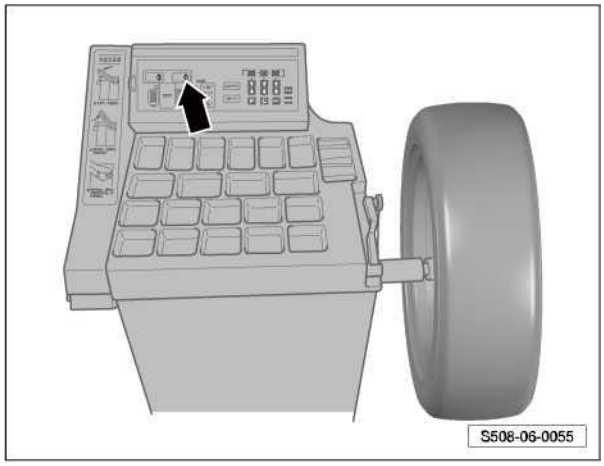
When pasting the counterbalance, take the rotating shaft of the balancer as the center, and paste the counterbalance on the rim right above the rotating shaft.



o. Press “START” (see arrow A) again, and the balancer starts to drive the wheel to rotate along the direction of arrow B.

Notes

When the wheel is rotating, do not approach it to avoid danger.



p. After the wheel stops automatically, the value of “00” displays on the panel (see arrow), which indicates that the dynamic balance is achieved.

3.5 Four-wheel alignment

3.5.1 Description and operation

3.5.1.1 Overview of four-wheel alignment

Special Tools and Repair Appliance

Four-wheel aligner approved by GAC MOTOR.

In each measurement, both the front and rear suspensions must be measured. Otherwise it cannot be ensured that the steering wheel is in the middle position. Measure and position with a four-wheel alignment tester.

All the information of measuring and positioning are available in the four-wheel alignment tester computer, including all the information update packages, provided by the four-wheel aligner manufacturer.

Tip:

The vehicle measurement cannot be conducted until the driving mileage reached 1000 km to 2000 km, as the subsidence process of coil spring will be ended after reaching such mileage. During adjustment, try best to obtain the accurate standard value.

Wheel alignment must be conducted under following situations:

- The driving performance is defected.
- There is damage due to accident and relevant components are replaced.
- Remove or replace the relevant suspension components.
- There is single tire wear or deviation.

Wheel alignment shall be conducted after replacing the following parts:

Front suspension parts and components	Whether alignment needed	
	Yes	No
Front swing arm assembly	√	
Front subframe welding assembly	√	
Front steering knuckle assembly	√	
Drive shaft	√	
Front damper assembly	√	
Steering box assembly	√	
Rear suspension parts and components	Whether alignment needed	
	Yes	No
Rear subframe assembly	√	
Rear coil spring	√	
Rear damper assembly	√	
Rear lower arm assembly	√	
Rear toe-in arm assembly	√	
Rear longitudinal swing arm	√	
Rear brake caliper mounting plate	√	

3.5.1.2 Prerequisites of alignment inspection

Check whether the wheel suspension, hub bearing and steering system are damaged and whether the clearance is too large.

The maximum allowable deviation of tire tread depth of the same suspension is 2mm.

Adjust the tire inflation pressure to specified value.

The vehicle should be in empty weight status.

Spare wheel and tool box are at corresponding fixed positions on the vehicle.

The fluid reservoir of the window glass and front combination lamp washer must reach the specified value.

Notes

Install and calibrate the measuring equipment. Pay attention to the operation instructions provided by the equipment manufacturer.

If necessary, request the four-wheel aligner manufacturer for usage instructions.

As time goes by, the four-wheel alignment platform and aligner may deviate from its initial measuring accuracy/set value.

In addition to the regular maintenance of the four-wheel alignment platform, aligner and computer, they shall be checked at least once a year, and adjustment shall be performed if necessary.

Be careful when using the high-precision equipment.

3.5.1.3 Preparation for alignment measurement

Tip:

The rim offset must be compensated; otherwise the measuring result may be not correct.

The toe-in cannot be correctly adjusted without rim offset compensation; therefore, the instructions provided by the four-wheel aligner must be followed.

1. Perform rim offset compensation.

2. Return the steering wheel and fix it with the fixing tool. Meanwhile, depress the brake pedal with pedal loading device.

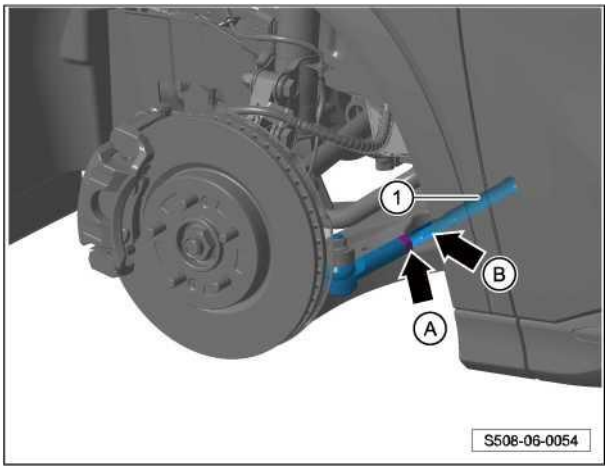
3.5.1.4 Wheel alignment

Parameters of Wheel Alignment

Item	Parameter	
Front wheel	Front wheel toe-in	0°±0.2°
	Front wheel camber angle	-0.5°±0.5°
	Kingpin caster angle	3.4°±0.5°
	Kingpin inclination angle	14.4°±0.5°
Rear wheel	Rear wheel toe-in	0.08°±0.08°
	Rear wheel camber angle	-1°±0.25°

3.5.1.5 Operating steps of four-wheel alignment

Adjust toe-in



1 Adjust the front wheel toe-in

a. Unscrew the locking nut (see arrow A), and rotate the left and right inner steering box ball joints ① to adjust the toe-in.

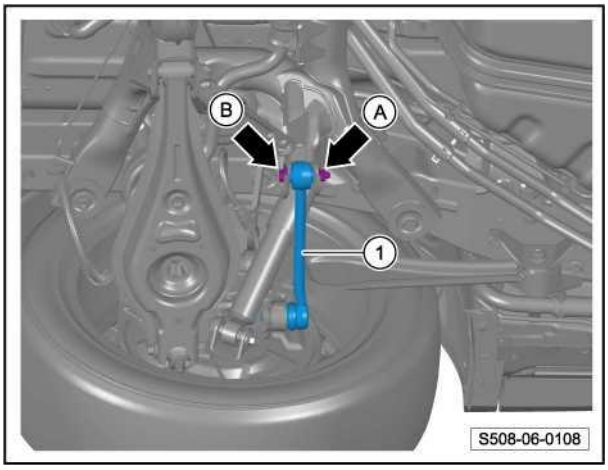
b. Rotate the left and right inner steering box ball joints ① at the hexagonal thread (see arrow B) with an open-end wrench, and adjust the toe-in value of the front wheel within the range of standard values.

c. After adjustment, tighten the lock nut (see arrow A) and recheck the toe-in of the front wheel.

• Tightening torque of nut (see arrow A): 80±5N·m

Tip:

After the lock nut is tightened, the toe-in value of the front wheel may be slightly changed.



2 Adjust the rear wheel toe-in

a. Loosen the lock nut (see arrow A), adjust the eccentric adjusting bolt (see arrow B) and adjusting gasket, and then adjust the camber of one side rear wheel to the standard range.

b. After adjustment, tighten the lock nut (see arrow A) and re-check the toe-in value of one side rear wheel.

• Tightening torque of nut (see arrow **A**): **130±5 N·m**

Tip:

After the locking bolt/nut is tightened, the rear wheel toe-in value may slightly changes.

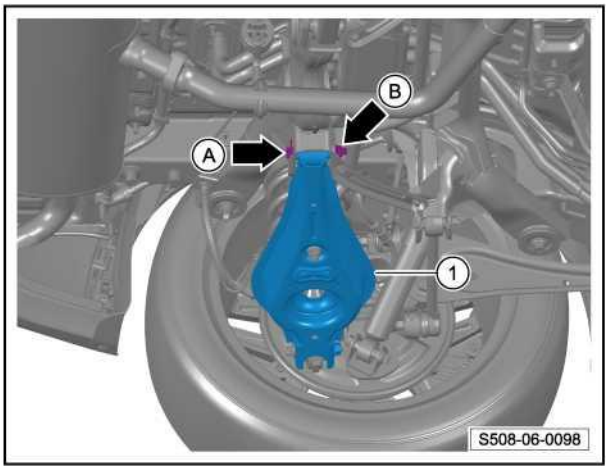
Adjust the rear left toe-in the same as the rear right one.

Adjust the camber.

1 Check the front wheel camber angle.

– The front wheel camber angle is not adjustable.

– When the measured value exceeds the permissible value, be sure to check the body subframe for damage.



2 Adjust rear wheel camber

a. Loosen the lock nut (see arrow A), adjust the eccentric adjusting bolt (see arrow B) and adjusting gasket, and then adjust the camber of one side rear wheel to the standard range.

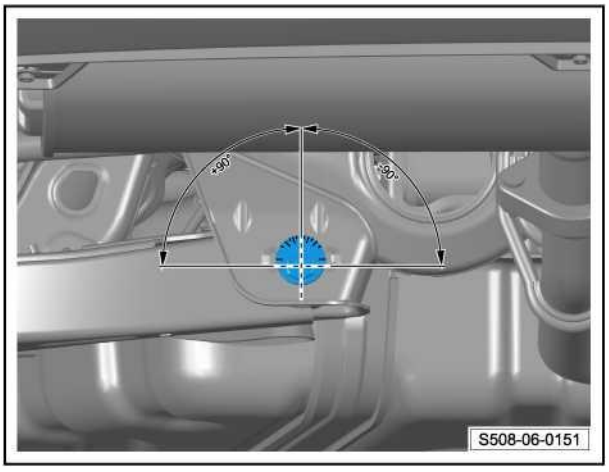
b. After adjustment, tighten the locking nut (see arrow B) and re-check the unilateral camber value of rear wheel.

- Tightening torque of nut (see arrow **A**): **130±5 N•m**
- Tightening torque of bolt (see arrow **B**): **130±5 N·m**

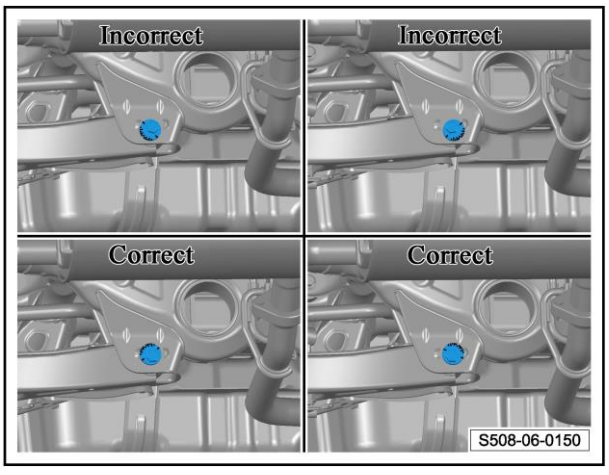
Tip:

After the locking bolt/nut is tightened, the camber value may be slightly changed.

Unscrew the locking nut (see arrow A) for not more than 2 threads; otherwise, the contact surface between the eccentric washer and the rear lower swing arm washer may be reduced easily, so that the upper bow-shaped washer of the rear lower swing arm may deform easily.



c. Required camber adjustment range of rear wheel: The adjustment range of an eccentric bolt is ±90°, as shown in the figure (when the eccentric bolt is adjusted towards the negative direction, the camber of rear wheel changes towards the negative direction; while when it is adjusted towards the positive direction, the camber of rear wheel changes towards the positive direction).



d. If the camber exceeds the adjustment range, as shown in the figure, the eccentric washer may deform, and the camber cannot be adjusted in severe cases.

Notes

- After performing the four-wheel alignment of the vehicle, calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

3.6 Drive shaft system

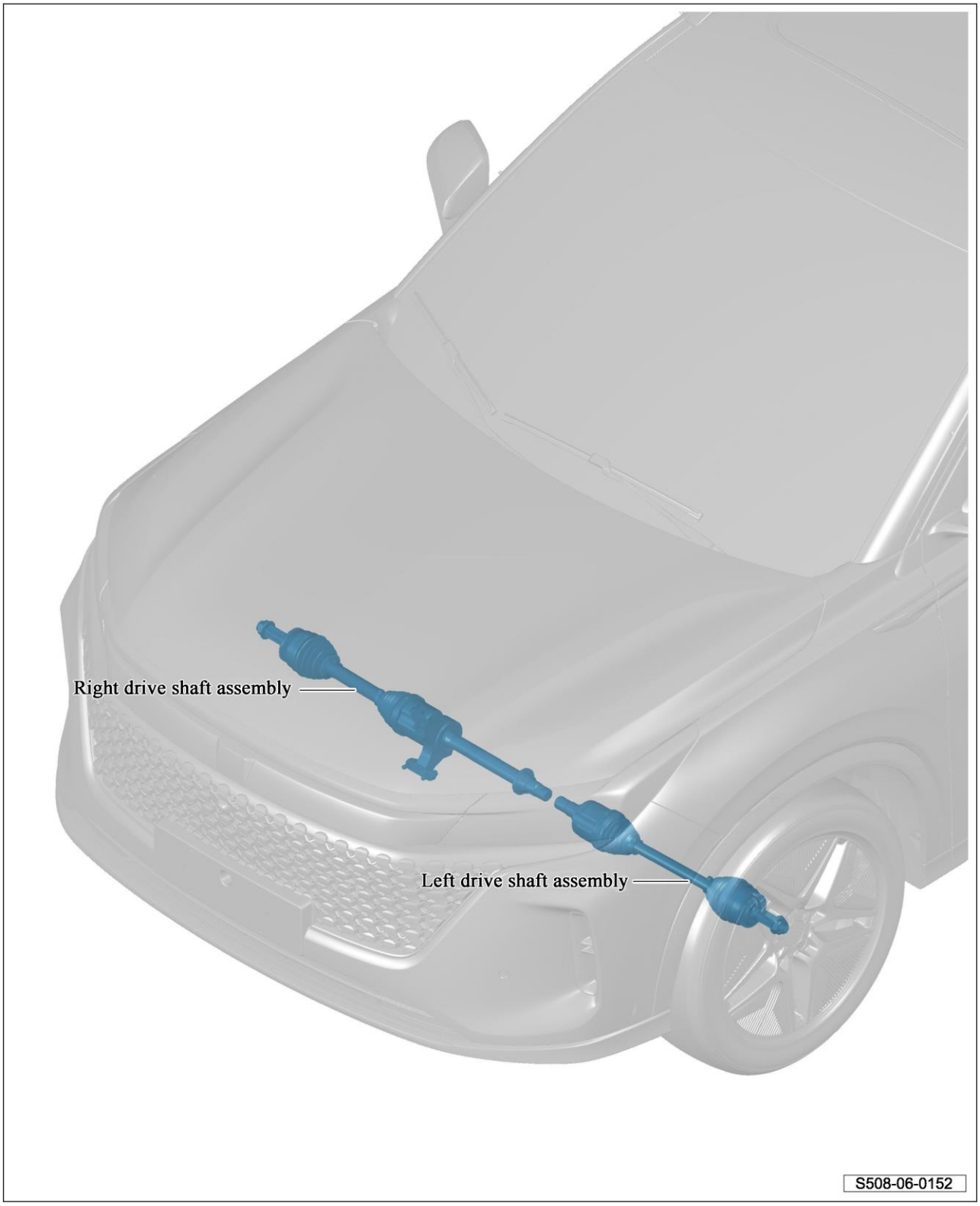
3.6.1 Specification

3.6.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connect the drive shaft to the brake.	Hub lock nut	260±12
Connecting the drive shaft intermediate support with the engine	Hexagon head flange bolt M10×1.25×35	52±3
Tie rod, ball joint and front brake	All-metal hexagon flange locking nut M12×1.25	100±5
Front swing arm and front brake	All-metal hexagon flange locking nut M12×1.25	90±5

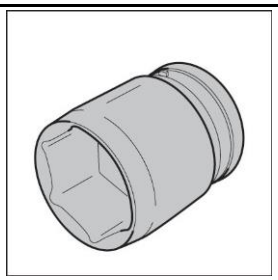
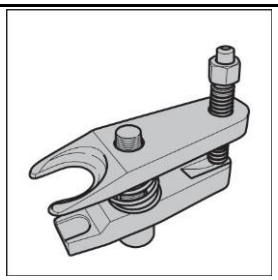
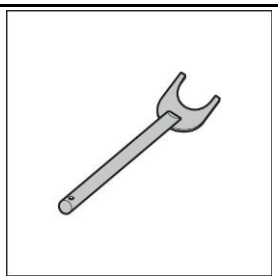
3.6.2 Component position

3.6.2.1 Component position



3.6.3 Special tool

3.6.3.1 List of special tools

S/N	Symbol	Description	Function
1		Drive Shaft Nut Removal and Installation Sleeve	Remove the drive shaft nut
2		Removal tool for ball joint	Connect the release ball joint with the steering knuckle
3		Axle shaft remover	For separating the reducer from the drive axle shaft

3.6.4 Removal and installation

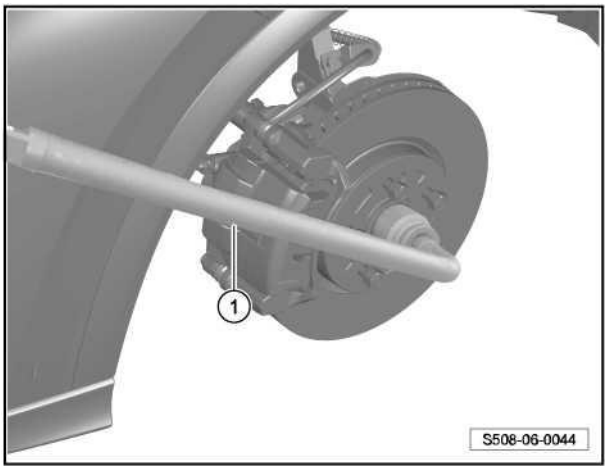
3.6.4.1 Removal and installation of hub locking nut

Disassembly procedures

Tip:

The removal and installation procedures are only for the left hub lock nut, which can be basically referred to for the right one.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

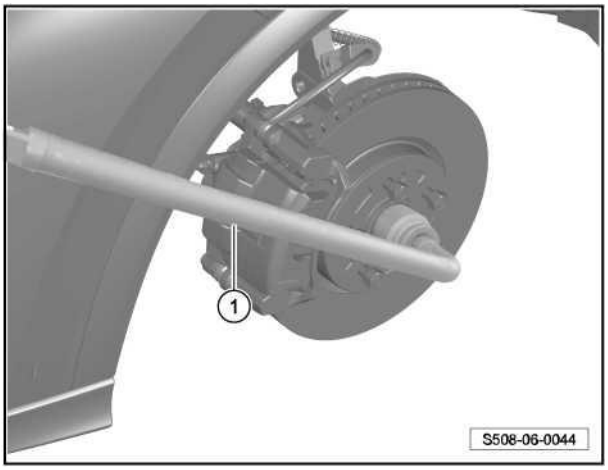


2 Remove the hub locking nut

a. Fix the brake disc with an appropriate tool, and unscrew the hub locking nut with the hub locking nut removal and installation sleeve ①.

- Tightening torque of nut: **260±12 N·m**

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After each removal, replace the hub locking nut.

-Fix the brake disc with an appropriate tool, and tighten the hub locking nut to the specified torque with the hub locking nut removal and installation sleeve ①.

- Tightening torque of nut: **260±12 N·m**

3.6.4.2 Removal and installation of left drive shaft assembly

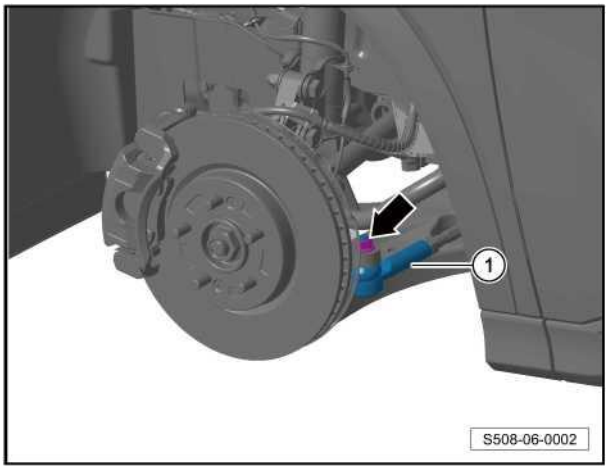
Disassembly procedures

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

3 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change.

4 Remove the front left hub locking nut. Refer to 3.6.4.1 Removal and installation of hub locking nut.

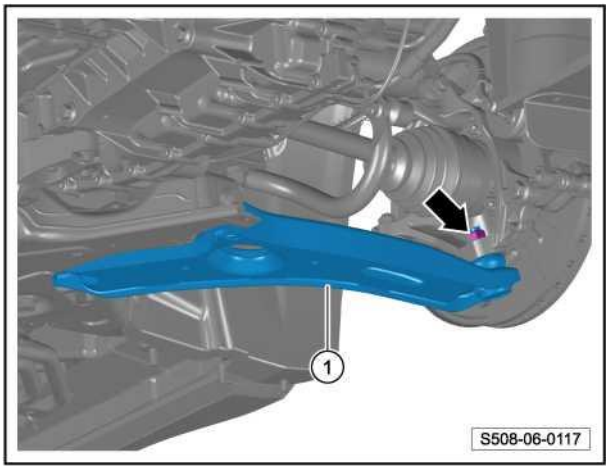


5 Remove the left drive shaft assembly

a. Unscrew the fixing nut (see arrow) connecting the outer tie rod ball joint with front steering knuckle assembly.

b. Press the outer tie rod ball joint ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.6.3.1 List of special tools), and disengage it from the steering knuckle assembly.

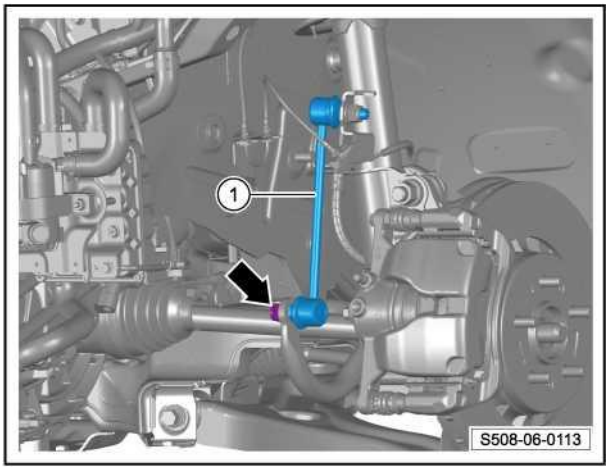
- Tightening torque of nut: **60±6 N·m**



c. Unscrew the fixing nut (see arrow) connecting front lower swing arm assembly to front steering knuckle assembly.

d. Press the front lower swing arm assembly ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.6.3.1 List of special tools), and disengage it from the steering knuckle assembly.

- Tightening torque of nut: 90±5 N·m

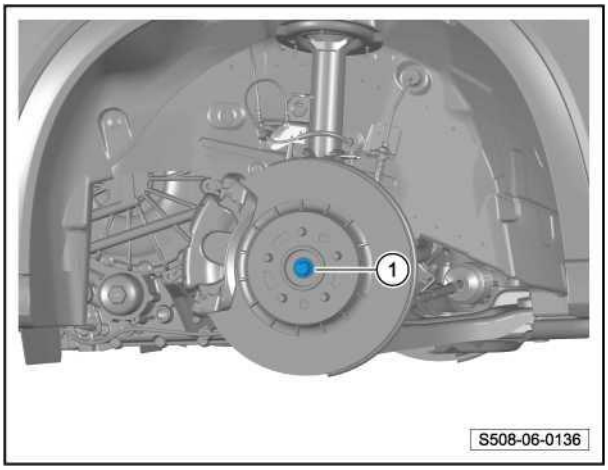


e. Unscrew the fixing nut (see arrow), and disengage the front stabilizer bar joint assembly ① from the front stabilizer bar.

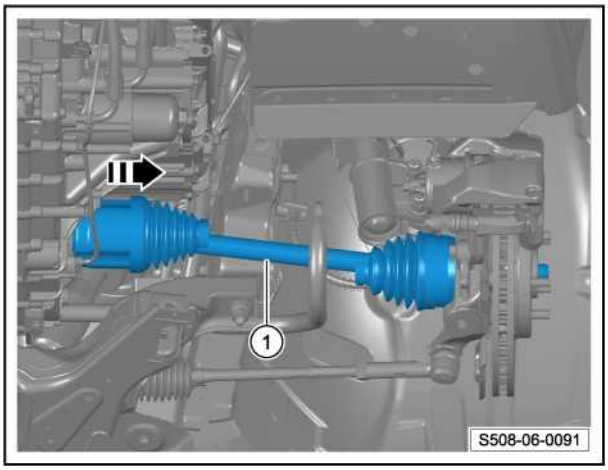
- Tightening torque of nut: **100±5 N·m**

Tip:

When removing the fixing nut, fix the back part of the ball pin with an open-end wrench to prevent the ball pin and nut from rotating at the same time.



f. Press the left drive shaft assembly ① out of the steering knuckle assembly with the half shaft removal tool (refer to 3.6.3.1 List of special tools).



g. Disengage the left drive shaft assembly ① from the hybrid transmission assembly with the half shaft removal tool (refer to 3.6.3.1 List of special tools).

h. Remove the front left drive shaft ①.

Tip:

If it is difficult to remove, tap the end of the drive shaft component gently with a brass rod and hammer.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-When assembling the drive shaft into the transmission (in the differential gear shaft), assemble a new ring seal.

-Confirm whether there are pollutants at the seal edge and in the transmission (in the differential gear

shaft).

-Apply the lubricating grease on the surface of drive shaft to prevent rust or abnormal wear. (Recommended grade of lubricating grease: SPL-1 or equivalent grade)

– Engage the drive shaft spline with the transmission internal spline a little.

– Hold the drive shaft by hand, and push it into the transmission in a "jerk mode" to the stop position.

– Do not push the front brake assembly too far away from the vehicle body when unnecessary.

– Do not damage the outer ball cage universal joint dust cover of front axle.

– Do not damage the wheel speed sensor gear ring.

-Add the hybrid transmission fluid. Refer to 4.2.8.1 Inspection of hybrid transmission fluid level.

3.6.4.3 Removal and installation of right drive shaft assembly

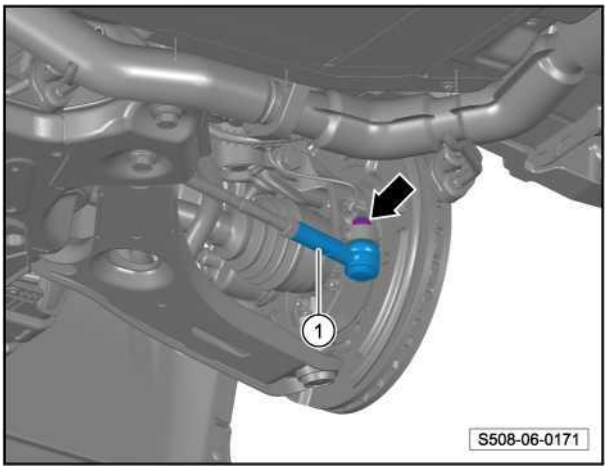
Disassembly procedures

1 Remove the front right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change.

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

4 Remove the hub locking nut. Refer to 3.6.4.1 Removal and installation of hub locking nut.

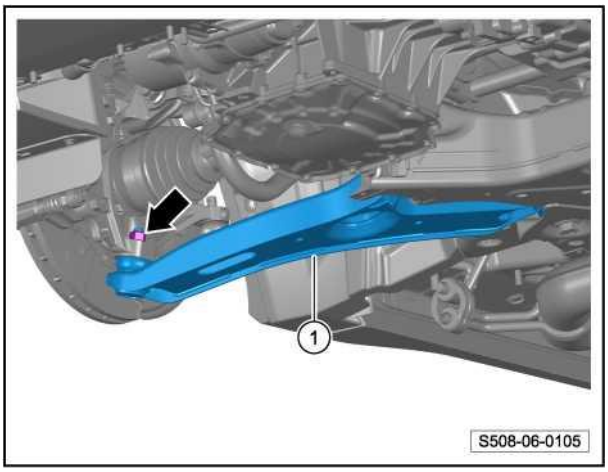


5 Remove the right drive shaft assembly

a. Unscrew the fixing nut (see arrow) connecting the outer tie rod ball joint with front steering knuckle assembly.

b. Press the outer tie rod ball joint ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.6.3.1 List of special tools), and disengage it from the steering knuckle assembly.

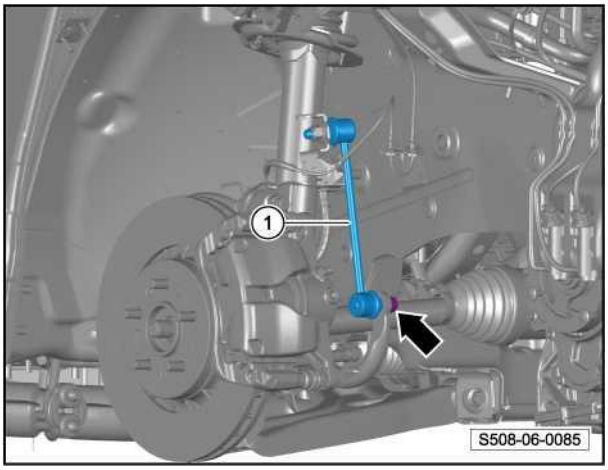
- Tightening torque of nut: 90±5 N·m



c. Unscrew the fixing nut (see arrow) of front lower swing arm assembly and front steering knuckle assembly.

d. Press the front lower swing arm assembly ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.6.3.1 List of special tools), and disengage it from the steering knuckle assembly.

- Tightening torque of nut: 90±5 N·m

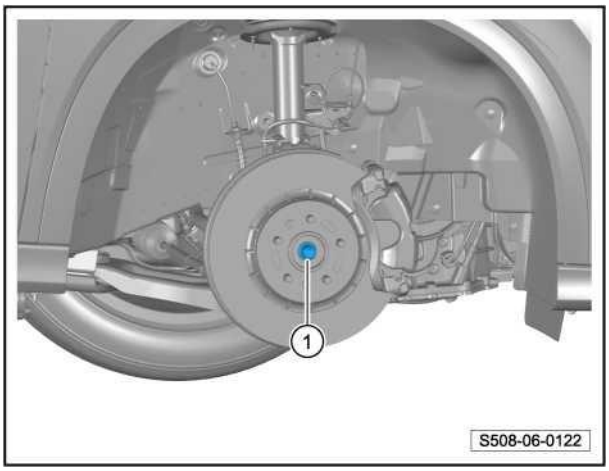


e. Unscrew the fixing nut (see arrow), and disengage the front stabilizer bar joint assembly ① from the front stabilizer bar.

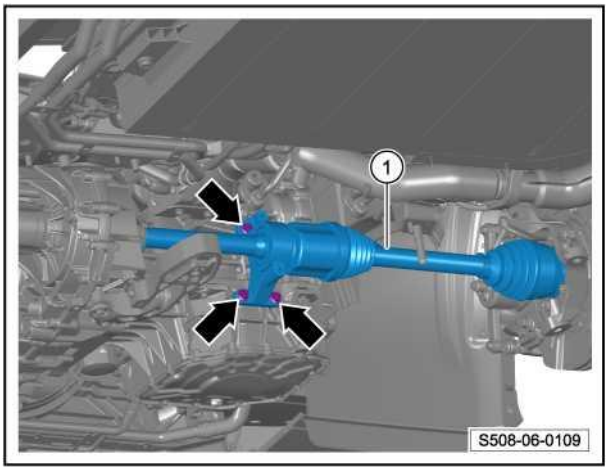
- Tightening torque of nut: **100±5 N·m**

Tip:

When removing the fixing nut, fix the back part of the ball pin with an open-end wrench to prevent the ball pin and nut from rotating at the same time.



f. Press the front right drive shaft assembly ① out of the front steering knuckle assembly with the half shaft removal tool (refer to 3.6.3.1 List of special tools).



g. Unscrew the fixing bolts (see arrows), knock the end of drive shaft assembly lightly with a rubber hammer to disengage the drive shaft assembly from the drive shaft hub assembly, and remove the right drive shaft assembly ①.

- Tightening torque of bolt: **52±3 N·m**

Tip:

If it is difficult to remove, tap the end of the drive shaft component gently with a brass rod and hammer.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-When assembling the drive shaft into the transmission (in the differential gear shaft), assemble a new ring seal.

-Confirm whether there are pollutants at the seal edge and in the transmission (in the differential gear

shaft).

-Apply the lubricating grease on the surface of drive shaft to prevent rust or abnormal wear. (Recommended grade of lubricating grease: SPL-1 or equivalent grade)

– Engage the drive shaft spline with the transmission internal spline a little.

– Hold the drive shaft by hand, and push it into the transmission in a "jerk mode" to the stop position.

– Do not push the front brake assembly too far away from the vehicle body when unnecessary.

– Do not damage the outer ball cage universal joint dust cover of front axle.

– Do not damage the wheel speed sensor gear ring.

-Add the hybrid transmission fluid. Refer to 4.2.8.1 Inspection of hybrid transmission fluid level.

3.7 Front brake

3.7.1 Specification

3.7.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Front brake disc and front hub bearing assembly	Cross recessed countersunk head screw	6.5±1.5
Front hub bearing assembly and steering knuckle	Bearing connecting bolt	100±10
Front brake hose and front brake caliper	Connecting bolt of front brake hose	37±3
Front brake hose and front brake pipe	Supplier's nuts	16±2
Front brake hose and front steering knuckle	Hexagon head bolt c/w plain washer cluster M6×16	10±1
Front brake caliper bracket and steering knuckle	Bracket bolt	160±15

3.7.2 Description and operation

3.7.2.1 Description and operation

Composition of front brake system:

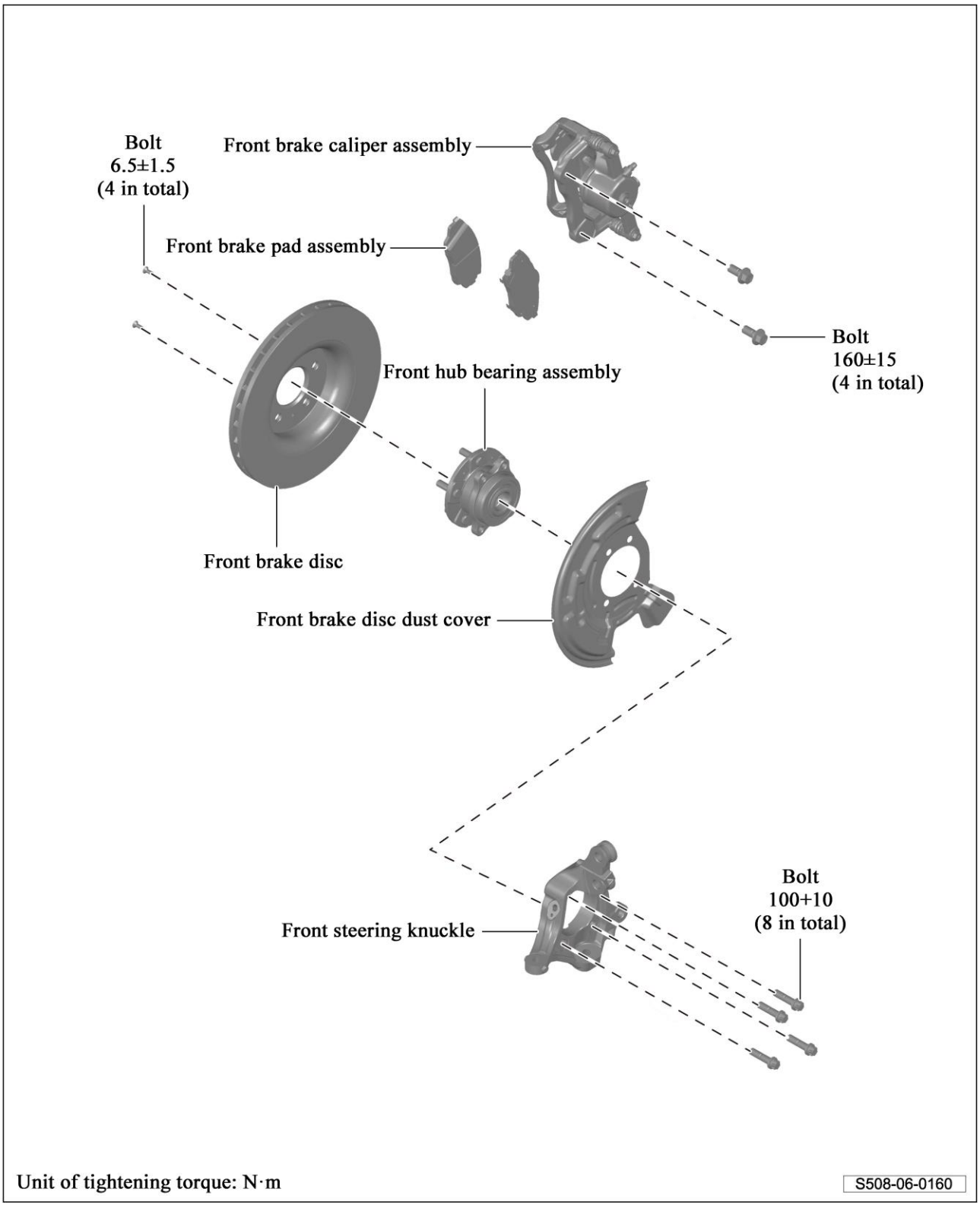
- Front brake pad assembly: It makes the mechanical output force from the hydraulic brake caliper act on the friction surface of brake disc.
- Guide vane of front brake pad assembly: located between the brake pad assembly and the brake caliper bracket and used to keep the brake pad assembly moving smoothly and eliminate noise.
- Brake disc: It slows down the wheel assembly for braking purpose by utilizing the mechanical output force applied by the brake pad assembly on the friction surface of the brake disc.
- Front brake caliper and front brake caliper bracket: They are used to fix the brake pad assembly and brake caliper in place, maintain a correct fitting position with the hydraulic brake caliper, and make the brake pad assembly slide when the mechanical output force acts on the inner brake pad assembly.
- Floating pin of front brake caliper: Used to install/fix the hydraulic brake caliper in place, maintain a correct fitting location with the brake caliper bracket, and slide the brake caliper relative to the brake pad assembly under the mechanical output force.

Operation of front brake system:

The mechanical output force from the hydraulic brake caliper piston is applied on the inner brake pad assembly. When the piston pushes the inner brake pad assembly outward, the brake caliper housing pulls the outer brake pad assembly inward simultaneously so that the output force is evenly distributed, and the brake pad assembly applies the output force on the friction surface at either side of the brake disc to slow down the wheel assembly. The front disc brake is of the floating caliper disc type. The brake caliper is of a single-cylinder type and is fixed by 2 mounting bolts on the steering knuckle. The brake caliper converts the hydraulic pressure from the hydraulic system into the lateral thrust evenly applied on the brake pad under the piston action. The inner brake pad moves outward after receiving the piston thrust. At the same time, the brake caliper drives the outer brake pad to move inward, and both inner and outer brake pads act on the brake disc. The friction between the brake pad and brake disc plays a role in decelerating or stopping the vehicle.

3.7.3 Exploded view

3.7.3.1 Exploded view



3.7.4 Diagnosis information and steps

3.7.4.1 Inspection of brake pad assembly

1 Check whether the friction surface of brake pad assembly is damaged.

2 Check the brake pad assembly for thickness. If it exceeds the limit value (2 mm) of thickness, replace it.

3.7.4.2 Brake caliper inspection

1 Check the brake caliper housing for cracking, serious abrasion or damage and replace, where necessary, the brake caliper.

2 Check the brake caliper piston dust cover sealing ring for cracks, fractures, notches, aging and improper installation in the brake caliper body. If any of the above conditions occurs, replace the brake caliper.

3 Check the dust cover seal ring of the brake caliper piston and the brake lining for brake fluid leakage and replace the brake caliper in case of any leakage.

4 Check whether the brake caliper piston can smoothly enter the brake caliper cylinder with a complete stroke. The piston in the brake caliper cylinder shall move smoothly and evenly. If the brake caliper piston is stuck or difficult to reach the bottom, replace the brake caliper.

3.7.4.3 Inspection of guide vane of brake pad assembly

- Inspect the brake pad assembly guide plate for missing, serious corrosion and bend of mounting tab.
- If any of the above is found, replace the brake pad assembly guide plate.

3.7.4.4 Inspecting floating pin of brake caliper

Check the floating pin of brake caliper for the following conditions:

- Struck
- Sticking
- Sleeve cracking or breakage
- Sleeve missing

If any of the above is found, replace the brake caliper.

3.7.4.5 Brake disc surface and wear inspection

1 Clean the friction surface of the brake disc with industrial alcohol or brake cleaner.

2 Inspect the brake disc friction surface for the following:

- Serious rust or pitting
- Slight surface rust
- Crack or burning spot
- Serious discoloration into bluish
- Deep scratch of brake disc friction surface

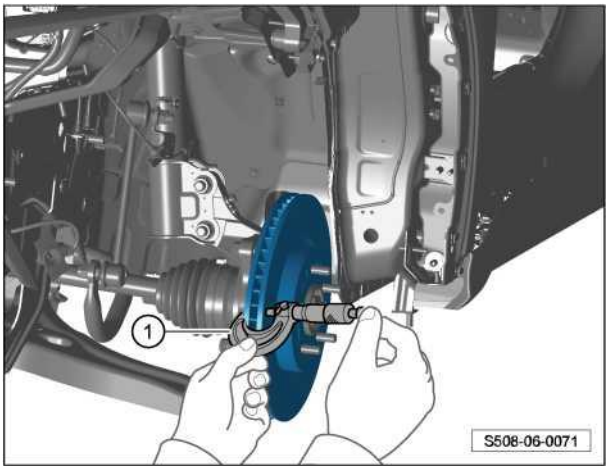
Trim the brake disc surface or replace the brake disc in any condition above.

Notes

The brake pad assembly shall also be replaced after the surface is burnished or the brake disc is replaced.

3.7.4.6 Brake disc thickness measurement

1 Remove the wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Check front wheel brake disc.

a. Clean the friction surface of the brake disc with industrial alcohol or brake cleaner.

b. As shown in the figure, use an outside micrometer ① to measure and record the minimum thickness of 4 or more points evenly distributed along the circumference of the brake disc. Make sure that only the contact area of the brake pad assembly surface is measured, and the distance between the outside micrometer ① and the outer edge of the brake disc must be equal during each measurement.

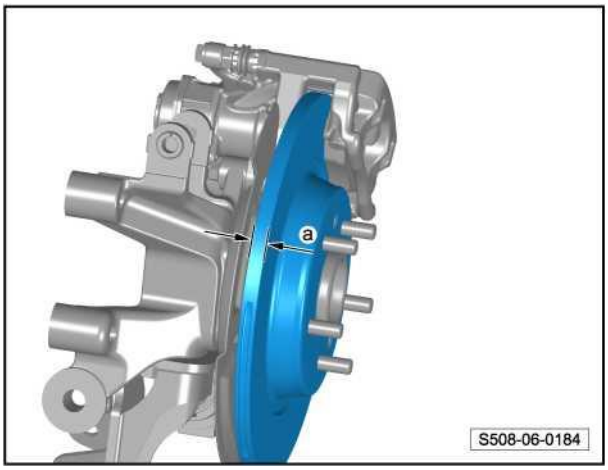
c. If the brake disc thickness exceeds the specification, it requires surface burnishing or replacement.

Parameters of Front Brake Disc

- Front brake disc thickness: 28mm
- Wear limit: **26 mm**

Notes

When the surface is burnished or the brake disc is replaced, the brake pad assembly shall also be replaced.



Check rear wheel brake disc.

a. Clean the friction surface of the brake disc with industrial alcohol or brake cleaner.

b. Measure the thickness (a) of rear brake disc.

c. If the brake disc thickness exceeds the specification, it requires surface burnishing or replacement.

Parameters of rear brake disc

- Thickness of front brake disc: **11 mm**
- Wear limit: **9 mm**

Notes

When the surface is burnished or the brake disc is replaced, the brake pad assembly shall also be replaced.

3.7.4.7 Measurement of end face runout after brake disc assembling

Notes

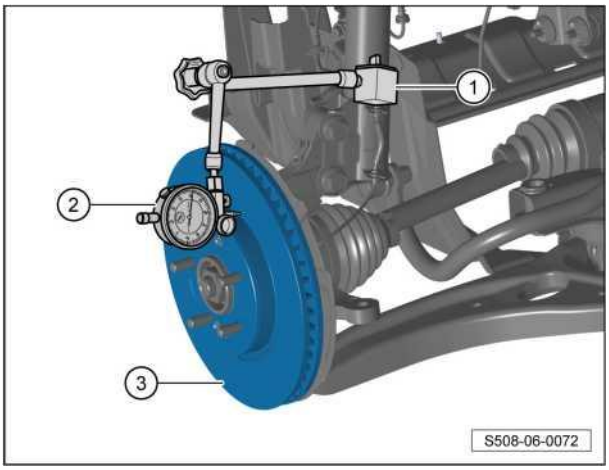
Before measuring the brake disc runout, ensure that the front wheel hub bearing is not loose.

When the brake disc is removed from the wheel hub, the rust or dirt on the fitting surface of the hub and the brake disc shall be removed. Otherwise, the end face runout may be too large after the brake disc is assembled, resulting in brake judder.

1 Remove the brake pad assembly. Refer to 3.7.6.1 Removal and installation of front brake pad assembly.

2 Clean the friction surface of the brake disc with industrial alcohol or brake cleaner.

3 Install the brake disc onto the hub and fix it securely with the tire bolts.



4 Measurement of End Face Runout After Brake Disc Assembling

a. Install the dial indicator base ① to the steering knuckle and place the dial indicator measuring head ② so that it contacts the brake disc friction surface at an angle of 90° and is 10 mm away from the outer edge of the brake disc.

b. Turn the brake disc ③ until the dial indicator reads the minimum, and then reset the dial indicator.

c. Rotate the brake disc ③ until the dial indicator reading reaches the maximum.

d. Mark and record the runout of the end face.

e. Compare the end face runout after the brake disc is assembled with standard value.

f. If the end face runout after the brake disc is assembled exceeds the specification, inspect the axial clearance of bearing and runout of axle hub. If both of them are normal and the brake disc thickness is in the specified range, the surface of brake disc shall be burnished to ensure correct flatness.

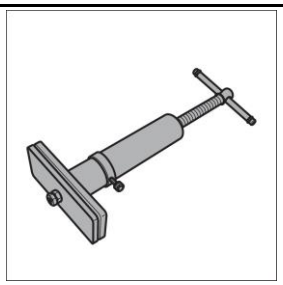
- Brake disc runout: **0.1mm**

Notes

When the surface is burnished or the brake disc is replaced, the brake pad assembly shall also be replaced.

3.7.5 Special tool

3.7.5.1 List of special tools

S/N	Symbol	Description	Function
1		Reset tool for front brake caliper piston	For resetting brake caliper piston

3.7.6 Removal and installation

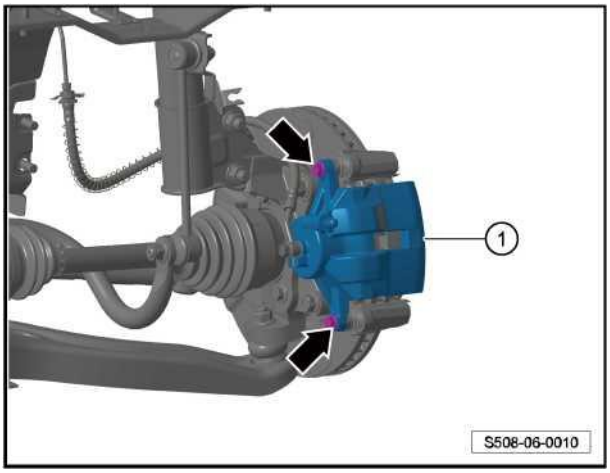
3.7.6.1 Removal and installation of front brake pad assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left brake pad assembly, which can be basically referred to for the front right one.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the front left brake pad assembly.

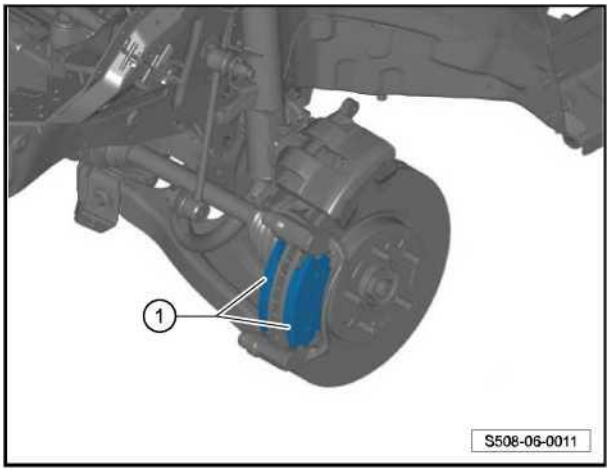
a. Unscrew the fixing bolts (see arrows), and remove the front brake caliper ①.

- Tightening torque of bolt: 35±3 N·m

Notes

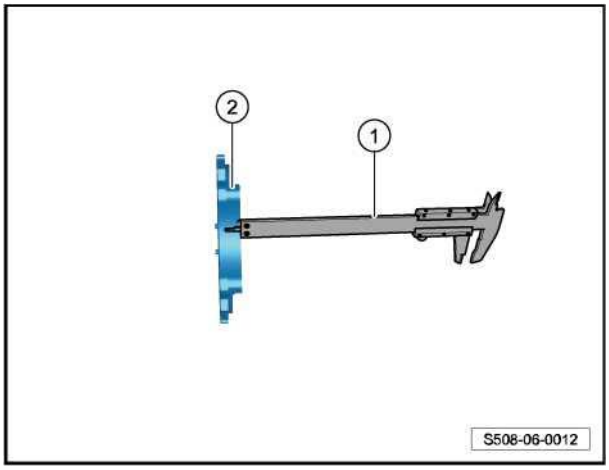
After removing the front brake caliper, hang it properly in the vehicle with the steel wire or other articles, to avoid the brake hose from being dragged and damaged.

After the front brake caliper is disconnected, never tramp the brake pedal so as to avoid failure of brake component state.



b. Remove the front brake pad assembly ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

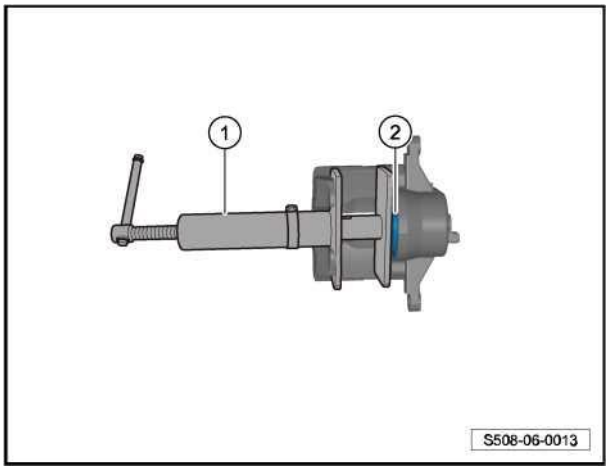
-Measure the thickness of friction surface of the front brake pad assembly ② with the vernier caliper ①.

- Standard thickness of friction lining: **8mm**
- Wear limit of friction plate: **2mm**

Notes

If the brake pad reaches the wear limit, replace a new one.

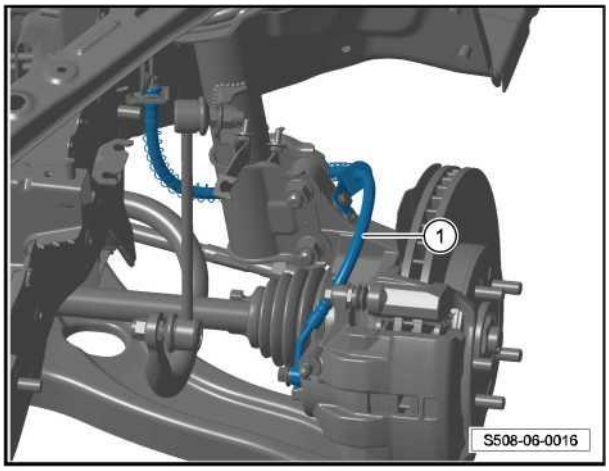
Before brake pad installation, attention shall be given to prevent any foreign matter from entering the caliper cylinder diameter.



-Reset the front brake piston ② with the brake caliper piston reset tool ①.

Tip:

Before pressing the brake piston back into the cylinder, draw a small amount of brake fluid from the brake oil reservoir; otherwise, the brake fluid may overflow due to the piston reset.



– When installing the front brake caliper, be sure to straighten out the brake hose ① and confirm that it is naturally bent.

-When installing the front brake caliper, apply the Loctite 242 thread locker on the fixing bolt of it.

– After each replacement of the front brake pad assembly, depress the brake pedal hard for several times when the vehicle is parked to restore its normal travel.

-After replacing the front brake pad assembly, check the level of brake fluid, and add the brake fluid if necessary.

3.7.6.2 Removal and installation of front brake hose

Disassembly procedures

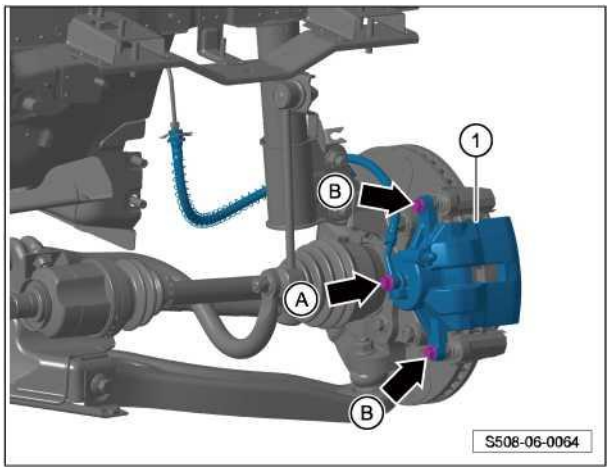
Tip:

The removal and installation procedures are only for the front left brake caliper, which can be basically referred to for the front right one.

When removing the front brake caliper, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, clean it with clear water immediately.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement



3 Remove the front brake caliper

a. Unscrew the fixing bolt (see arrow A), disengage the front brake hose from the front brake caliper ①, and remove the washer.

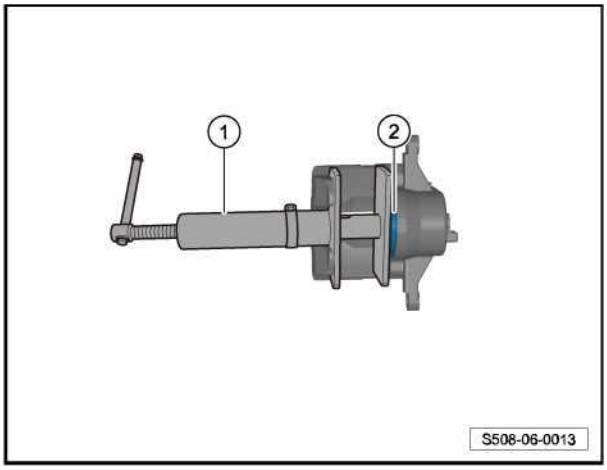
b. Unscrew the fixing bolts (see arrow B), and remove the front brake caliper ①.

- Tightening torque of bolt (see arrow **A**): **37±3 N·m**
- Tightening torque of bolt (see arrow B): 35±3 N·m

Tip:

When unscrewing the fixing bolt of the front brake hose, place an appropriate container underneath for brake fluid collection.

Installation procedures

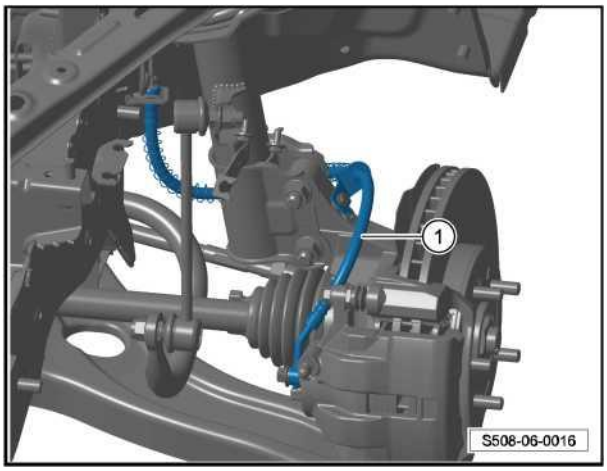


Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Reset the front brake piston ② with the brake caliper piston reset tool ①.

Tip:

Before pressing the brake piston back into the cylinder, draw a small amount of brake fluid from the brake oil reservoir; otherwise, the brake fluid may overflow due to the piston reset.



– When installing the front brake caliper, be sure to straighten out the brake hose ① and confirm that it is naturally bent.

-When installing the front brake caliper, apply the Loctite 242 thread locker on the fixing bolt of it.

-After installing the brake hose, add the brake fluid. Refer to 1.4.3.10 Brake fluid inspection.

-After installing the brake hose, bleed the brake system. Refer to 1.4.3.53 Brake system bleeding.

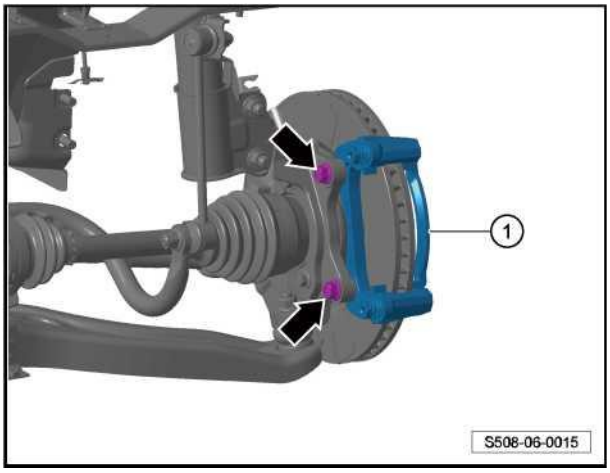
3.7.6.3 Removal and installation of front brake caliper bracket

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left brake caliper bracket, which can be basically referred to for the front right one.

1 Remove the front left brake pad assembly. Refer to 3.7.6.1 Removal and installation of front brake pad assembly.



2 Remove the front caliper bracket

a. Unscrew the fixing bolts (see arrows), and remove the front brake caliper bracket ①.

- Tightening torque of bolt: 160±15 N•m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-When installing the front brake caliper bracket, apply the Loctite 242 thread locker on the fixing bolt of it.

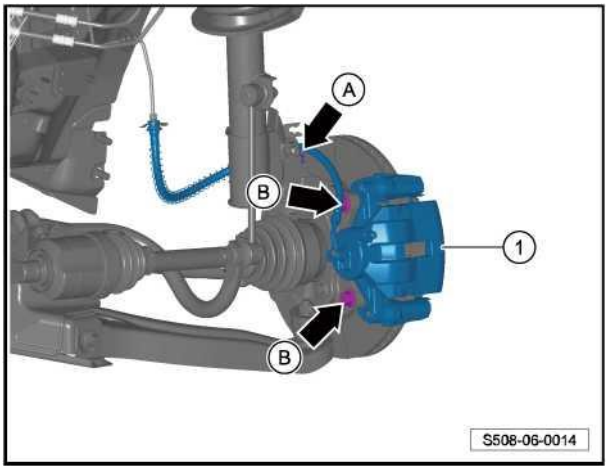
3.7.6.4 Removal and installation of front brake disc

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left brake disc, which can be basically referred to for the front right one.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the front brake disc.

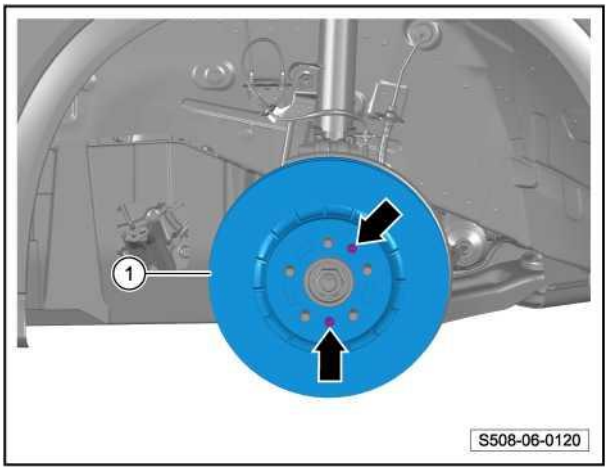
a. Unscrew the fixing bolt (see arrow A) of the front brake hose bracket.

b. Unscrew the fixing bolt (see arrow B), and hang the front brake caliper ① safely on the front suspension with the steel wire, to avoid the brake hose from being dragged and damaged.

- Tightening torque of bolt (see arrow **A**): **10±1 N·m**
- Tightening torque of bolt (see arrow **B**): **160±15 N·m**

Notes

After the front brake caliper is disconnected, never tramp the brake pedal so as to avoid failure of brake component state.



c. Unscrew the front brake disc locating bolt (see arrow) and remove the front brake disc ①.

- Tightening torque of bolt: **6.5±1.5 N·m**

Notes

The brake discs must be replaced in pairs unless the discs have just been replaced and operated for less than 1500 km.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– No grease or oil is allowed on the brake disc during installation.

-Check the wear of the front brake disc, and replace the brake disc if necessary. See 3.7.6.4 Removal and installation of front brake disc.

-When installing the front brake caliper assembly, apply the Loctite 242 thread locker on the fixing bolt of it.

Notes

If the front brake disc reaches the wear limit, replace a new one.

If the runout of the front brake disc is more than the standard value, trim the surface of the brake disc, and replace the front brake disc if necessary.

3.7.6.5 Removal and installation of front brake hose

Disassembly procedures

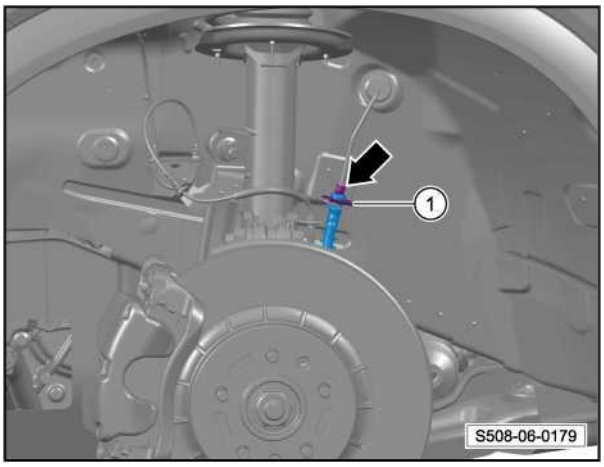
Tip:

The removal and installation procedures are only for the front left brake hose, which can be basically referred to for the front right one.

When removing the front brake caliper, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, clean it with clear water immediately.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

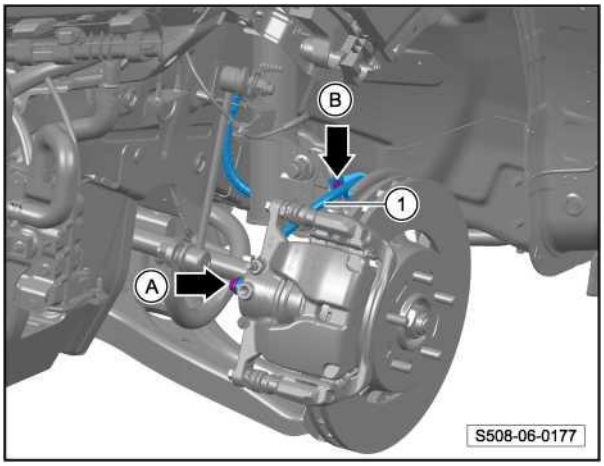


3 Remove the front brake hose

a. Unscrew the nut (see arrow) connecting the front brake hose and the brake pipeline 3 assembly.

b. Remove the E-Ring ① with a proper tool.

- Tightening torque of nut: 16±2 N·m



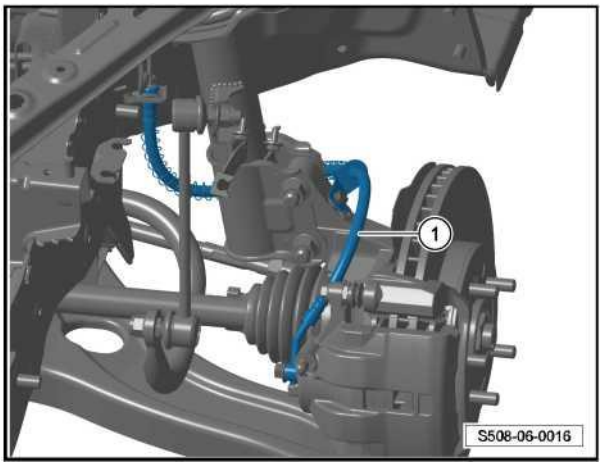
c. Unscrew the fixing bolt (see arrow A) of the brake hose and that (see arrow B) of the hose bracket, and remove the front brake hose ①.

- Tightening torque of bolt (see arrow **A**): **37±3 N·m**
- Tightening torque of bolt (see arrow **B**): **10±1 N·m**

Tip:

Before unscrewing the fixing bolt of the front brake hose, place an appropriate container underneath for brake fluid collection.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-During installation, straighten out the brake hose ①. Make sure that the hose is bending in a natural way.

-After installing the brake hose, add the brake fluid. Refer to 1.4.3.10 Brake fluid inspection.

-After installing the brake hose, bleed the brake system. Refer to 1.4.3.53 Brake system bleeding.

3.8 Rear brake

3.8.1 Specification

3.8.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connecting the rear brake caliper mounting plate with the rear brake caliper assembly	Check the connecting bolts of rear brake caliper	70±5
Connecting the rear brake disc with the rear hub bearing assembly	Hexagonal countersunk head screws	6.5±1.5
Connecting the rear brake hose with the rear brake caliper	Rear brake hose connecting bolt	37±3
Rear brake hose and rear brake pipe	Supplier's nuts	16±2
Bearing connecting bolt	Bolt	160±10
Bracket bolt	Bolt	70±5
Rear damper mounting plate bolt	Bolt	80±5

3.8.2 Description and operation

3.8.2.1 Description and operation

Composition of rear brake system:

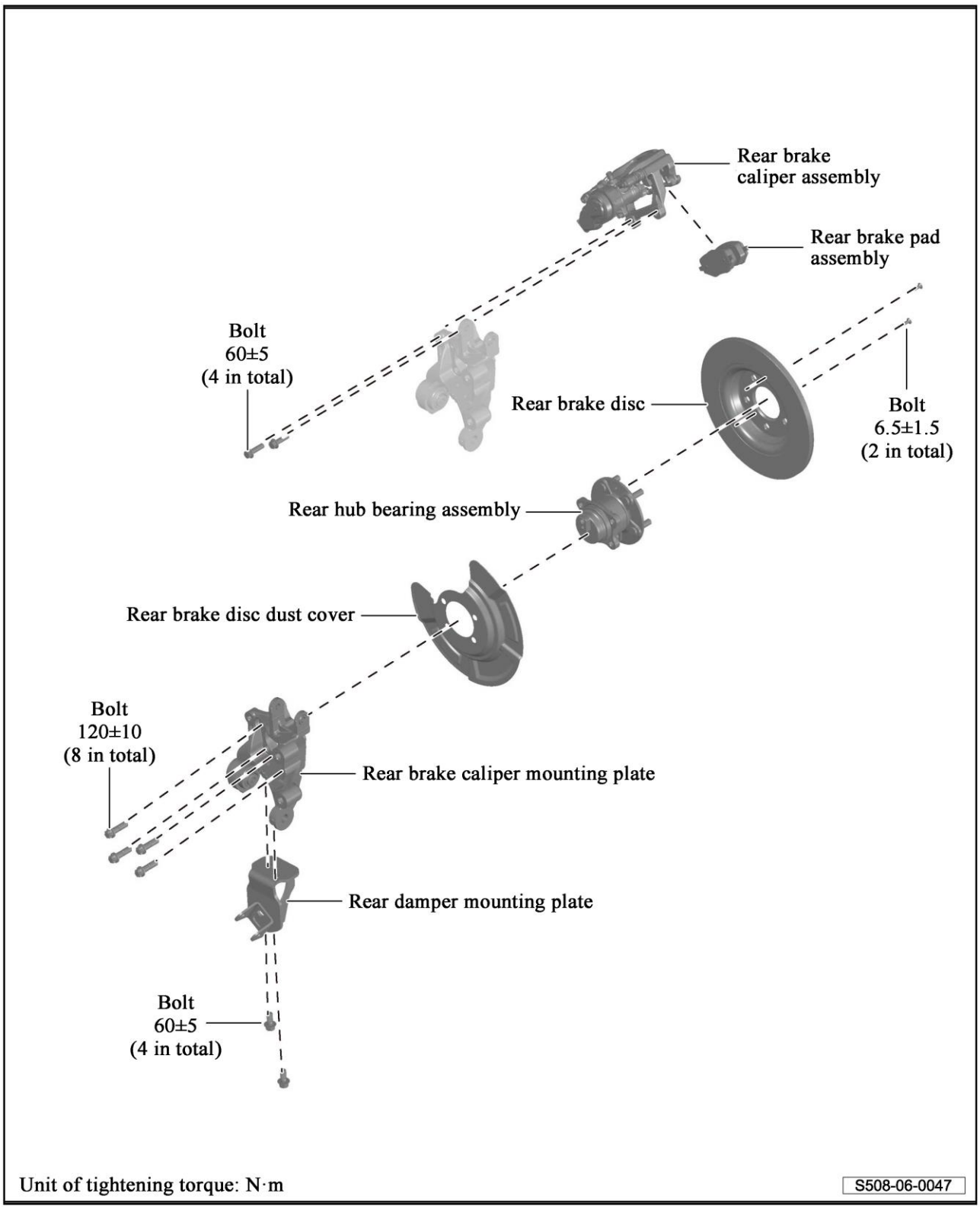
- Rear brake pad assembly: It makes the mechanical output force from the hydraulic brake caliper act on the friction surface of brake disc.
- Guide vane of rear brake pad assembly: located between the brake pad assembly and the brake caliper bracket and used to keep the brake pad assembly moving smoothly and eliminate noise.
- Brake disc: It slows down the wheel assembly for braking purpose by utilizing the mechanical output force applied by the brake pad assembly on the friction surface of the brake disc.
- Rear brake caliper and front brake caliper bracket: They are used to fix the brake pad assembly and brake caliper in place, maintain a correct fitting position with the hydraulic brake caliper, and make the brake pad assembly slide when the mechanical output force acts on the inner brake pad assembly.
- Floating pin of rear brake caliper: Used to install/fix the hydraulic brake caliper in place, maintain a correct fitting location with the brake caliper bracket, and slide the brake caliper relative to the brake pad assembly under the mechanical output force.
- Brake caliper with EPB assembly: Bear the hydraulic pressure from the brake master cylinder, convert the hydraulic pressure to mechanical output force and apply the mechanical output force on the inner brake lining. When the brake master cylinder returns to original position, the brake caliper piston automatically returns to original position. The brake caliper integrates the EPB motor and can realize electronic parking by using the EPB switch.

Operation of rear brake system:

The rear disc brake is of the caliper-integrated disc type. When 2 bolts are fixed on the rear brake caliper mounting plate, the rear brake caliper converts the action of passing the piston hydraulically into the uniform transverse pushing force against the brake pad, the inner brake pad moves outwards when being pushed by the piston, and the brake caliper body drives the outer brake pad to move inwards. The friction between the brake pad and brake disc plays a role in decelerating or stopping the vehicle

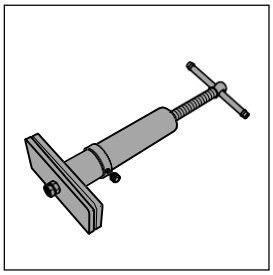
3.8.3 Exploded view

3.8.3.1 Exploded view of rear brake



3.8.4 Special tool

3.8.4.1 List of special tools

S/N	Symbol	Description	Function
1		Reset tool of brake caliper piston	For resetting brake caliper piston

3.8.5 Removal and installation

3.8.5.1 Removal and installation of rear brake pad assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left brake pad assembly, which can be basically referred to for the rear right one.

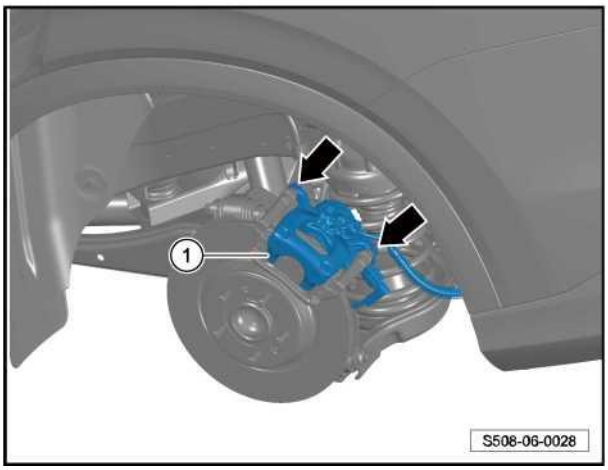
When removing the rear brake pad assembly, mark on the rear brake pad assembly to be used continuously, and reinstall such plate on the same position again; otherwise, the brake effect may be uneven after installation.

The brake disc and rear brake pad assembly shall not be stained with grease.

1 Release the EPB switch.

2 Operate the maintenance activation of electronic parking brake with the diagnostic scanner. Refer to 1.4.2.8 Maintenance activation of electronic parking brake.

3 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



4 Remove the rear brake pad assembly

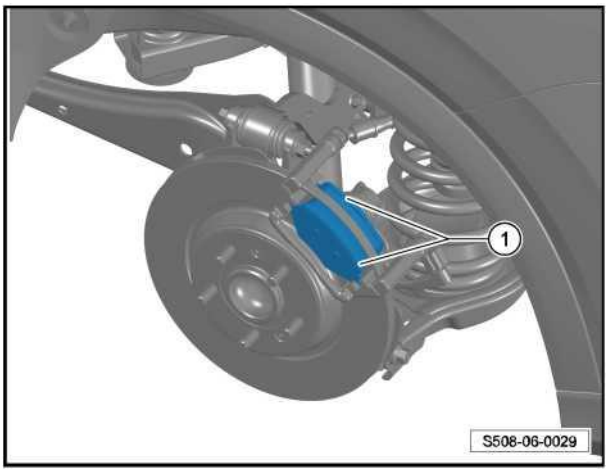
a. Unscrew fixing bolts (see arrows), and remove the rear brake caliper and EPB drive motor assembly ①.

- Tightening torque of bolt: **34.5±3.5 N·m**

Notes

Fix the rear brake caliper and EPB drive motor assembly ① with the steel wire, to avoid the brake hose from being dragged and damaged.

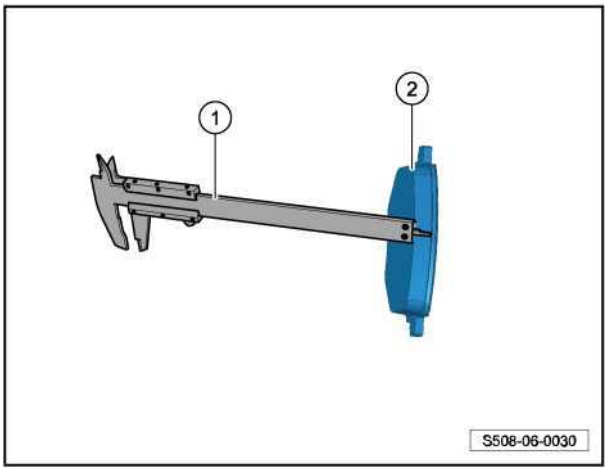
After the rear brake caliper is disconnected, never tramp the brake pedal so as to avoid failure of brake component state.



b. Remove the rear brake pad assembly ①.

c. Thoroughly clean friction surfaces of the brake pad assembly and the rear brake disc.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Assembly new rear brake pad assembly according to the program.

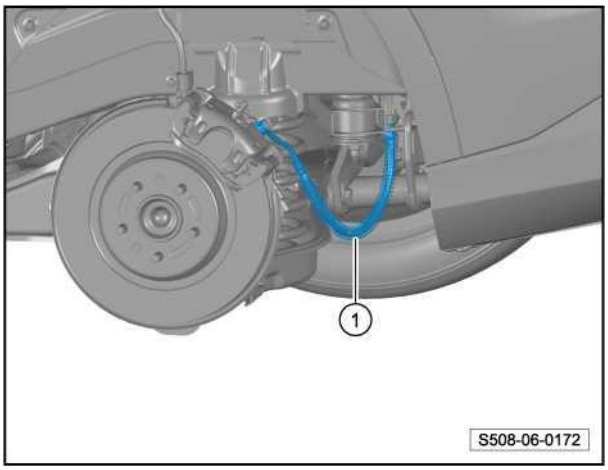
Thickness of rear brake pad assembly	Wear limit
10mm	2mm

Tip:

Before pressing the brake piston back into the cylinder with the reset tool of brake caliper piston, observe whether the fluid overflows from the brake oil reservoir, and draw a small amount of brake fluid from the brake oil reservoir if necessary; otherwise, the brake fluid may overflow due to the piston reset.

After replacing the brake friction plate every time, repetitively depress the brake pedal hard under vehicle standstill status, to make the brake pedal restore to its normal stroke.

Finally, check the brake fluid level and add brake fluid if necessary.



– During installation, be sure to fix one end of the hose connected with the caliper first and straighten out the brake hose ①. Make sure that the hose is bent naturally.

3.8.5.2 Removal and installation of rear brake caliper and EPB drive motor assembly

Disassembly procedures

Tip:

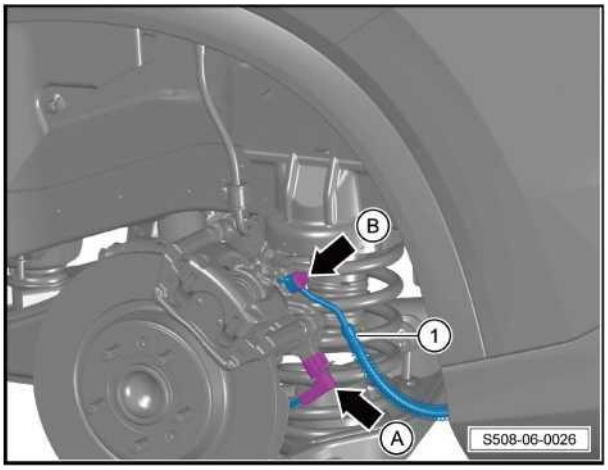
The removal and installation procedures are only for the left rear brake caliper and EPB drive motor assembly, which can be basically referred to for the right one.

Do not splash the brake fluid on car in process of removing the rear brake caliper and EPB drive motor assembly; otherwise, the paint may be damaged. If the brake fluid is splashed on the paint, clean it with water immediately.

The brake disc and brake pad assembly shall not be stained with grease.

1 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement



3 Remove the rear brake caliper and EPB drive motor assembly

a. Release the EPB switch.

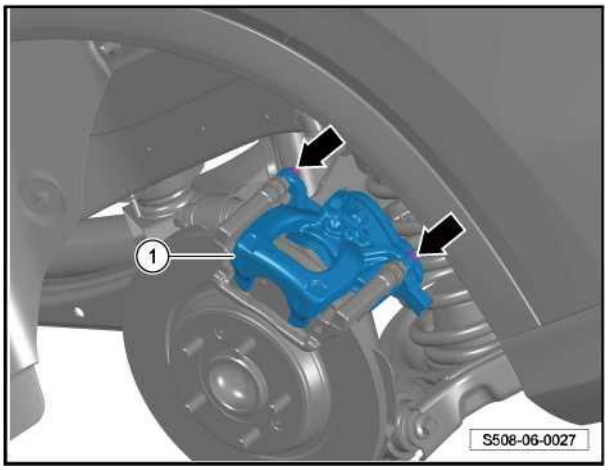
b. Disconnect the connector (see arrow A) of the rear brake caliper and EPB drive motor assembly.

c. Unscrew the fixing bolt (see arrow B), and remove the washer. Disengage the rear brake hose from the rear brake caliper and EPB drive motor assembly ①, and remove the washer.

- Tightening torque of bolt (see arrow **B**): **37±3 N·m**

Tip:

When unscrewing the fixing bolt of the rear brake hose, place an appropriate container underneath for brake fluid collection.



d. Unscrew fixing bolts (see arrows), and remove the rear brake caliper and EPB drive motor assembly ①.

- Tightening torque of bolt: **34.5±3.5 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installing the rear brake caliper and EPB drive motor assembly, add the brake fluid. Refer to 1.4.3.10 Brake fluid inspection.

-After adding the brake fluid, bleed all four brake slave cylinders. Refer to 1.4.3.53 Brake system bleeding.

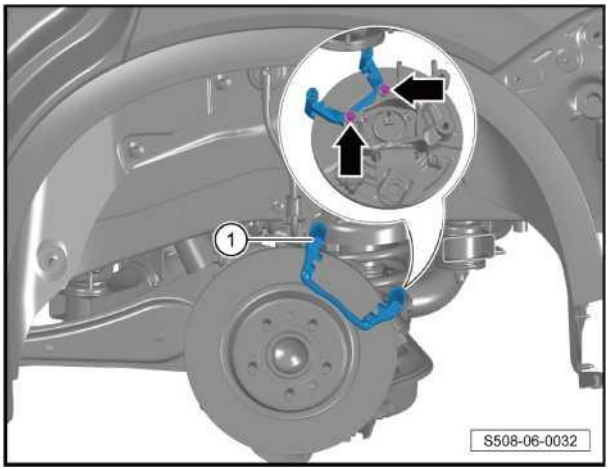
3.8.5.3 Removal and installation of rear brake caliper bracket

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left brake caliper bracket, which can be basically referred to for the rear right one.

1 Remove the rear brake pad assembly. Refer to 3.8.5.1 Removal and installation of rear brake pad assembly.

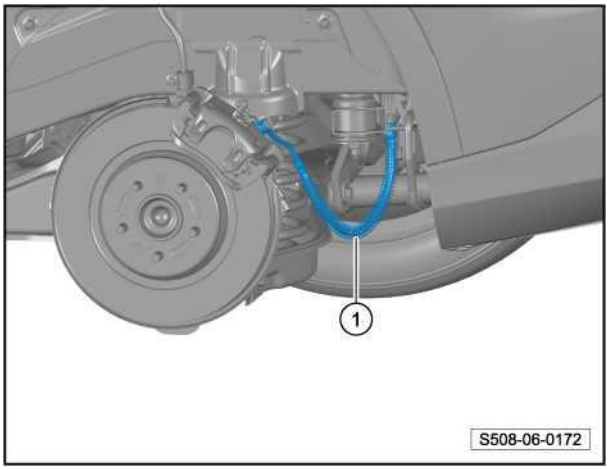


2 Remove the rear brake caliper bracket

a. Unscrew fixing bolts (see arrows), and remove the rear brake caliper bracket ①.

- Tightening torque of bolt: 70±5 N•m

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-When installing the rear motor-integrated rear caliper assembly, straighten out the brake hose ①. Make sure that the hose is bending in a natural way.

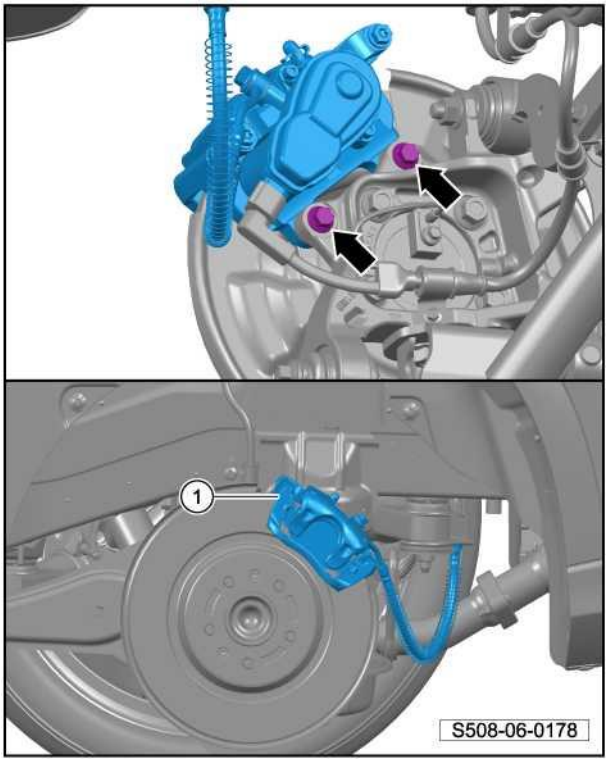
3.8.5.4 Removal and installation of rear brake disc

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left brake disc, which can be basically referred to for the rear right one.

1 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the rear brake disc

a. Release the EPB switch.

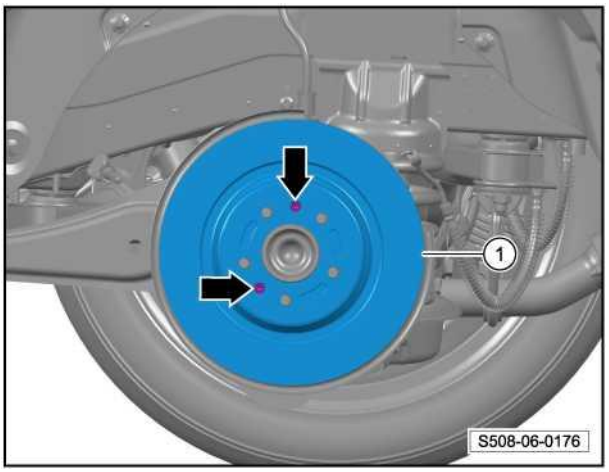
b. Unscrew the fixing bolts (see the arrows) of rear caliper bracket.

c. Hang the rear brake caliper and EPB drive motor assembly ① safely on the rear suspension with the steel wire, to avoid the brake hose from being dragged and damaged. .

- Tightening torque of bolt: 70±5 N•m

Notes

After removing the brake caliper, do not depress the brake pedal again to avoid damaging the status of brake components.



d. Unscrew the fixing bolts (see the arrows) of rear brake disc and remove the rear brake disc ①.

- Tightening torque of bolt: **6.5±1.5 N·m**

Notes

If the rear brake disc reaches the wear limit, replace a new one.

If the runout of the rear brake disc is more than the standard value, trim the surface of the brake disc, and replace the rear brake disc if necessary.

The rear brake discs must be replaced in pairs unless the discs have just been replaced and operated for less than 1500 km.

Installation procedures

Perform the installation procedures in the reverse

order of removal procedures and pay attention to the following items:

– No grease or oil is allowed on the brake disc during installation.

-Check the wear of the rear brake disc. Replace the brake disc if necessary. Refer to 3.7.4.5 Brake disc surface and wear inspection.

3.8.5.5 Removal and installation of rear brake hose

Disassembly procedures

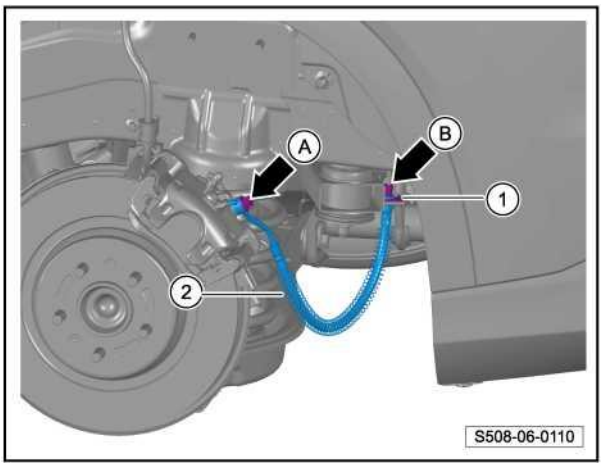
Tip:

The removal and installation procedures are only for the rear left brake hose, which can be basically referred to for the rear right one.

When removing the front brake caliper, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, clean it with clear water immediately.

1 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement



3 Remove the rear brake hose

a. Unscrew the fixing bolt (see arrow A) of the rear brake hose, and remove the washer.

b. Unscrew the nut (see arrow B) connecting the rear brake hose ② and the brake pipeline 9.

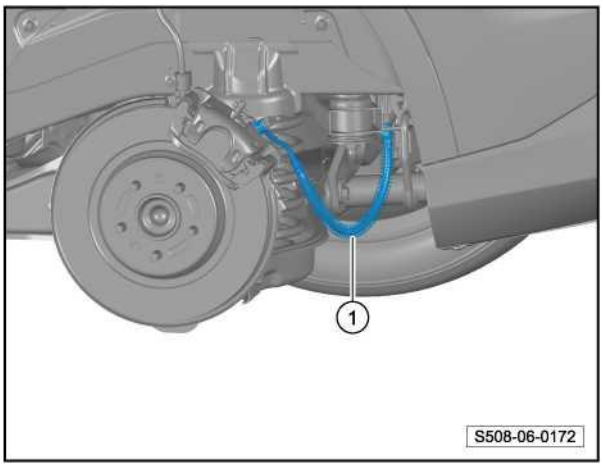
c. Remove the E-Ring ① with a proper tool.

d. Remove the rear brake hose ②.

• Tightening torque of nut (see arrow **A**): **37±3N·m**

• Tightening torque of bolt (see arrow **B**): **16±2 N·m**

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– During installation, be sure to fix the end of hose connected with caliper first and straighten out brake hose ①. Make sure that the hose is bent naturally.

-After installing the brake hose, add the brake fluid. Refer to 1.4.3.10 Brake fluid inspection.

-After installing the brake hose, bleed all four brake slave cylinders. Refer to 1.4.3.53 Brake system bleeding.

3.9 Hydraulic braking system

3.9.1 Specification

3.9.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection of brake bracket assembly with brake safety control system	All-metal hexagon flange locking nut M8	25±2
Connection of brake bracket assembly with body	All-metal hexagon flange locking nut M8	25±2
Connection of brake oil reservoir and accessory assembly with body	Hexagon flange nut M6	8±1

3.9.2 Description and operation

3.9.2.1 Description and operation

Hydraulic braking system

The hydraulic brake system consists of the following components:

– Brake fluid reservoir: It supplies brake fluid to the hydraulic braking system.

-Brake safety control system: integrated with the brake master cylinder and ABS, it converts the mechanical input force of the brake pedal into hydraulic output pressure, which is used to control and adjust the hydraulic pressure of each wheel brake oil line, for achieving a reasonable distribution of braking force, and converts the hydraulic input pressure into mechanical output force to realize the wheel braking.

– Brake oil pipe: It transmits brake fluid between components of the hydraulic braking system.

System operation

The mechanical force from the brake pedal is converted into oil pressure by the brake safety control system. After adjustment by the hydraulic electronic control unit, it is transmitted to the brake slave cylinder through the brake pipe and hose, and then the brake slave cylinder converts the oil pressure into mechanical force, so that the brake pad presses the brake disc tightly for vehicle braking.

Brake fluid level warning light

The brake fluid level warning light will illuminate under the following conditions:

– Ignition ON: The brake fluid level warning light is on at the moment when the ignition switch is turned on to check whether the indicator works normally.

-Excessive low brake fluid level: When the brake fluid level is too low, the brake fluid level warning switch will send the signal to the circuit, and the brake fluid level warning light will turn on to alert the refilling of brake fluid.

Parking state indicator lamp

The parking status indicator will turn on in the following situations:

-If the parking brake is not released, the indicator is always on; otherwise, the indicator will turn off. The indicator is used to indicate the parking braking status.

ABS and EBD fault indicator

The ABS and EBD fault indicators will turn on in the following situations:

-Ignition switch on: At the moment when the ignition switch is turned on, the ABS and EBD fault indicators will turn on for the self-test of the ABS and EBD system. After the self-test finishes, the indicators will turn off. The process lasts for about 3s.

-Abnormal working of **ABS and EBD** systems: When the ABS system becomes faulty (the ABS fault indicator will turn on, while the EBD one will turn off), the anti-lock function fails. The brake system works in the EBD brake force distribution mode (same as the non-ABS vehicle provided with the load sensing proportioning valve), but is not provided with the anti-lock function. Please contact a service outlet authorized by Dongfeng Sokon for inspection.

Warning!

If any or both of the ABS and EBD fault indicators turn(s) on when the engine is running or moving, it indicates that the ABS/EBD system works abnormally. At this time, the brake system is in danger. Please slow down the vehicle slowly until it stops, and contact an authorized service outlet of Dongfeng Sokon for inspection immediately.

ABS fault indicator

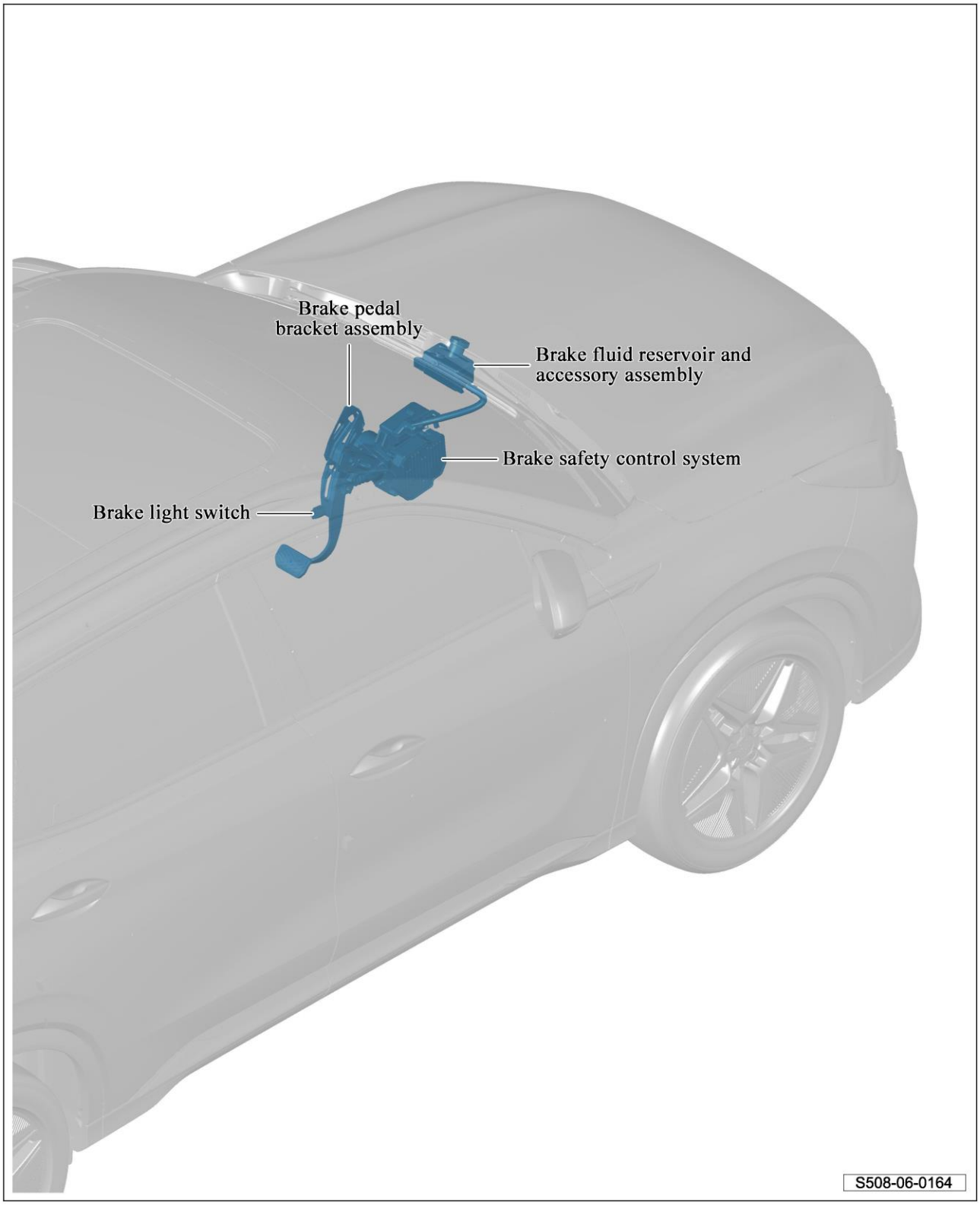
The ABS fault indicator will turn on in the following situations:

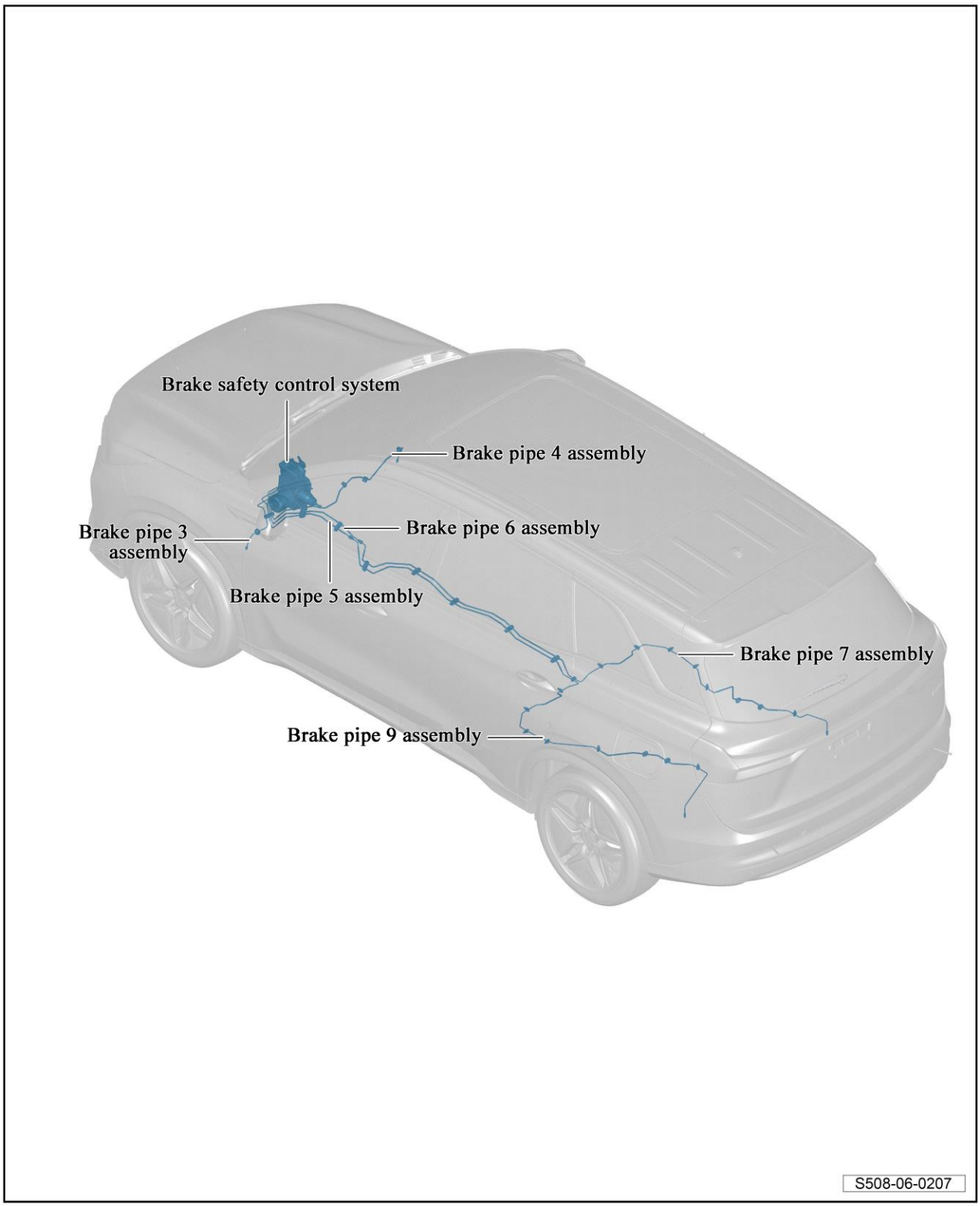
-Ignition switch on: At the moment when the ignition switch is turned on, the ABS fault indicator will turn on for the self-test of the ABS system. After the self-test finishes, the indicator will turn off. The process lasts for about 3s.

-Improper connection of harness of **ESC** system or system fault: When the harness of the ABS system is not connected in place or the ABS system itself becomes faulty, the ABS fault indicator will turn on to prompt the maintenance of the ABS system.

3.9.3 Component position

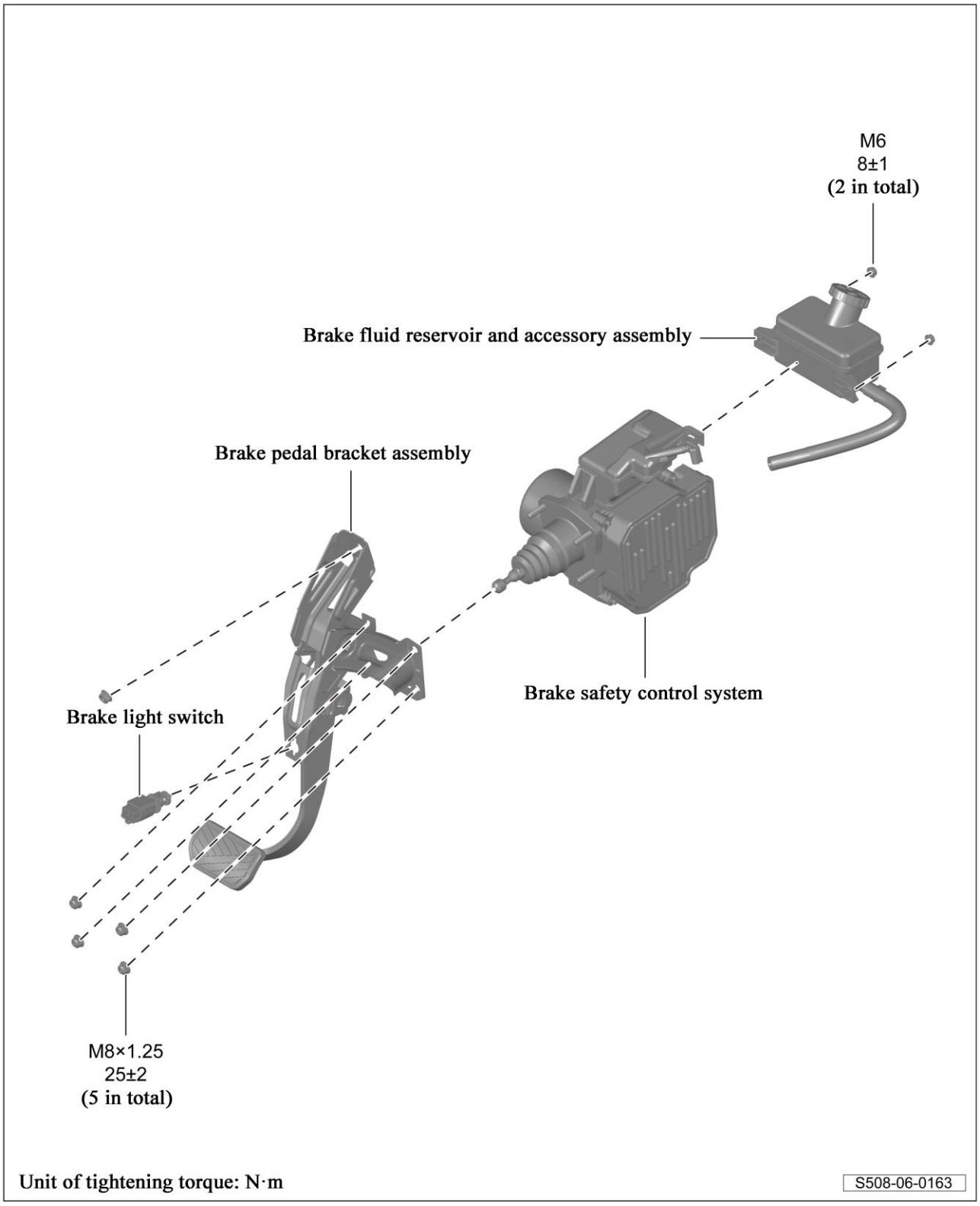
3.9.3.1 Component position




Brake safety control system
Brake pipe 4 assembly
Brake pipe 3 assembly
Brake pipe 6 assembly
Brake pipe 5 assembly
Brake pipe 7 assembly
Brake pipe 9 assembly
S508-06-0207

3.9.4 Exploded view

3.9.4.1 Exploded view



3.9.5 Special tool

3.9.5.1 List of special tools

S/N	Symbol	Description	Function
1		Removal tool for ball joint clip	For removal of brake safety control system ball joint and pedal bracket assembly CV joint

3.9.6 Removal and installation

3.9.6.1 Removal and installation of oil reservoir and accessory assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

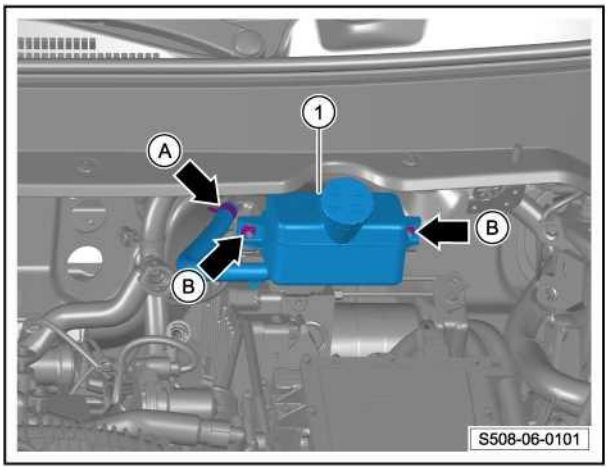
4 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front).

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

7 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly.

8 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement



9 Remove the oil reservoir and accessory assembly

a. Disengage the oil reservoir and accessory assembly ① from the brake safety control system fixing clamp (see arrow A).

b. Unscrew the fixing nuts (see arrow B), and remove the oil reservoir and accessory assembly ①.

- Tightening torque of nut: **8±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to

the following items:

-After installation, add the brake fluid. See 1.4.3.10 Brake fluid inspection.

-After installation, bleed the four tires. See 1.4.3.53 Brake system bleeding.

-Check the brake fluid level and fill the brake fluid to the standard level. Refer to 1.4.3.10 Brake fluid inspection.

3.9.6.2 Removal and installation of pedal bracket assembly

Disassembly procedures

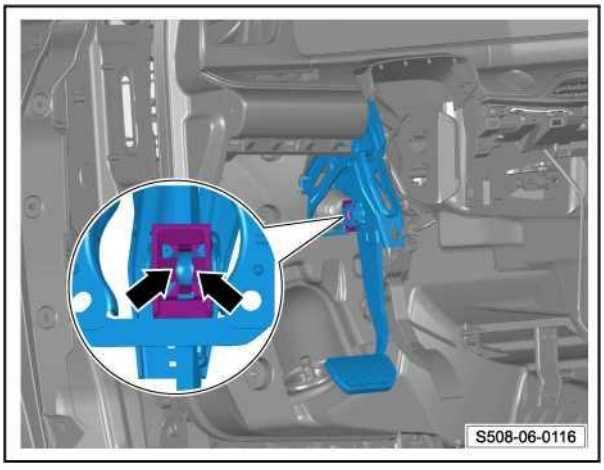
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel left lower cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel left lower cover assembly

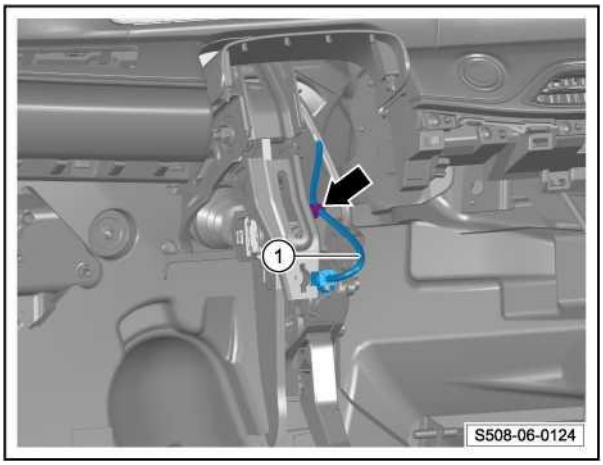
4 Remove the front left air-to-footwell pipe assembly. Refer to 6.5.4.7 Removal and installation of front left air-to-footwell pipe assembly.

5 Remove the brake light switch assembly. Refer to 3.9.5.3 Removal and installation of brake light switch assembly.

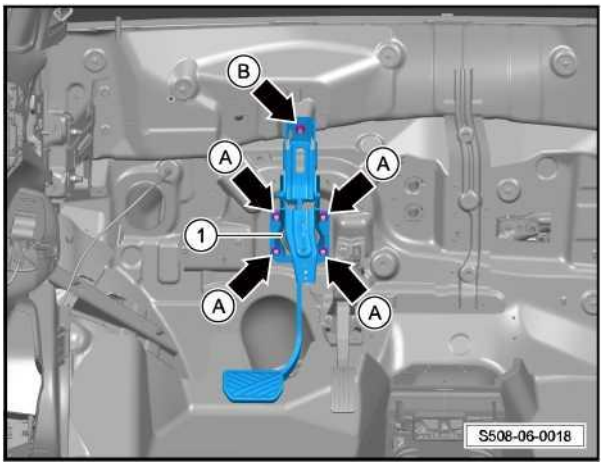


6 Remove the pedal bracket assembly

a. At the location (see arrow), disengage the brake safety control system ball joint from the pedal bracket assembly CV joint with the removal tool for ball joint clip (refer to 3.9.5.1 List of special tools).



b. Disengage the fixing clip (see arrow), and disengage the brake light switch connector harness ① from the pedal bracket assembly.



c. Unscrew the nuts (see arrow A) connecting the pedal bracket assembly ① with the brake safety control system.

d. Unscrew the nuts (see arrow B) connecting the pedal bracket assembly ① with the body.

e. Remove the pedal bracket assembly ①.

• Tightening torque of nut (see arrow **A**): **25±2N·m**

• Tightening torque of nut (see arrow **B**): **25±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

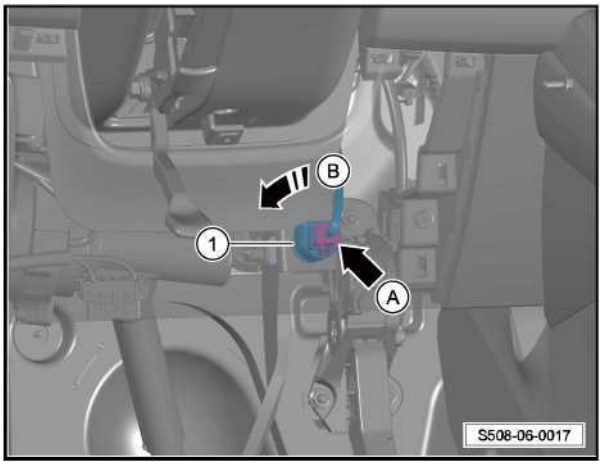
–After installation, check the free stroke of the brake pedal. Refer to 1.4.3.30 Inspection of free stroke and height of brake pedal.

3.9.6.3 Removal and installation of brake lamp switch

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the brake lamp switch assembly

a. Disconnect the connector (see arrow A) of the brake light switch assembly.

b. Rotate the brake light switch ① to the slot along the direction of arrow B.

c. Remove the brake lamp switch ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installation, check that the protruding length of the brake light switch contact is 1.5±0.5 mm.

3.9.6.4 Removal and installation of brake pipeline 3 assembly

Disassembly procedures

Tip:

When removing the brake pipeline, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, wash it with clear water immediately.

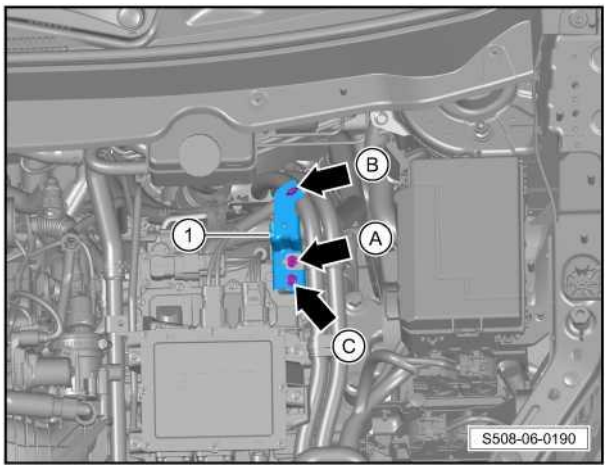
1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

3 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly.

4 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component.

5 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant.



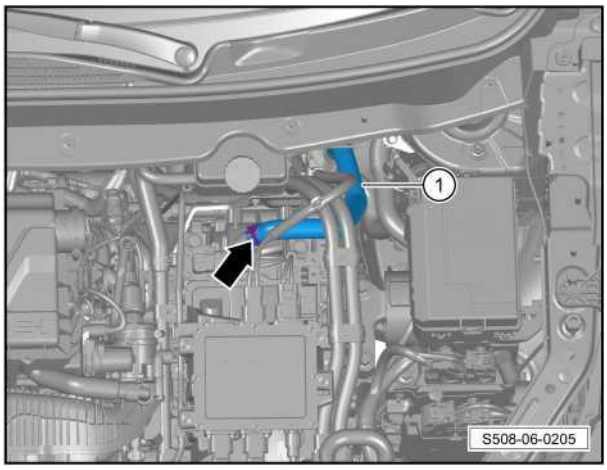
6 Remove brake pipeline 3 assembly

a. Unscrew the fixing bolt (see arrow A) of the battery pack HV harness and harness support 5.

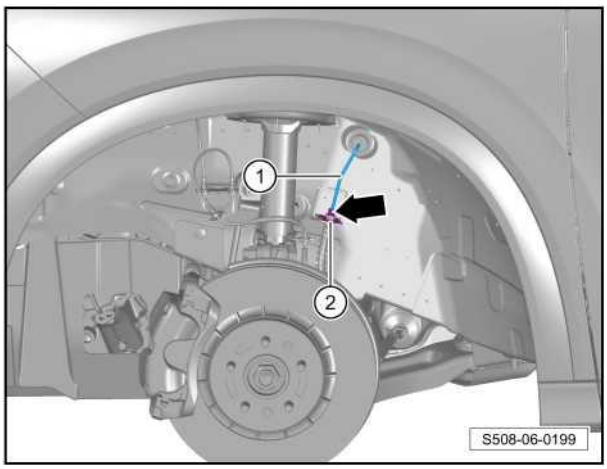
b. Disengage the fixing clip (see arrow B) of charger HV harness and harness support 5.

c. Unscrew the fixing bolts (see arrow C), and remove the harness support 5 ①.

- Tightening torque of bolt (see arrow **A**): **10±1 N·m**
- Tightening torque of bolt (see arrow **C**): **10±1 N·m**



d. Loosen the fixing clamp (see arrow), and disengage the low-temperature water pipe assembly ① from the MCU/GCU (integrated dual motor controller).



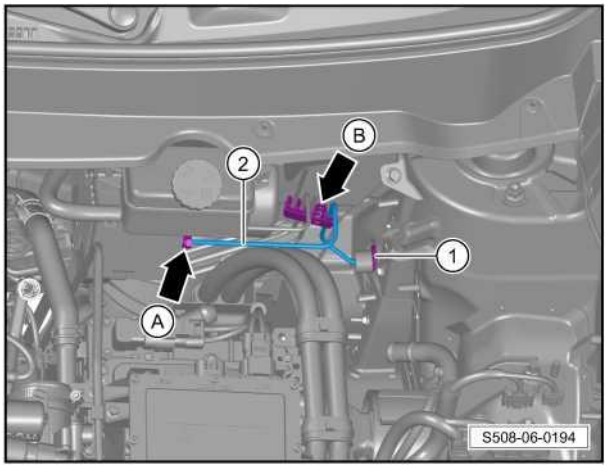
e. Unscrew the nut (see arrow) connecting the brake pipeline 3 assembly and the front brake hose.

f. Remove the E-Ring ① with a proper tool.

- Tightening torque of nut: 16±2 N·m

Tip:

Before unscrewing the fixing nut of the brake pipeline 3 assembly, place an appropriate container underneath for brake fluid collection.



g. Unscrew the nuts (see arrow A) connecting the brake pipeline 3 assembly with the brake safety control system.

h. Disengage the fixing clip (see arrow B) of brake pipeline 3 assembly and four-pipe clip of brake pipeline.

i. Disengage the brake pipeline 3 assembly protective jacket ①.

g. Remove brake pipeline 3 assembly ②.

• Tightening torque of nut (see arrow **A**): **16±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installing the brake hose, add the brake fluid. Refer to 1.4.3.41 Brake fluid change.

-After installing the brake hose, bleed the brake system. Refer to 1.4.3.53 Brake system bleeding.

-Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

3.9.6.5 Removal and installation of brake pipeline 4 assembly

Disassembly procedures

Tip:

When removing the brake pipeline, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, wash it with clear water immediately.

1 Remove the front right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

3 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly.

4 Remove the thermal management integrated module. Refer to 5.4.5.2 Removal and installation of thermal management integrated module.

5 Remove the battery pack HV harness. Refer to

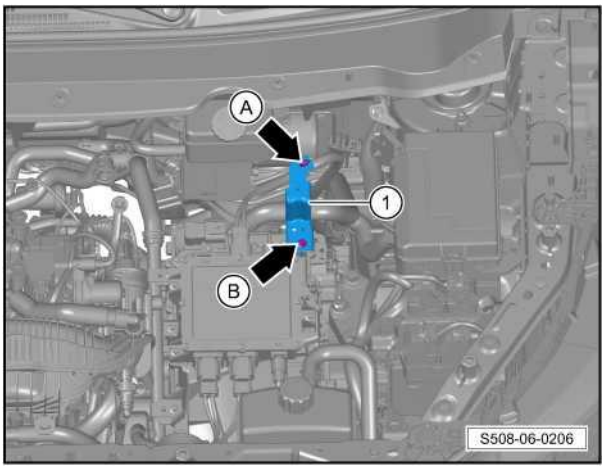
5.6.6.5 Removal and installation of battery pack HV harness assembly.

6 Remove the battery pack connecting tube assembly. Refer to 5.4.5.3 Removal and installation of battery pack connecting pipe assembly.

7 Remove the engine compartment fully-wrapped cover support plate component (left/right). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component.

8 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant.

9 Discharge the engine coolant. Refer to 1.4.3.40 Replacement of engine coolant.

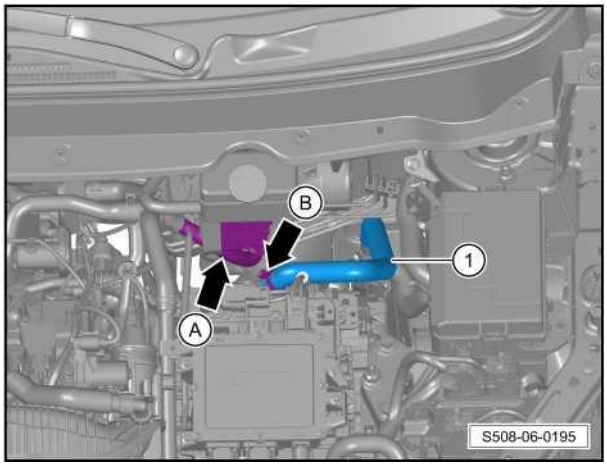


10 Remove brake pipeline 4 assembly

a. Disengage the fixing clip (see arrow A) of charger HV harness and harness support 5.

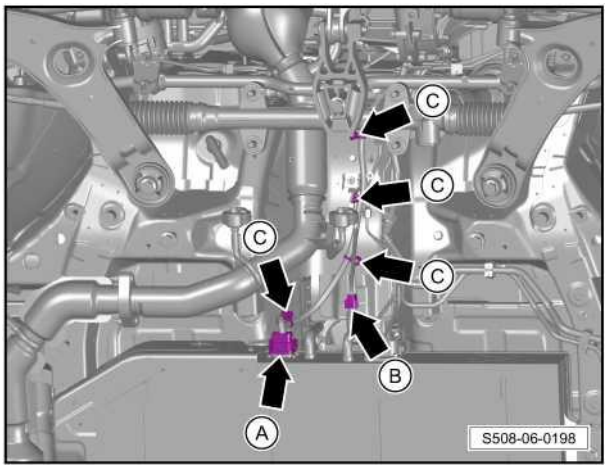
b. Unscrew the fixing bolt (see arrow B) and remove the harness bracket 5 ①.

• Tightening torque of bolt (see arrow **B**): **10±1 N·m**



c. Disconnect the connector (see arrow A) of the brake safety control system.

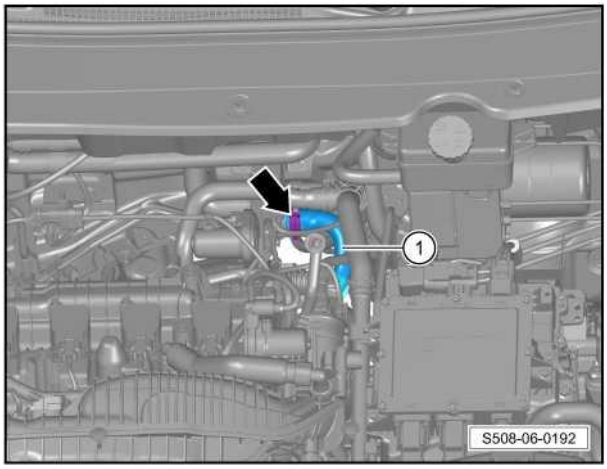
d. Loosen the fixing clamp (see arrow B), and disengage the low-temperature water pipe assembly ① from the MCU/GCU (integrated dual motor controller).



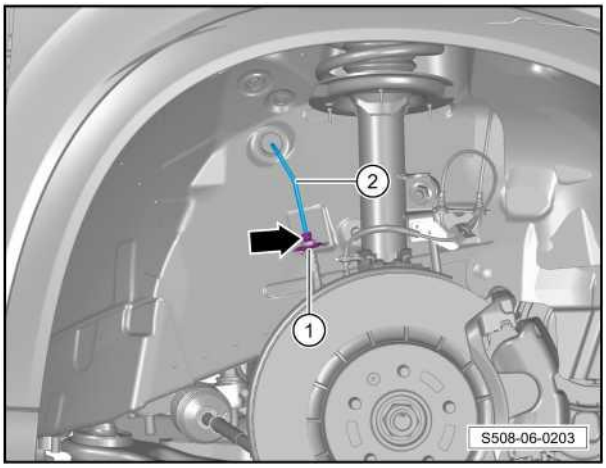
e. Disconnect the battery pack LV harness connector (see arrow A).

f. Disconnect the battery pack coolant temperature sensor connector (see arrow B).

g. Disengage the fixing clips (see arrow C) of engine compartment harness.



h. Loosen the fixing clamp (see arrow) and disengage the three-way valve outlet hose I ① from the HVAC circulating three-way valve assembly.



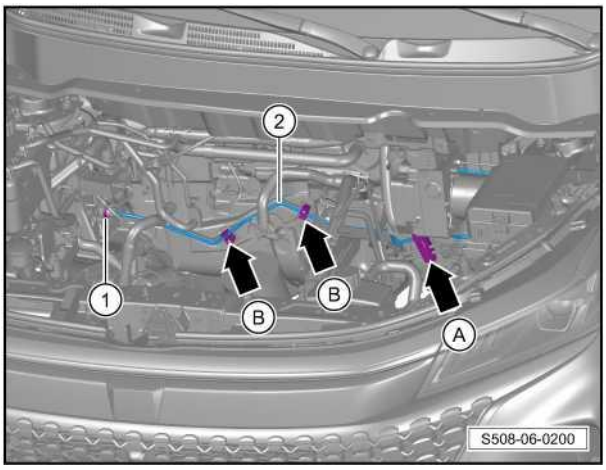
i. Unscrew the nut (see arrow) connecting the brake pipeline 4 assembly ② and the front brake hose.

g. Remove the E-Ring ① with a proper tool.

- Tightening torque of nut: 16±2 N·m

Tip:

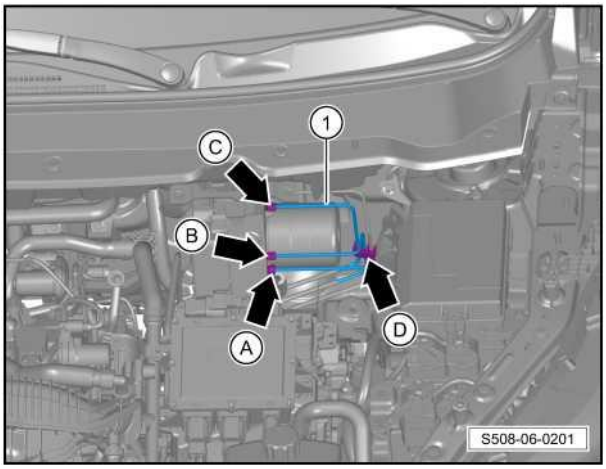
Before unscrewing the fixing nut of the brake pipeline 4 assembly, place an appropriate container underneath for brake fluid collection.



k. Disengage the fixing clip (see arrow A) of brake pipeline 4 assembly ② and three-pipe clip of brake pipeline.

l. Disengage the fixing clip (see arrow B) of brake pipeline 4 assembly ② and single-pipe clip of brake pipeline.

m. Disengage the brake pipeline 4 assembly protective jacket ①.



n. Unscrew the nuts (see arrow A) connecting the brake pipeline 3 assembly with the brake safety control system.

o. Unscrew the nuts (see arrow B) connecting the brake pipeline 6 assembly with the brake safety control system.

p. Unscrew the nuts (see arrow C) connecting the brake pipeline 4 assembly with the brake safety control system.

q. Disengage the fixing clip (see arrow D) of brake pipeline 4 assembly and four-pipe clamp of brake pipeline.

r. Remove brake pipeline 4 assembly ①.

- Tightening torque of nut (see arrow **A**): **16±2 N·m**
- Tightening torque of nut (see arrow **B**): **16±2 N·m**
- Tightening torque of nut (see arrow **C**): **16±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installing the brake hose, add the brake fluid. Refer to 1.4.3.41 Brake fluid change.

-After installing the brake hose, bleed the brake system. Refer to 1.4.3.53 Brake system bleeding.

-Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

-Add the engine coolant after installation. Refer to 1.4.3.40 Replacement of engine coolant.

3.9.6.6 Removal and installation of brake pipeline 5 assembly

Disassembly procedures

Tip:

When removing the brake pipeline, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, wash it with clear water immediately.

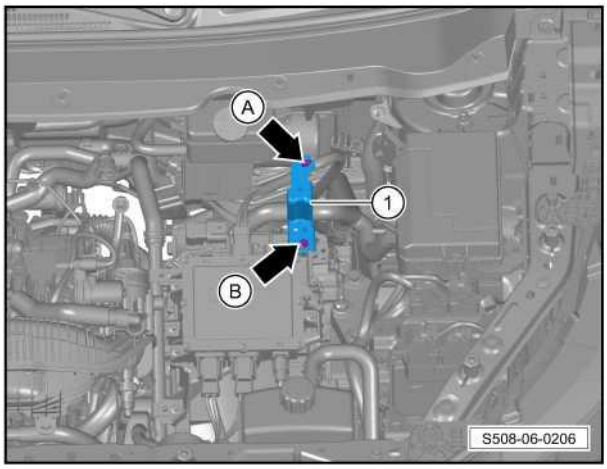
1 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

2 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly.

3 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component.

4 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant.

5 Remove the battery pack HV harness. Refer to 5.6.6.5 Removal and installation of battery pack HV harness assembly.

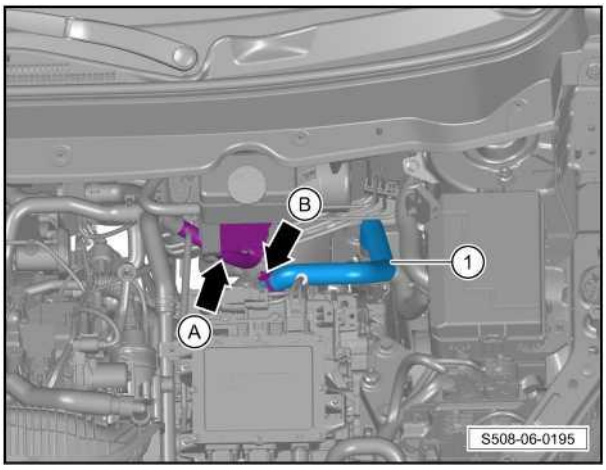


6 Remove brake pipeline 5 assembly

a. Disengage the fixing clip (see arrow A) of charger HV harness and harness support 5.

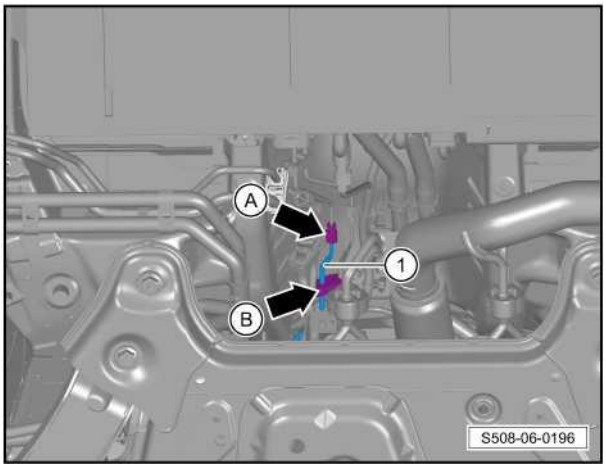
b. Unscrew the fixing bolt (see arrow B) and remove the harness bracket 5 ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**



c. Disconnect the connector (see arrow A) of the brake safety control system.

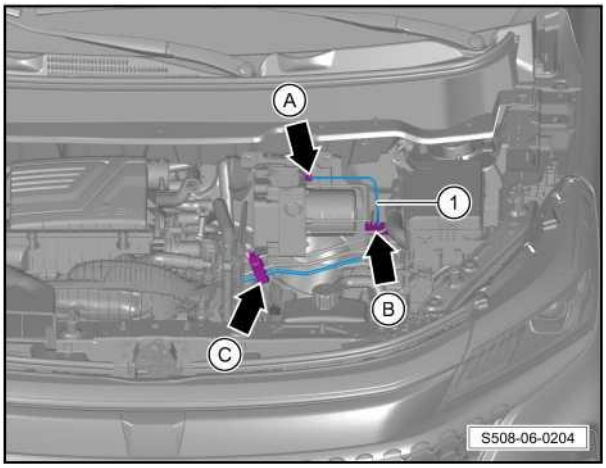
d. Loosen the fixing clamp (see arrow B), and disengage the low-temperature water pipe assembly ① from the MCU/GCU (integrated dual motor controller).



e. Unscrew the fixing nuts (see arrow A) of brake pipeline 5 assembly and brake pipeline 9 assembly.

f. Disengage the fixing clip (see arrow B) of brake pipeline 5 assembly and double-pipe clip of brake pipeline.

• Tightening torque of nut (see arrow **A**): **16±2 N·m**



g. Unscrew the nuts (see arrow A) connecting the brake pipeline 5 assembly with the brake safety control system.

h. Disengage the fixing clip (see arrow B) of brake pipeline 5 assembly and four-pipe clip of brake pipeline.

i. Disengage the fixing clip (see arrow C) of brake pipeline 5 assembly and three-pipe clip of brake pipeline.

g. Remove brake pipeline 5 assembly ①.

• Tightening torque of nut (see arrow **A**): **16±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installing the brake hose, add the brake fluid. Refer to 1.4.3.41 Brake fluid change.

– After installing the brake hose, bleed the brake system. Refer to 1.4.3.53 Brake system bleeding.

-Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

3.9.6.7 Removal and installation of brake pipeline 6 assembly

Disassembly procedures

Tip:

When removing the brake pipeline, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, wash it with clear water immediately.

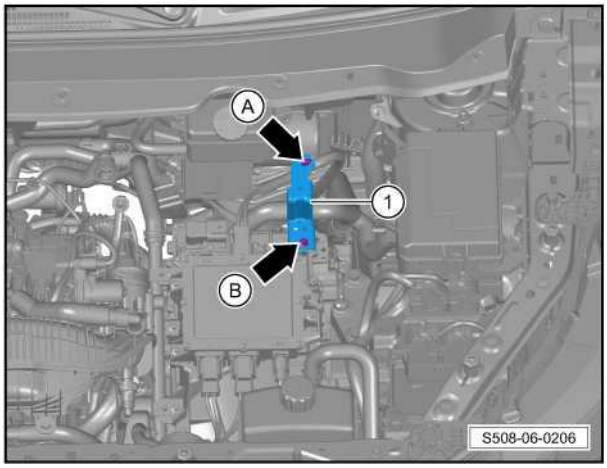
1 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

2 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly.

3 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component.

4 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant.

5 Remove the battery pack HV harness. Refer to 5.6.6.5 Removal and installation of battery pack HV harness assembly.

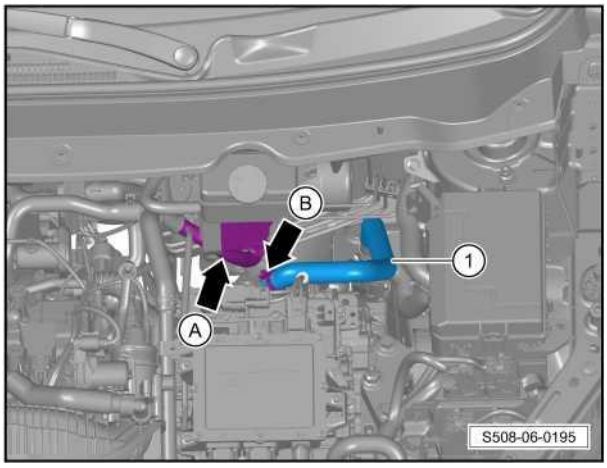


6 Remove brake pipeline 6 assembly

a. Disengage the fixing clip (see arrow A) of charger HV harness and harness support 5.

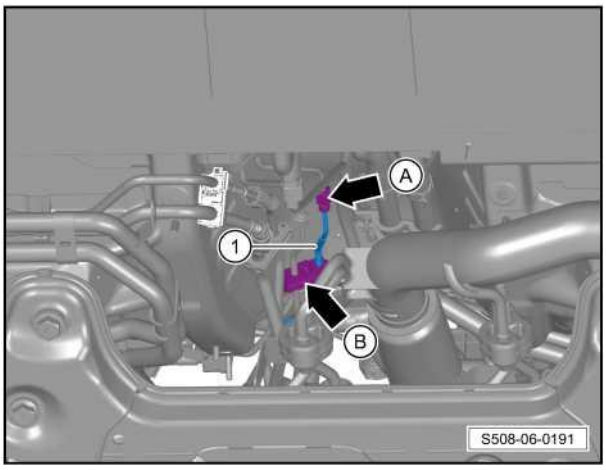
b. Unscrew the fixing bolt (see arrow B) and remove the harness bracket 5 ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**



c. Disconnect the connector (see arrow A) of the brake safety control system.

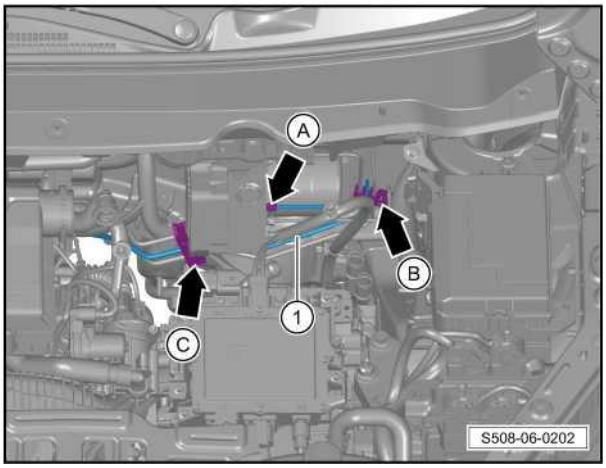
d. Loosen the fixing clamp (see arrow B), and disengage the low-temperature water pipe assembly ① from the MCU/GCU (integrated dual motor controller).



e. Unscrew the fixing nuts (see arrow A) of brake pipeline 6 assembly and brake pipeline 7 assembly.

f. Disengage the fixing clip (see arrow B) of brake pipeline 6 assembly and double-pipe clip of brake pipeline.

- Tightening torque of nut (see arrow **A**): **16±2 N·m**



g. Unscrew the nuts (see arrow A) connecting the brake pipeline 6 assembly with the brake safety control system.

h. Disengage the fixing clip (see arrow B) of brake pipeline 6 assembly and four-pipe clip of brake pipeline.

i. Disengage the fixing clip (see arrow C) of brake pipeline 6 assembly and three-pipe clip of brake pipeline.

g. Remove brake pipeline 6 assembly ①.

- Tightening torque of nut (see arrow **A**): **16±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installing the brake hose, add the brake fluid. Refer to 1.4.3.10 Brake fluid inspection.

-After installing the brake hose, bleed the brake system. Refer to 1.4.3.53 Brake system bleeding.

-Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

3.9.6.8 Removal and installation of brake pipeline 9 assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the brake pipeline 9 assembly, which can be basically referred to for the brake pipeline 7 assembly.

When removing the brake pipeline, do not splash the brake fluid on the vehicle; otherwise, the paint may be damaged. If the brake fluid has been splashed on the paint layer, wash it with clear water immediately.

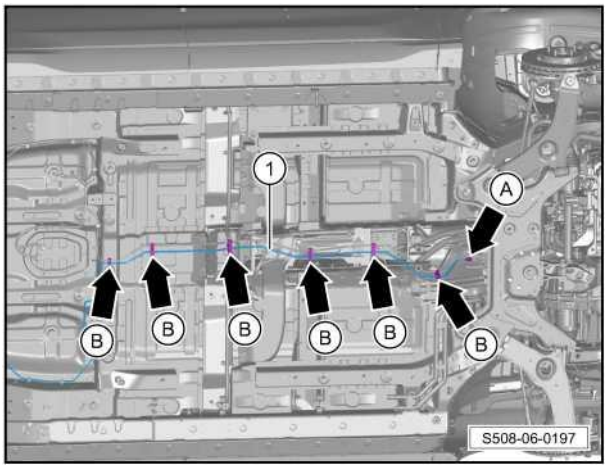
1 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

2 Discharge the battery system coolant. Refer to 5.4.5.1 Replacement of power battery coolant.

3 Remove the battery pack assembly. Refer to 5.3.7.1 Removal and installation of battery pack assembly.

4 Remove the fuel tank assembly. Refer to 2.3.9.5 Removal and installation of fuel tank assembly

5 Remove the rear subframe assembly. Refer to 3.3.6.11 Removal and installation of rear subframe assembly.

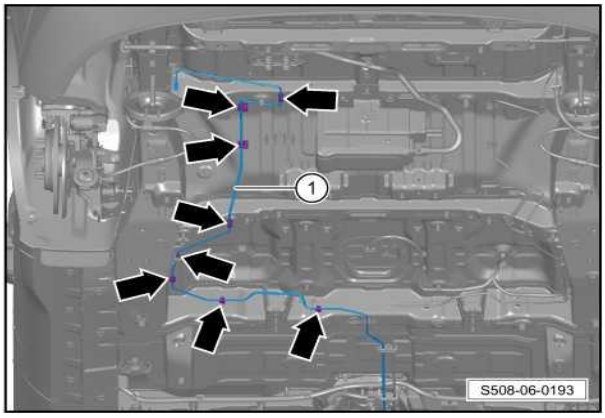


6 Remove brake pipeline 9 assembly

a. Unscrew the fixing nuts (see arrow A) of brake pipeline 9 assembly ① and brake pipeline 5 assembly.

b. Disengage the fixing clip (see arrow B) of brake pipeline 5 assembly and double-pipe clip of brake pipeline.

- Tightening torque of nut (see arrow **A**): **16±2 N·m**



c. Disengage the fixing clips (see arrows) of brake pipeline 9 assembly and single-pipe clip of brake pipeline.

d. Remove brake pipeline 9 assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installing the brake hose, add the brake fluid. Refer to 1.4.3.10 Brake fluid inspection.

-After installing the brake hose, bleed the brake system. Refer to 1.4.3.53 Brake system bleeding.

-Add the battery system coolant after installation. Refer to 5.4.5.1 Replacement of power battery coolant.

3.10 Parking system

3.10.1 Specification

3.10.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
EPB controller and vehicle body assembly	Hexagon head flange bolt M6	10±1

3.10.2 Description and operation

3.10.2.1 Description and operation

Overview of EPB system

The EPB system uses the parking brake motor to directly control the rear wheel brake caliper for parking braking purpose and mainly consists of three components, i.e., EPB switch, EPB controller and parking brake motor.

The parking brake functions to keep the parked vehicle stop fully and from sliding. Start the vehicle on slopes also with the use of other devices. At the same time, it can be used for emergency braking after the service brake of vehicle fails.

The EPB switch is located on the front central control panel. When the EPB switch is pulled upward, the drive motor assembly rotates. The drive motor assembly drives the screw rod to rotate, and then the nut moves forward. The piston moves forward under the action of nut and clamps, and then the parking is completed. When the brake pedal is depressed and the EPB switch pressed downward, the drive motor assembly rotates, which drives the screw rod to rotate. The rotating screw rod drives the nut to move backward. The piston moves backward under the action of rectangular sealing ring, and then the release is completed.

The EPB controller is mainly to receive the EPB switch information and CAN bus information, process and analyze such information and control the parking brake motor.

For the EPB system realizing parking braking by controlling the brake caliper, it is required to remove the EPB motor and then rotate the push rod in the caliper with a special wrench to release the brake caliper if the EPB cannot be released. After this operation, reset the EPB brake caliper with a diagnostic scanner.

Advantages of EPB system:

1. The parking brake will be applied automatically after the engine is shut down.

2. The strength of different drivers varies, and the traditional parking brake is different in actual parking brake. EPB braking force is stable and will not vary from person to person. It replaces the traditional parking brake system, so that the parking brake can be realized by operating a simple switch, greatly improving the comfort and safety of the complete vehicle.

3. Automatic functions such as assisted start can be added. It takes up less space and makes the vehicle interior design more convenient.

Parking state indicator lamp

The vehicle is equipped with the parking status indicator. The parking status indicator switch is turned on when the parking start button is raised for parking braking, and the parking status indicator on the instrument cluster will turn on. The parking status indicator is used to indicate the parking braking status.

Emergency braking function

In case of emergency, pull up the EPB switch and hold it, then use the EPB system to brake the vehicle. Emergency braking can be canceled by releasing the EPB switch or depressing the accelerator pedal.

Automatic Release of EPB during Start

When the vehicle is parked, start the vehicle, press and hold the brake pedal, and shift to D or R from P to automatically release EPB, at this time, the indicator goes out, the function is disabled, and the vehicle starts normally.

Automatic vehicle hold

AVH is an automatic vehicle hold (AUTOHOLD) function. It is used when the vehicle needs to be stationary for a long time to maintain parking, such as following in traffic jams on slopes and waiting for traffic lights. On the premise that the complete vehicle meets the requirements of automatic vehicle hold, depress the brake pedal to standstill (the speed changes from yes to no). After the brake pedal is released, ESC will actively maintain the hydraulic pressure in the brake pipeline to keep the vehicle stationary.

3.10.2.2 Instructions for releasing EPB switch

The vehicle is provided with the autonomous brake function. Please release the electronic switch during maintenance. The specific operating steps are as follows:

1 Turn the ignition switch to the “ON” position, and depress the brake pedal.

2 Press and hold the parking button for 10 ~ 15s.

3 Release the parking button and immediately press it again. Release it for less than 1s.

Tip:

After the operation, the EPB ECU assembly will release the maintenance, and the sound of mechanical rotation of the rear brake caliper assembly will be heard during the process.

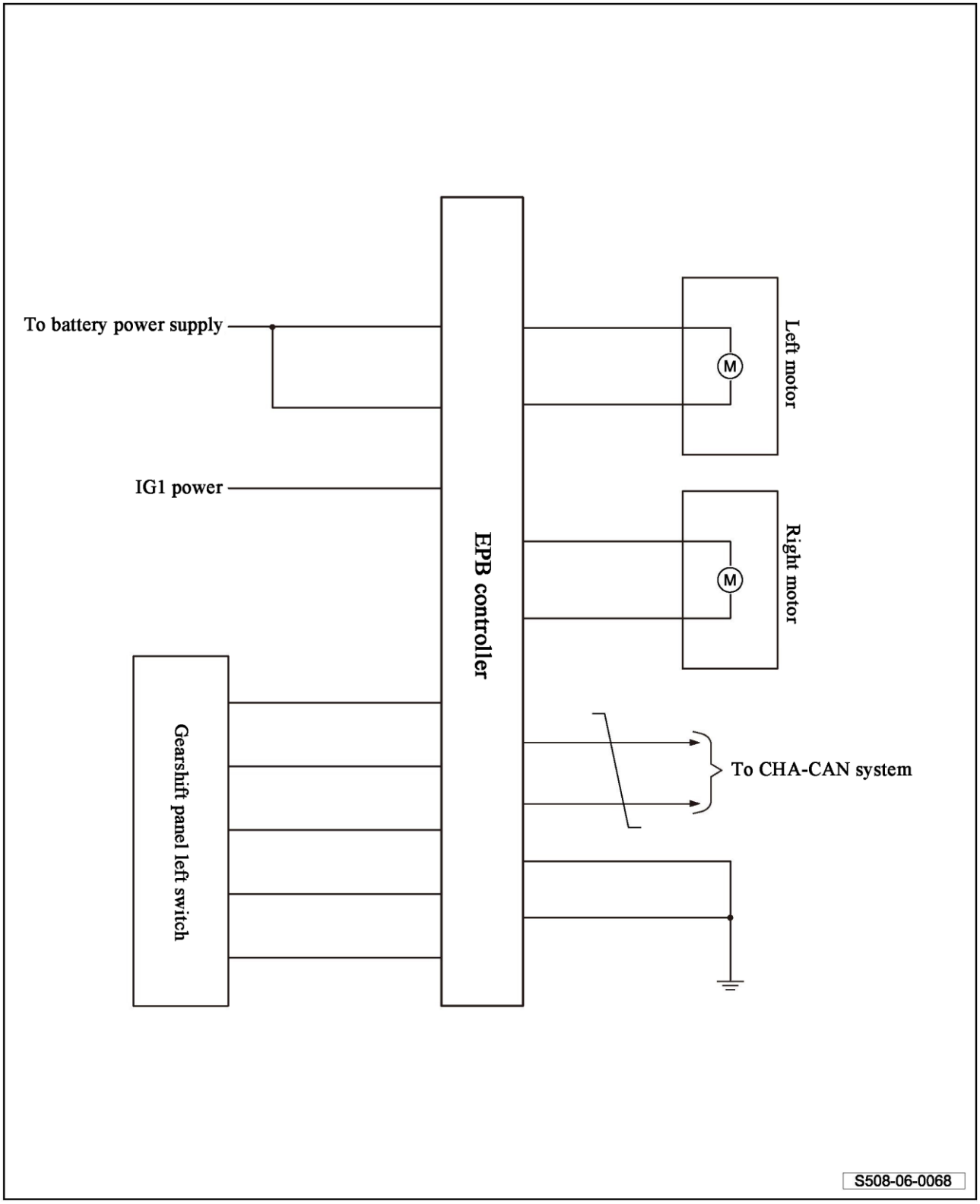
Alternatively, a diagnostic scanner can also be used to release maintenance. Refer to 1.4.2.8 Maintenance activation of EPB for specific operating steps.

3.10.3 Component position

3.10.3.1 Component position

3.10.4 Electrical schematic diagram

3.10.4.1 Electrical schematic diagram



3.10.5 Diagnosis information and steps

3.10.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD diagnosis interface of the vehicle. By comparing the data sheet provided by EPB with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

3.10.5.2 Visual inspection

- Confirmation of fault symptom

The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

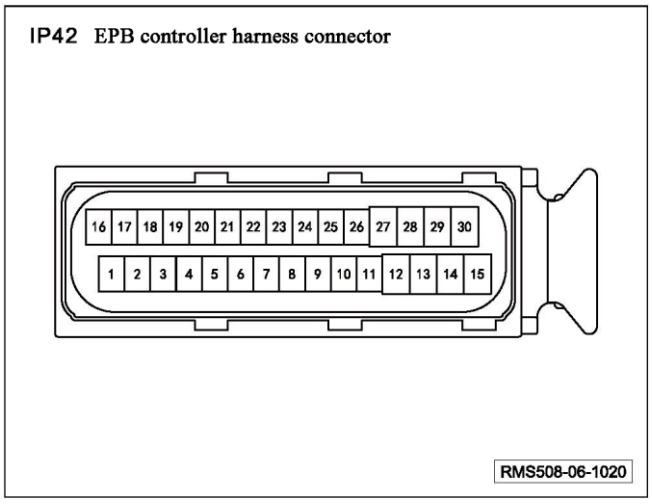
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

3.10.5.3 ECU terminals

EPB controller harness connector (IP42)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
8	0.35/brown-purple	EPB indicator -	—	—
9	0.35/brown-black	EPB signal 1	—	—
10	0.35/brown-green	EPB signal 2	—	—
12	2.5/Blue	Right wheel speed motor +	—	—
13	2.5/Red and blue	Right motor B+	The start switch is put to any position	Battery voltage
14	2.5/Green	Left wheel speed motor +	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
15	2.5/Brown and white	Left motor B+	The start switch is put to any position	Battery voltage
16	0.35/Light green	Chassis (CH)CAN-H	—	—
17	0.35/Light green and white	Chassis (CH)CAN-L	—	—
18	0.35/brown-yellow	EPB signal 3	—	—
19	0.35/Brown and blue	EPB signal 4	—	—
22	0.35/White and red	IG1+	The start switch is in IG1 position.	Battery voltage
27	2.5/White	Right wheel speed motor -	—	—
28	2.5/Black	Right motor -	—	0V
29	2.5/Orange	Left wheel speed motor -	—	—
30	2.5/Black	Left motor -	—	0V

3.10.5.4 Data list

DID No.	DID description	Byte(s)	Byte(s)	Bit	Data name	Scope		Unit
						Minimum	Max. value	
0x0502	Date of programming	4	0	All	Year High	0	255	-
			1	All	Year Low	0	255	-
			2	All	Month	1	12	-
			3	All	Date	1	31	-
0x0506	Left clamping force	2	ALL	ALL	Left clamping force	0	30	kN
0x0507	Right clamping force	2	ALL	ALL	Right clamping force	0	30	kN
0x0508	Inclination reading	1	ALL	ALL	Inclination reading	-128	127	%
0x0509	Brake disc temperature	2	ALL	ALL	Brake disc temperature	0	1000	°C
0x0510	Clamping count of left actuator	4	ALL	ALL	Clamping count of left actuator	0	Maximum load cycle	1
0x0511	Clamping count of right actuator	4	ALL	ALL	Clamping count of right actuator	0	Maximum load cycle	1
0x0512	Status of left actuator	1	ALL	ALL	Status of left actuator	-	-	-
0x0513	Status of	1	ALL	ALL	Status of	-	-	-

	right actuator				right actuator			
0x0514	Switch status	1	ALL	ALL	Switch status	-	-	-
0x0610	Vehicle model configuration	10	ALL	ALL	Vehicle model configuration	-	-	-

3.10.5.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
B111716	Insufficient supply voltage	The EPB function is limited, and only the parking release is allowed.	Power supply fault	Check the battery voltage, repair or replace the battery.
C128060	Low supply voltage	The motor stops immediately, and the EPB function is disabled.	Power supply fault	Check the battery voltage, repair or replace the battery.
C128A13	The left motor power supply circuit is disconnected.	The left motor parking function is prohibited.	Harness fault or fuse fault	Check the power fuse and wiring harness of EPB left motor.
C128B13	The right motor power supply circuit is disconnected.	The right motor parking function is prohibited.	Harness fault or fuse fault	Check the power fuse and wiring harness of EPB right motor.

B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
C128105	Ignition signal line fault	The system does not sleep, and the Auto Hold is disabled.	IGN wiring harness error	Check the IGN harness connection
C1282A0	Unexpected power failure	The EPB function is not limited.	Abnormal power-off	Check the battery terminal or ECU harness.
C128313	The EPB switch is disconnected.	The EPB switch operation is invalid, and the manual parking and manual release functions are disabled.	The switch is disconnected.	Check the harness of the EPB switch. If the fault cannot be eliminated, replace the EPB switch.
C128301	EPB switch signal fault	The EPB switch operation is invalid, and the manual	Switch error	Check the harness of the EPB switch. If the fault cannot be eliminated,

B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
		parking and manual release functions are disabled.		replace the EPB switch.
C128400	The switch is stuck when being pulled up.	The automatic function of EPB is not limited, and the EPB switch operation is invalid.	The switch is faulty	Check the wiring harness connections and connectors, and if the fault persists, replace the switch button.
C128500	The switch is stuck when being released.	The automatic function of EPB is not limited, and the EPB switch operation is invalid.	The switch is faulty	Check the wiring harness connections and connectors, and if the fault persists, replace the switch button.
C128004	Auxiliary MCU fault	The system stops working, and the EPB function is disabled.	Control unit internal fault	Power on again after power off to clear DTC; if the fault cannot be eliminated, replace the EPB controller.
C128044	Failure of main MCU RAM	The system stops working, and the EPB function is disabled.	Control unit internal fault	Power on again after power off to clear DTC; if the fault cannot be eliminated, replace the EPB controller.
C128045	Failure of main MCU ROM	The system stops working, and the EPB function is disabled.	Control unit internal fault	Power on again after power off to clear DTC; if the fault cannot be eliminated, replace the EPB controller.
C128046	EEPROM data storage error	The status of parking calipers is unknown by default, and the EPB function is not limited.	Control unit internal fault	Wait for 30s after power off, and restart; if the fault cannot be eliminated, replace the EPB controller.
C12801D	Left motor current sensor failure	Rear left electronic caliper does not work.	Control unit internal circuit fault	In order to clear the DTC, wait for 30s after power off, and restart; if the fault cannot be eliminated, replace the EPB controller.
C12811D	Right motor current sensor failure	Right rear electronic caliper does not work.	Control unit internal circuit fault	In order to clear the DTC, wait for 30s after power off, and restart; if the fault cannot be eliminated, replace the EPB controller.
C128204	Left motor relay failure	Rear left electronic caliper does not work.	Control unit internal circuit	Replace the EPB controller

B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
			fault	
C128304	Left motor drive circuit failure	Rear left electronic caliper does not work.	Control unit internal circuit fault	Replace the EPB controller
C128404	Right motor relay failure	Right rear electronic caliper does not work.	Control unit internal circuit fault	Replace the EPB controller
C128504	Right motor drive circuit failure	Right rear electronic caliper does not work.	Control unit internal circuit fault	Replace the EPB controller
C128013	Left motor open circuit	Rear left electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of plug-in 4. Control unit internal circuit fault	Check the harness and connector of the left motor. If the fault cannot be eliminated, replace the rear left caliper motor.
C128014	Left motor short-circuited to ground	Rear left electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of plug-in 4. Control unit internal circuit fault	Check the harness and connector of the left motor. If the fault cannot be eliminated, replace the EPB controller.
C128015	Left motor short-circuited to power supply	Rear left electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of plug-in 4. Control unit internal circuit fault	Check the harness and connector of the left motor. If the fault cannot be eliminated, replace the EPB controller.
C12801A	Short circuit of positive and negative poles of left motor	Rear left electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of plug-in 4. Control unit internal circuit fault	Check the harness and connector of the left motor. If the fault cannot be eliminated, replace the rear left caliper motor.
C128113	Right motor open circuit	Right rear electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of	Check the harness and connector of the right motor. If the fault cannot be eliminated, replace

B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
			plug-in 4. Control unit internal circuit fault	the rear right caliper motor.
C128114	Right motor short-circuited to ground	Right rear electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of plug-in 4. Control unit internal circuit fault	Check the harness and connector of the right motor. If the fault cannot be eliminated, replace the EPB controller.
C128115	Right motor short-circuited to power supply	Right rear electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of plug-in 4. Control unit internal circuit fault	Check the harness and connector of the right motor. If the fault cannot be eliminated, replace the EPB controller.
C12811A	Short circuit of positive and negative poles of right motor	Right rear electronic caliper does not work.	1. Motor fault 2. Harness is disconnected 3. Poor contact of plug-in 4. Control unit internal circuit fault	Check the harness and connector of the right motor. If the fault cannot be eliminated, replace the right caliper motor.
C128219	Left motor current too high	Rear left electronic caliper does not work.	1. Caliper jamming 2. The caliper state is inconsistent with the control unit state, i.e. the caliper is in clamping state, and the control unit is in release state.	Check the harness and connector of the left motor. If the fault cannot be eliminated, replace the rear left caliper motor.
C128319	Right motor current too high	Right rear electronic caliper does not work.	1. Caliper jamming 2. The caliper state is inconsistent with the control unit state, i.e. the	Check the harness and connector of the right motor. If the fault cannot be eliminated, replace the rear right caliper motor.

B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
			caliper is in clamping state, and the control unit is in release state.	
C128407	Left motor clamping timeout	Rear left electronic caliper does not work.	1. Caliper has no load. 2. No caliper is connected.	Check whether the rear left caliper is installed correctly. If the fault cannot be ruled out, replace the rear left caliper.
C128507	Right motor clamping timeout	Right rear electronic caliper does not work.	1. Caliper has no load. 3. No caliper is connected.	Check whether the rear right caliper is installed correctly. If the fault cannot be ruled out, replace the rear right caliper.
C128A07	Left motor idle stroke current too high	Rear left electronic caliper does not work.	Excessive large sliding resistance of caliper piston	Replace rear left caliper.
C128B07	Right motor idle travel current too high	Right rear electronic caliper does not work.	Excessive large sliding resistance of caliper piston	Replace rear right caliper.
C128C00	Left motor does not work.	Rear left electronic caliper does not work.	Motor fault	Check the harness and connector of the left motor. If the fault cannot be eliminated, replace the rear left caliper motor.
C128D00	Right motor does not work.	Right rear electronic caliper does not work.	Motor fault	Check the harness and connector of the right motor. If the fault cannot be eliminated, replace the rear right caliper motor.
C128E00	Left motor stalling	The EPB function is not limited.	Excessive harness resistance	Check the correctness of battery voltage, and harness and connector of the left motor. If the fault cannot be eliminated, replace the harness of the EPB controller.
C128F00	Right motor stalling	The EPB function is not limited.	Excessive harness resistance	Check the correctness of battery voltage, and harness and connector of the right motor. If the fault cannot be

B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
				eliminated, replace the harness of the EPB controller.
C129000	Motor harness connection error	The EPB function is disabled.	Wrong harness connection	Check whether the motor harness is connected correctly, and replace the harness.
C12A000	Assembly test not executed	The EPB function is disabled.	Assembly test not executed	Perform the assembly inspection with diagnostic scanner.
C12A100	Maintenance mode	The EPB function is disabled.	Enter maintenance mode	Exit the maintenance mode with the diagnostic scanner.
C12B286	Brake pedal signal error	The manual release function is degraded, press and hold the switch for 2s.	Bus signal error	Check and repair the fault of MCU control unit
C12B386	Accelerator pedal signal error	Automatic release DAA function is disabled.	Bus signal error	Check and repair the fault of MCU control unit
C12B486	Motor speed signal error	Automatic release DAA function is disabled.	Bus signal error	Check and repair the fault of MCU control unit
C12B586	Motor torque signal error	Automatic release DAA function is disabled.	Bus signal error	Check and repair the fault of MCU control unit
C12B686	Vehicle speed signal error	The Auto Hold is disabled, the manual parking enters the degraded mode, and the clamping is carried out gradually.	Bus signal error	Check and repair the fault of ESC or ABS control unit
C12B786	Position signal error	Automatic release DAA function is disabled.	Bus signal error	Check and repair the fault of VCU control unit
C128200	Variable code configuration is not complete.	The EPB function is limited.	Not configured	Reconfigure the vehicle model
U012287	Communication with ESP interrupted	The EPB function is limited.	Bus node loss	Check whether ESP node sends messages normally/check whether CANH and CANL of EPB connector are abnormal.
U029387	Communication with VCU interrupted	The EPB function is limited.	Bus node loss	Check whether VCU node sends messages

B111717	Power supply voltage too high	If the voltage is greater than 16.5V, it is allowed to clamp and release only once.	Power supply fault	Check the battery voltage, repair or replace the battery.
				normally/check whether CANH and CANL of EPB connector are abnormal.
U014087	Communication with BCS interrupted	The EPB function is limited.	Bus node loss	Check whether BCM node sends messages normally/check whether CANH and CANL of EPB connector are abnormal.
U015187	Communication with ABM interrupted	The EPB function is limited.	Bus node loss	Check whether ABM node sends messages normally/check whether CANH and CANL of EPB connector are abnormal.
U016487	Loss of communication with AC	The EPB function is limited.	Bus node loss	Check whether AC node sends messages normally/check whether CANH and CANL of EPB connector are abnormal.
U015587	Communication with IC interrupted	The EPB function is limited.	Bus node loss	Check whether IC node sends messages normally/check whether CANH and CANL of EPB connector are abnormal.
U007488	Bus off fault	The EPB function is limited.	BUS OFF	Check whether CANH and CANL of EPB connector are abnormal.

3.10.5.6 DTC: B111717, B111716.....

DTC	DTC definition
B111717	Power supply voltage too high
B111716	Insufficient supply voltage
C128060	Low supply voltage
C128105	Ignition signal line fault
C1282A0	Unexpected power failure

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses ISB06, ISB05 and IF26 of the EPB controller.

A Check whether fuses ISB06, ISB05 and IF26 are blown.

No → Go to Step 5.

Yes

Step 4	Maintain circuits of fuses ISB06, ISB05 and IF26.

A Check whether circuits of fuses ISB06, ISB05 and IF26 are short-circuited.

B Repair the circuit and make sure there is no short

circuit.

C Replace blown fuses with fuses of rated current.

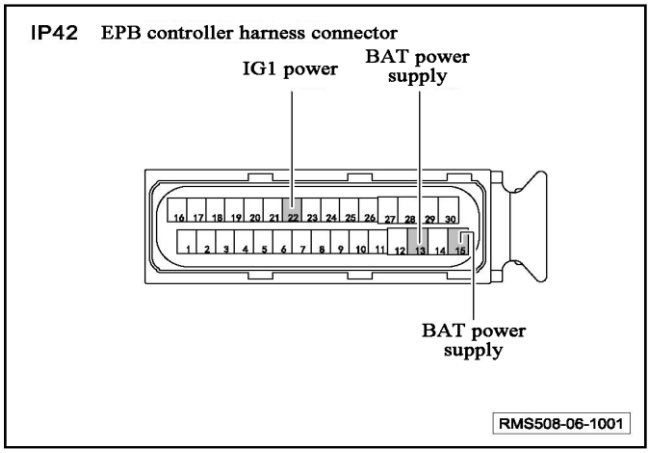
Rated values of fuses: ISB06 30A, ISB05 30A and IF26 5A

D Confirm whether the EPB controller works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the EPB controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 13, 15 and 22 of the EPB controller harness connector IP42 and the body ground.

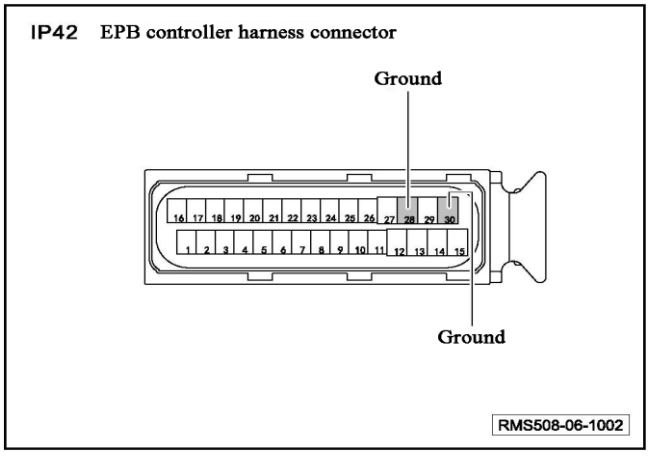
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the EPB controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Measure the resistance between terminals 28 and 30 of the EPB controller harness connector IP42 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.10.5.7 DTC: C128304, C128013.....

DTC	DTC definition
C128304	Left motor drive circuit failure
C128013	Left motor open circuit
C128014	Left motor short-circuited to ground
C128015	Left motor short-circuited to power supply
C12801A	Short circuit of positive and negative poles of left motor
C128219	Left motor current too high
C128A13	The left motor power supply circuit is disconnected.
C128C00	Left motor does not work.
C128E00	Left motor stalling

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

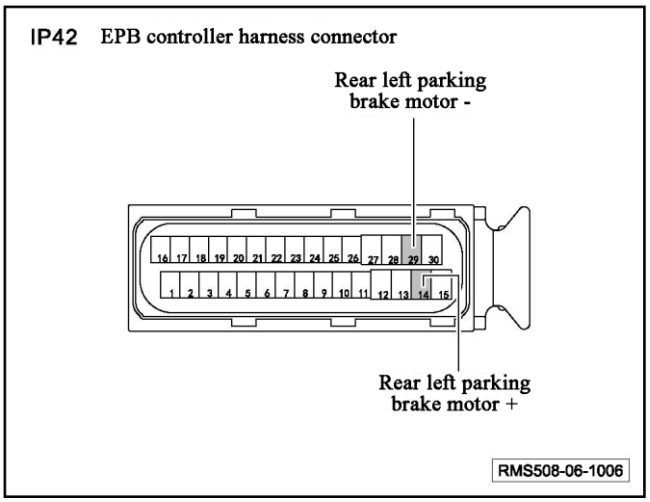
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the rear left parking brake motor and the EPB brake.



A Turn the start switch to "OFF" position.

B Disconnect the rear left parking brake motor harness connector BD31.

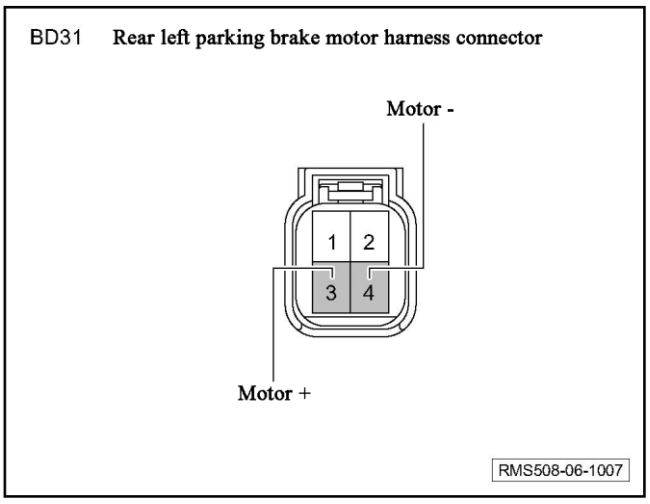
C Disconnect the EPB brake harness connector IP42.

D Measure the resistance between terminal 3 of the rear left parking brake motor harness connector BD31 and terminal 14 of the EPB brake harness connector IP42.

E Measure the resistance between terminal 4 of the rear left parking brake motor harness connector BD31 and terminal 29 of the EPB brake harness connector IP42.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 3	Check whether the rear left EPB motor circuit is short-circuited to ground.

A Turn the start switch to "OFF" position.

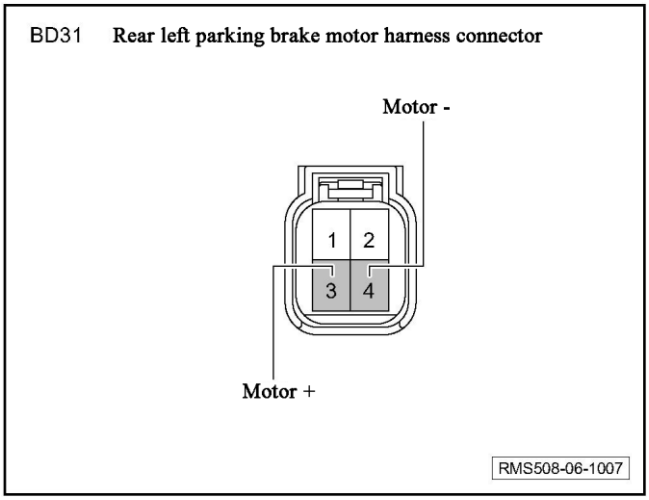
B Disconnect the rear left parking brake motor harness connector BD31.

C Disconnect the EPB brake harness connector IP42.

D Measure the resistance between terminal 3/4 of the rear left EPB motor harness connector BD31 and body ground.

Standard resistance value: 10 kΩ or higher

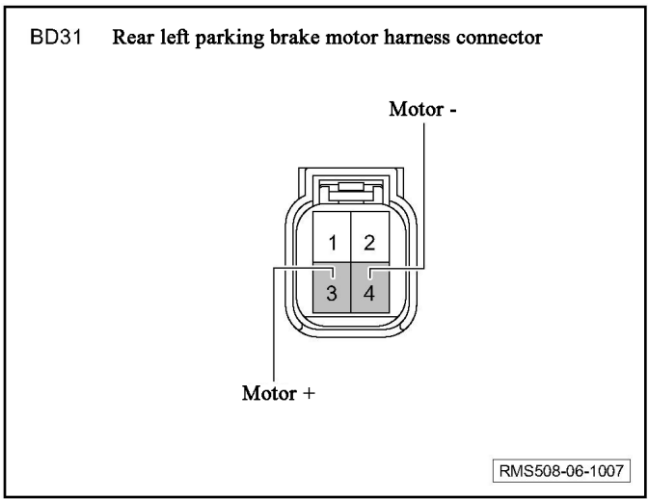
E Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 4	Check whether the rear left EPB motor circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the rear left parking brake motor harness connector BD31.

C Disconnect the EPB brake harness connector IP42.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 3/4 of the rear left EPB motor harness connector BD31 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

Yes

Step 5	Replace the rear left parking brake motor.

A Replace the rear left parking brake motor.

B Is the fault eliminated after replacing the rear left EPB motor.

Yes	The system works normally.

No

Step 6	Replace the EPB controller.

A Replace the EPB brake.

B Is the fault eliminated after replacing the EPB brake?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.8 DTC: C128113, C128114.....

DTC	DTC definition
C128113	Right motor open circuit
C128114	Right motor short-circuited to ground
C128115	Right motor short-circuited to power supply
C12811A	Short circuit of positive and negative poles of right motor
C128319	Right motor current too high

DTC	DTC definition
C128B13	The right motor power supply circuit is disconnected.
C128504	Right motor drive circuit failure

DTC	DTC definition
C128D00	Right motor does not work.
C128F00	Right motor stalling

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

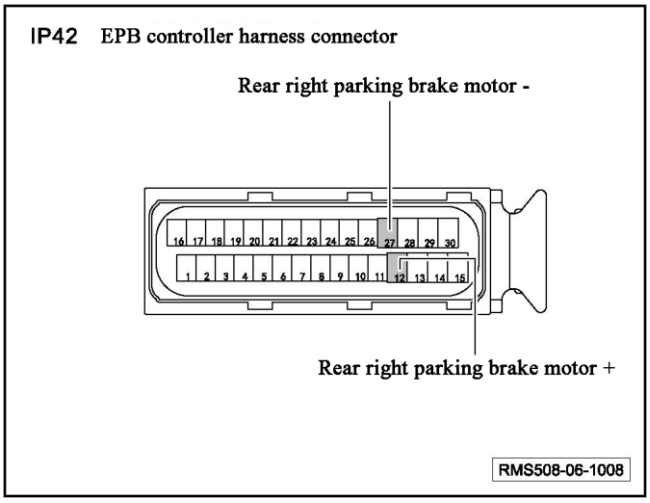
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the rear right parking brake motor and the EPB brake.



A Turn the start switch to "OFF" position.

B Disconnect the rear right parking brake motor harness connector BD07.

C Disconnect the EPB brake harness connector IP42.

D Measure the resistance between terminal 3 of the rear right parking brake motor harness connector BD07 and terminal 12 of the EPB brake harness connector IP42.

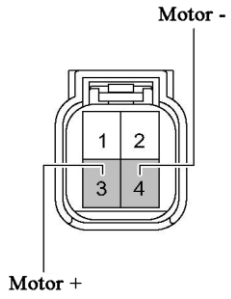
E Measure the resistance between terminal 4 of the rear right parking brake motor harness connector BD07 and terminal 27 of the EPB brake harness connector IP42.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

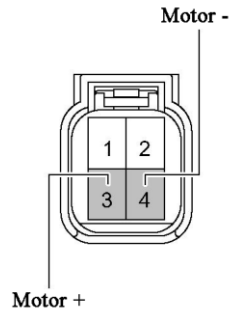
BD07 **Rear right parking brake motor harness connector**



Yes

Step 3	Check whether the rear right EPB motor circuit is short-circuited to ground.

BD07 Rear right parking brake motor harness connector



RMS508-06-1009

A Turn the start switch to "OFF" position.

B Disconnect the rear right parking brake motor harness connector BD07.

C Disconnect the EPB brake harness connector IP42.

D Measure the resistance between terminal 3/4 of the rear right EPB motor harness connector BD07 and the body ground.

Standard resistance value: 10 kΩ or higher

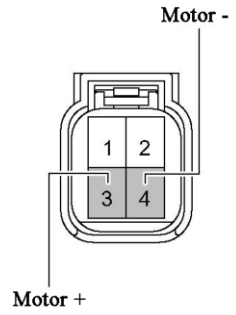
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Check whether the rear right EPB motor circuit is short-circuited to power supply.

BD07 Rear right parking brake motor harness connector



RMS508-06-1009

A Turn the start switch to "OFF" position.

B Disconnect the rear right parking brake motor harness connector BD07.

C Disconnect the EPB brake harness connector IP42.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 3/4 of the rear right EPB motor harness connector BD07 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Replace the rear right parking brake motor.

A Replace the rear right parking brake motor.

B Is the fault eliminated after replacing the rear right EPB motor?

Yes → The system works normally.

No

Step 6	Replace the EPB brake.

A Replace the EPB brake.

B Is the fault eliminated after replacing the EPB brake?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.9 DTC: C128313, C128301.....

DTC	DTC definition
C128313	The EPB switch is disconnected.
C128301	EPB switch signal fault
C128400	The switch is stuck when being pulled up.
C128500	The switch is stuck when being released.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

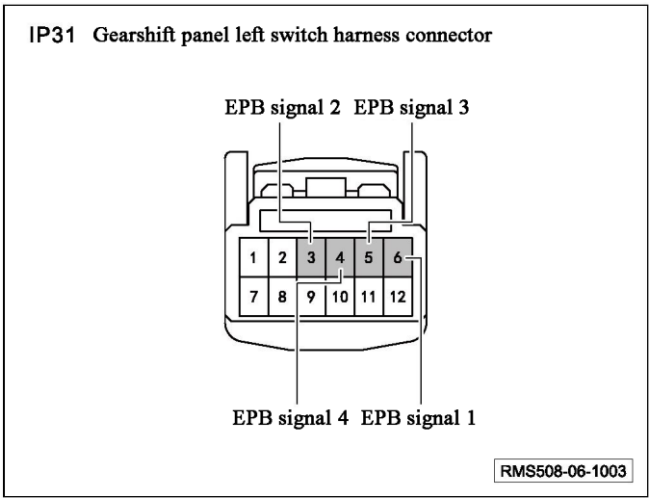
Step 2	Check the EPB switch.

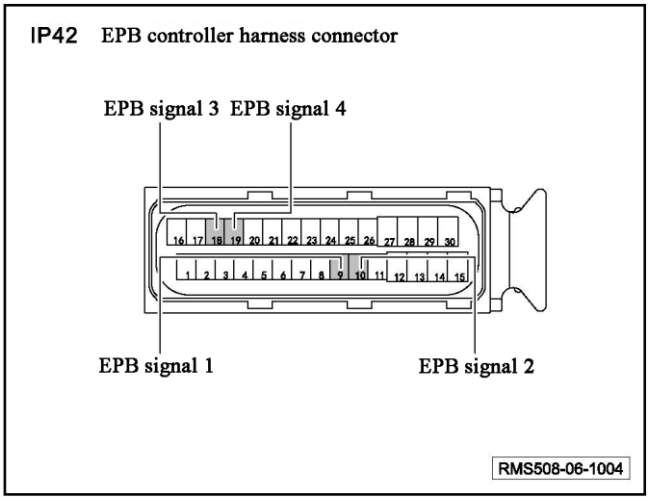
A Check whether the EPB switch is damaged, pressed by heavy articles or stuck.

Yes → Replace the EPB switch or remove heavy articles.

No

Step 3	Check the circuit between the EPB switch and the EPB controller.





A Turn the start switch to "OFF" position.

B Disconnect the gearshift panel left switch harness connector IP31.

C Disconnect EPB controller harness connector IP42.

D Measure the resistance of circuit between terminal 3 of the gearshift panel left switch harness connector IP31 and terminal 10 of the EPB controller harness connector IP42.

E Measure the resistance between terminal 4 of the gearshift panel left switch harness connector IP31 and terminal 19 of the EPB controller harness connector IP42.

F Measure the resistance of circuit between terminal 5 of the gearshift panel left switch harness connector IP31 and terminal 18 of the EPB controller harness connector IP42.

G Measure the resistance of circuit between terminal 6 of the gearshift panel left switch harness connector IP31 and terminal 9 of the EPB controller harness connector IP42.

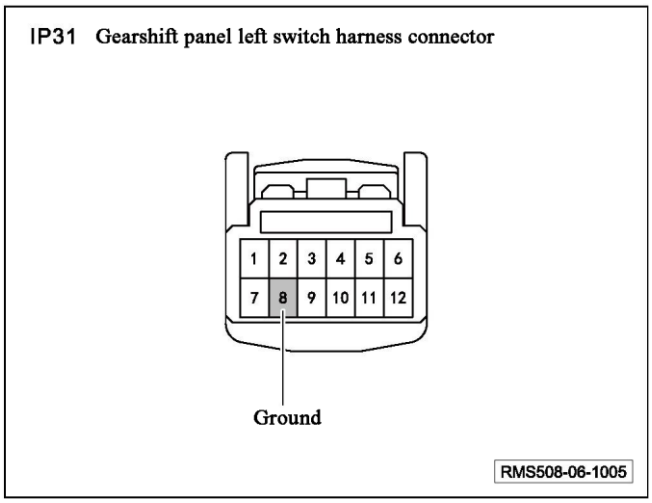
Standard resistance value: <1Ω

H Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check the ground circuit of EPB switch.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift panel left switch harness connector IP31.

C Measure the resistance of circuit between terminal 8 of the gearshift panel left switch harness connector IP31 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the gearshift panel left switch.

A Replace the gearshift panel left switch.

B Is the fault eliminated after replacing the gearshift panel left switch?

Yes → The system works normally.

No

Step 6	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.10 DTC: C128004, C128044.....

DTC	DTC definition
C128004	Auxiliary MCU fault
C128044	Failure of main MCU RAM
C128045	Failure of main MCU ROM
C128046	EEPROM data storage error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses ISB06, ISB05 and IF26 of the EPB controller.

A Check whether fuses ISB06, ISB05 and IF26 are blown.

No → Go to Step 4.

Yes

Step 3	Maintain circuits of fuses ISB06, ISB05 and IF26.

A Check whether circuits of fuses ISB06, ISB05 and IF26 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

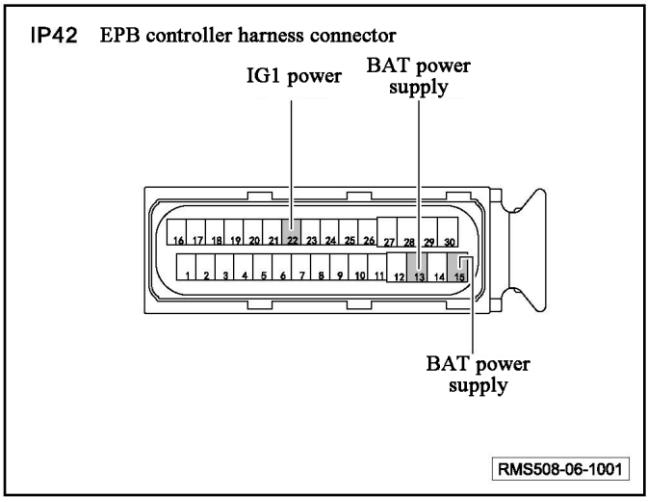
Rated values of fuses: ISB06 30A, ISB05 30A and IF26 5A

D Confirm whether the EPB controller works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the EPB controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 13, 15 and 22 of the EPB controller harness connector IP42 and the body ground.

Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the EPB controller.

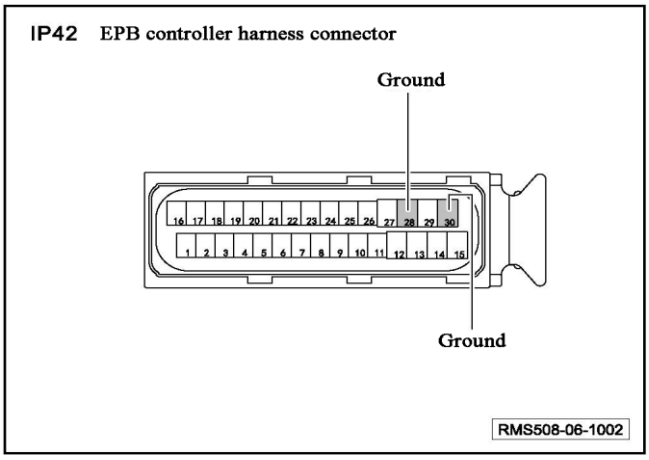
A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Measure the resistance between terminals 28 and 30 of the EPB controller harness connector IP42 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 6	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.11 DTC: C12801D, C12811D.....

DTC	DTC definition
C12801D	Left motor current sensor failure
C12811D	Right motor current sensor failure
C128204	Left motor relay failure
C128404	Right motor relay failure

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses ISB06, ISB05 and IF26 of the EPB controller.

A Check whether fuses ISB06, ISB05 and IF26 are blown.

No → Go to Step 4.

Yes

Step 3	Maintain circuits of fuses ISB06, ISB05 and IF26.

A Check whether circuits of fuses ISB06, ISB05 and IF26 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

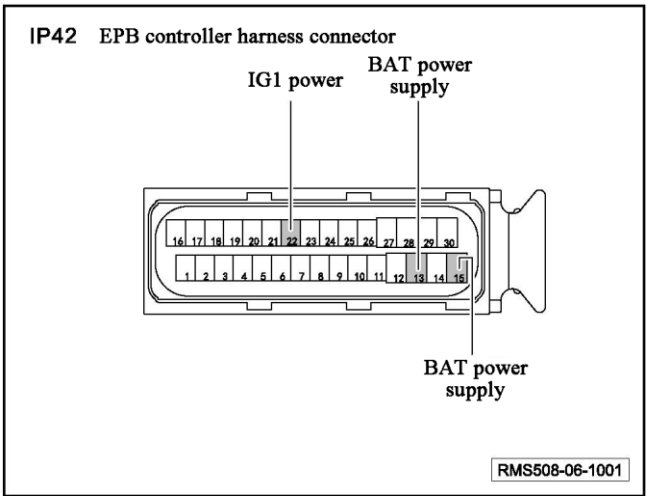
Rated values of fuses: ISB06 30A, ISB05 30A and IF26 5A

D Confirm whether the EPB controller works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the EPB controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 13, 15 and 22 of the EPB controller harness connector IP42 and the body ground.

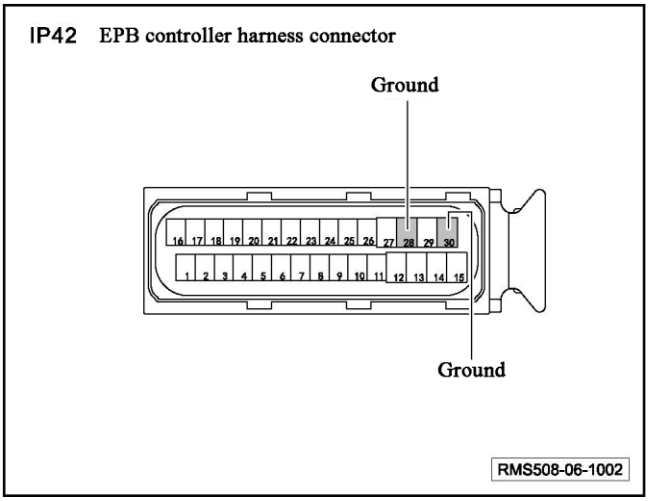
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the EPB controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Measure the resistance between terminals 28 and 30 of the EPB controller harness connector IP42 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.12 DTC: C128407, C128507.....

DTC	DTC definition
C128407	Left motor clamping timeout
C128507	Right motor clamping timeout
C128A07	Left motor idle stroke current too high
C128B07	Right motor idle travel current too high

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the installation of electronic brake caliper and brake pad.

A Check whether the electronic brake caliper and brake pad are installed correctly.

No → Reinstall.

Yes

Step 3	Replace the rear brake caliper assembly.

A Replace the rear brake caliper assembly.

B Is the fault eliminated after replacing the rear brake caliper assembly?

Yes → The system works normally.

No

Step 4	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

3.10.5.13 DTC: C129000

DTC	DTC definition
C129000	Motor harness connection error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

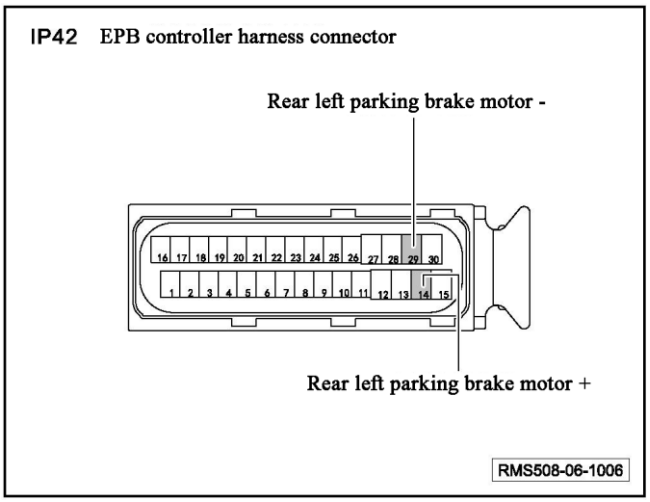
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the rear left parking brake motor and the EPB brake.



A Turn the start switch to "OFF" position.

B Disconnect the rear left parking brake motor harness connector BD31.

C Disconnect the EPB brake harness connector IP42.

D Measure the resistance between terminal 3 of the rear left parking brake motor harness connector BD31 and terminal 14 of the EPB brake harness connector IP42.

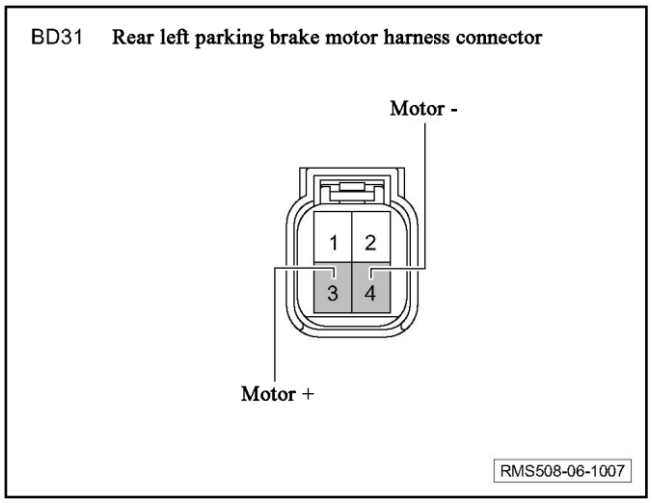
E Measure the resistance between terminal 4 of the rear left parking brake motor harness connector BD31 and terminal 29 of the EPB brake harness connector IP42.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the

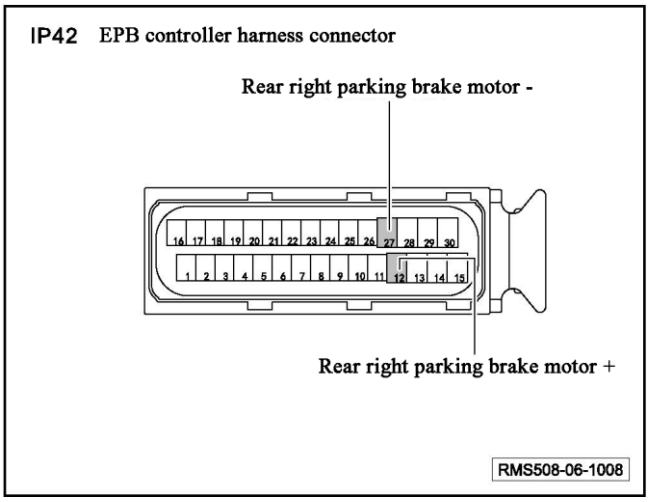
standard.

No	Repair or replace the harness.



Yes

Step 3	Check the circuit between the rear right parking brake motor and the EPB brake.



A Turn the start switch to "OFF" position.

B Disconnect the rear right parking brake motor harness connector BD07.

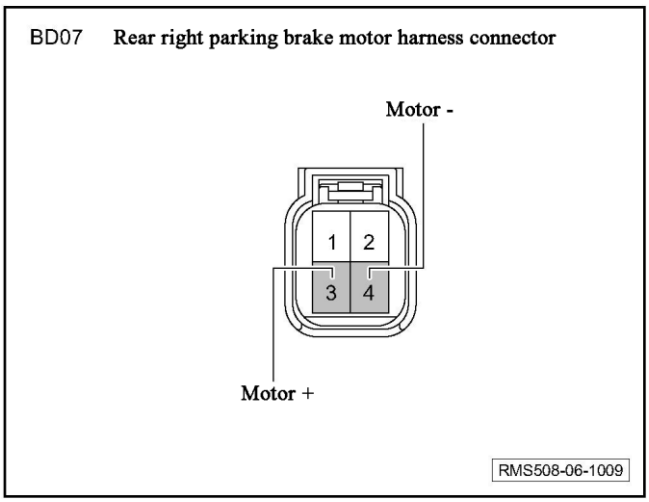
C Disconnect the EPB brake harness connector IP42.

D Measure the resistance between terminal 3 of the rear right parking brake motor harness connector BD07 and terminal 12 of the EPB brake harness connector IP42.

E Measure the resistance between terminal 4 of the rear right parking brake motor harness connector BD07 and terminal 27 of the EPB brake harness connector IP42.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 4	Replace the rear brake caliper assembly.

A Replace the rear brake caliper assembly.

B Is the fault eliminated after replacing the rear brake caliper assembly?

Yes → The system works normally.

No

Step 5	Replace the EPB brake.

A Replace the EPB brake.

B Is the fault eliminated after replacing the EPB brake?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.10.5.14 DTC: C12A000, C12A100

DTC	DTC definition
C12A000	Assembly test not executed
C12A100	Maintenance mode

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Implement the procedure to quit the caliper maintenance mode.

A Connect the diagnostic scanner to OBD interface.

B Put the start switch to the "ON" position, and enter the main interface of the diagnostic scanner.

C Follow the tip on the diagnostic scanner screen to exit the caliper maintenance mode.

D Clear the DTC.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

3.10.5.15 DTC: C12B286, C12B386

DTC	DTC definition
C12B286	Brake pedal signal error
C12B386	Accelerator pedal signal error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the VCU.

A Connect the diagnostic scanner to OBD interface.

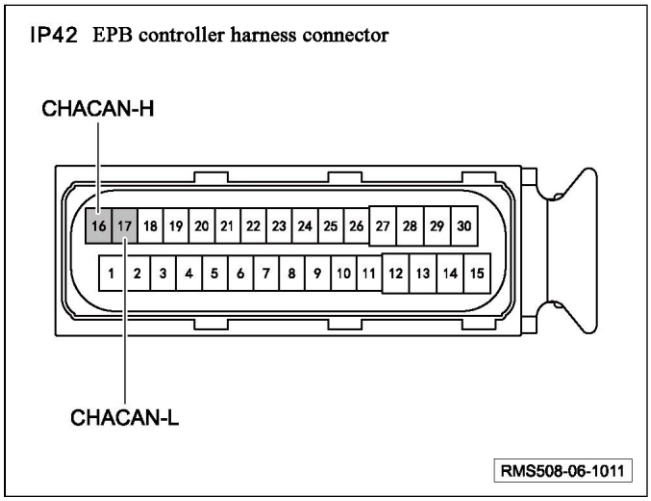
B Turn the start switch to the "ON" position, and read and record the DTC of VCU.

C Check whether the VCU has relevant DTC?

Yes → Give priority to the maintenance of VCU related faults.

No

Step 3	Check the CAN data communication wire between the EPB controller and the VCU.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

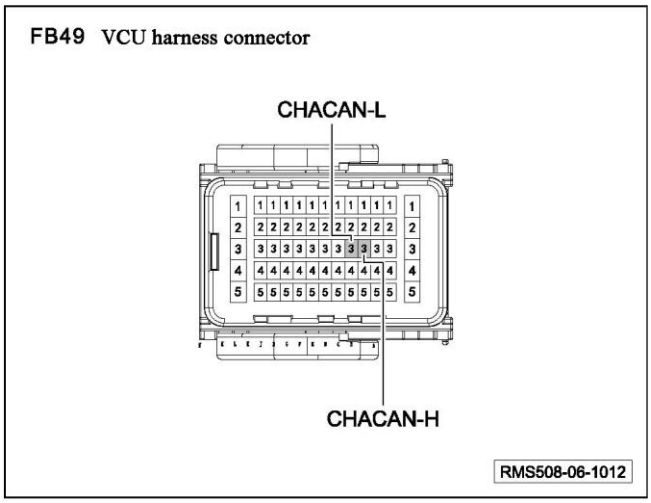
C Disconnect the VCU harness connector FB49.

D Measure the resistance between terminal 16 of the EPB controller harness connector IP42 and terminal E3 of the VCU harness connector FB49.

E Measure the resistance between terminal 7 of the EPB controller harness connector IP42 and terminal D3 of the VCU harness connector FB49.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 6	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.16 DTC: C12B486, C12B586

DTC	DTC definition
C12B486	Motor speed signal error
C12B586	Motor torque signal error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the MCU/GCU dual motor controller.

A Connect the diagnostic scanner to OBD interface.

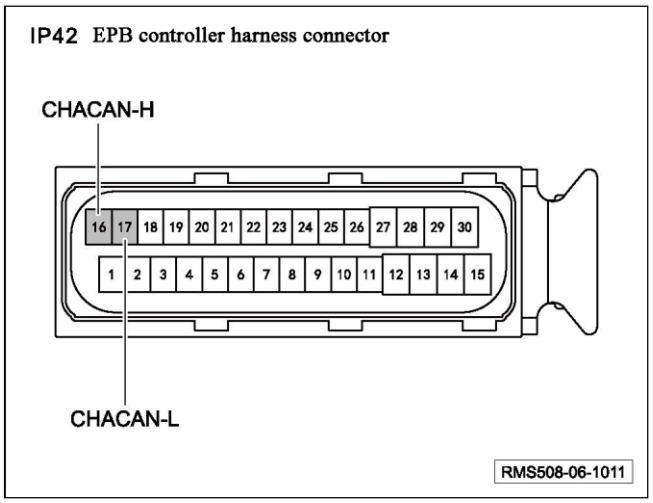
B Turn the start switch to the "ON" position, and read and record the DTC of MCU/GCU dual-motor controller.

C Check whether the MCU/GCU dual-motor controller has relevant DTC?

Yes → Give priority to repairing the faults of MCU/GCU dual-motor controller.

No

Step 3	Check the CAN data communication wire between the EPB controller and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

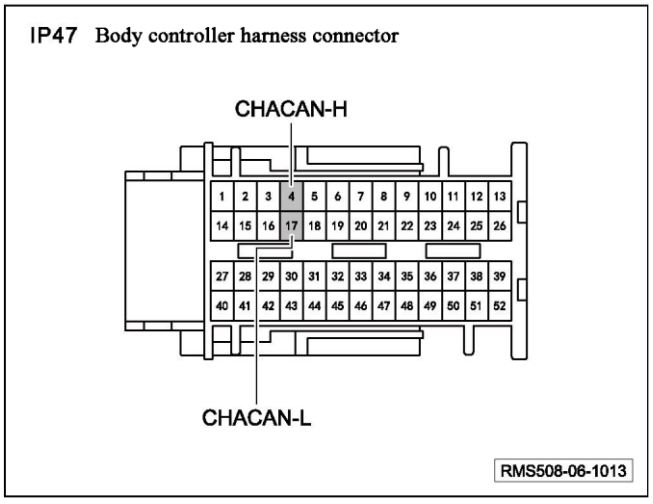
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 16 of the EPB controller harness connector IP42 and terminal 1 of the body controller harness connector IP47.

E Measure the resistance between terminal 7 of EPB controller harness connector IP42 and terminal 9 of body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the body controller and the MCU/GCU dual-motor controller.

A Turn the start switch to "OFF" position.

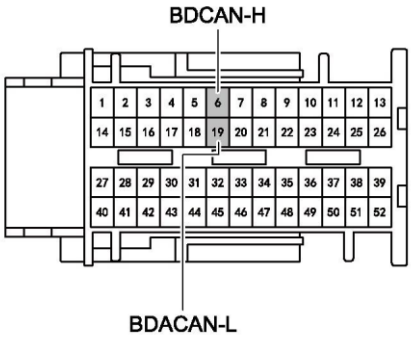
B Disconnect body controller harness connector IP47

C Disconnect the MCU/GCU dual-motor harness connector EN55.

D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 22 of the MCU/GCU dual-motor controller harness connector EN55.

E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 23 of the MCU/GCU dual-motor

IP47 Body controller harness connector



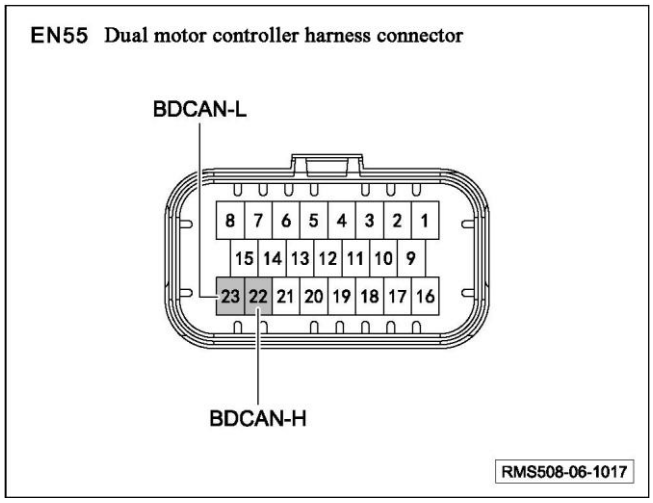
controller harness connector EN55.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply ground wire of the MCU/GCU dual-motor controller.

A Check whether the power supply ground wire of the MCU/GCU dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the MCU/GCU (integrated dual motor controller)

A Replace the MCU/GCU (integrated dual motor controller)

B Is the fault eliminated after replacing the MCU/GCU (integrated dual motor controller)?

Yes → The system works normally.

No

Step 7	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.10.5.17 DTC: C12B686

DTC	DTC definition
C12B686	Vehicle speed signal error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the brake safety control system.

A Connect the diagnostic scanner to OBD interface.

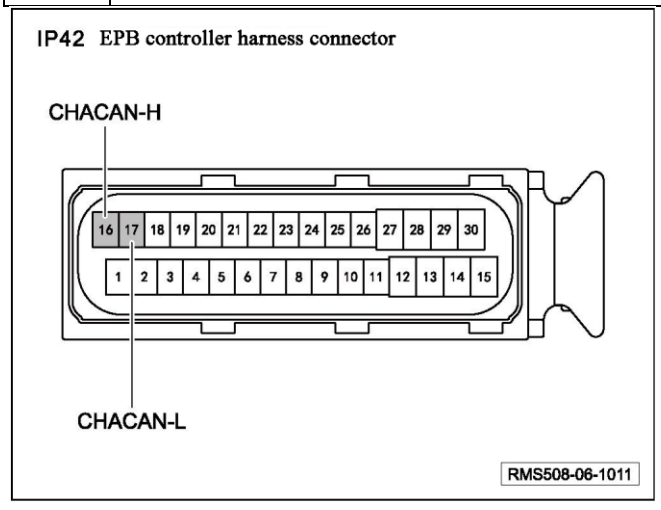
B Turn the start switch to the "ON" position, and read and record the DTC of brake safety control system.

C Does the brake safety control system have any relevant DTC?

Yes → Give priority to the maintenance of related faults of brake safety control system.

No

Step 3	Check the CAN data communication wire between the body controller and the MCU/GCU dual-motor controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance between terminal 16 of the EPB controller harness connector IP42 and terminal 5 of the brake safety control system harness connector FB57.

E Measure the resistance between terminal 17 of the EPB controller harness connector IP42 and terminal 19 of the brake safety control system harness connector FB57.

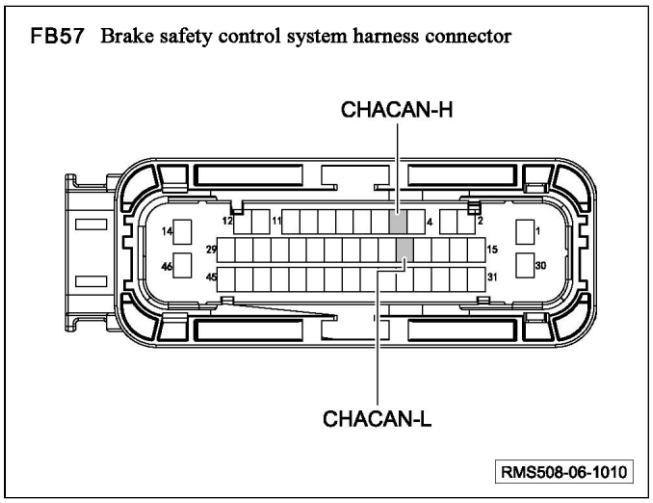
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the

standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.18 DTC: C12B786

DTC	DTC definition
C12B786	Position signal error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the gearshift control mechanism assembly.

A Connect the diagnostic scanner to OBD interface.

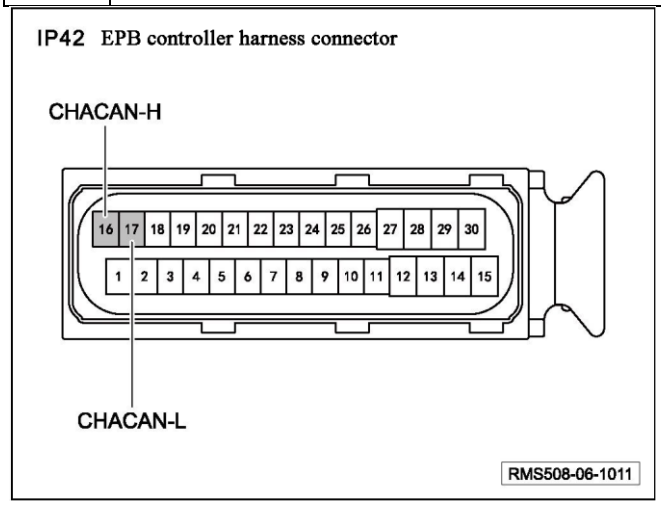
B Turn the start switch to the "ON" position, and read and record the DTC of the gearshift control mechanism assembly.

C Check whether the gearshift control mechanism assembly has any relevant DTC?

Yes → Give priority to the maintenance of related faults of the gearshift control mechanism assembly.

No

Step 3	Check the CAN data communication wire between EPB controller and gearshift control mechanism assembly.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Disconnect the gearshift control mechanism assembly harness connector IP30.

D Measure the resistance between terminal 16 of EPB controller harness connector IP42 and terminal 12 of gearshift control mechanism assembly harness connector IP30.

E Measure the resistance between terminal 17 of EPB controller harness connector IP42 and terminal 11 of gearshift control mechanism assembly harness connector IP30.

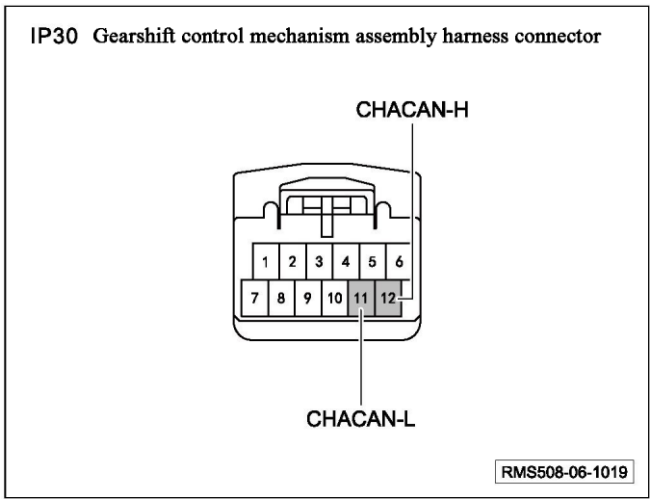
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the

standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

No

Step 6	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.10.5.19 DTC: C128200

DTC	DTC definition

C128200	Variable code configuration is not complete.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Rewrite the configuration information with a diagnostic scanner.

A Connect the diagnostic scanner to OBD interface.

B Put the start switch to the "ON" position, and enter the main interface of the diagnostic scanner.

C Write the configuration information of the EPB controller as prompted on the screen of the diagnostic scanner.

D Clear the DTC.

E Read the DTC again.

F Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

3.10.5.20 DTC: U012287

DTC	DTC definition
U012287	Communication with ESP interrupted

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

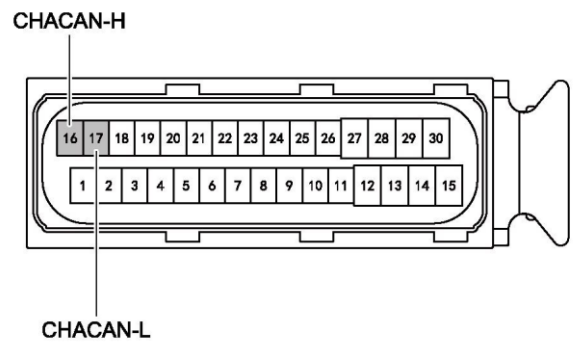
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the EPB controller and the brake safety control system.

IP42 EPB controller harness connector



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Disconnect the brake safety control system harness connector FB57.

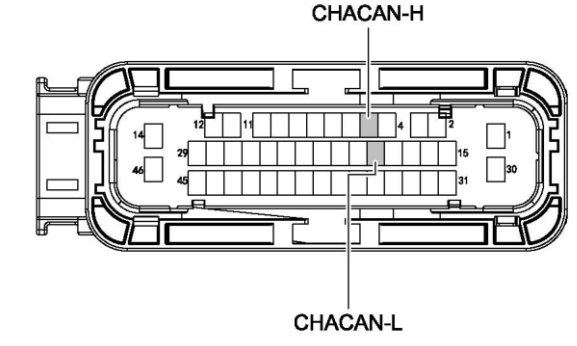
D Measure the resistance between terminal 16 of the EPB controller harness connector IP42 and terminal 5 of the brake safety control system harness connector FB57.

E Measure the resistance between terminal 17 of the EPB controller harness connector IP42 and terminal 19 of the brake safety control system harness connector FB57.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

FB57 Brake safety control system harness connector



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.10.5.21 DTC: U029387

DTC	DTC definition
U029387	Communication with VCU interrupted

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

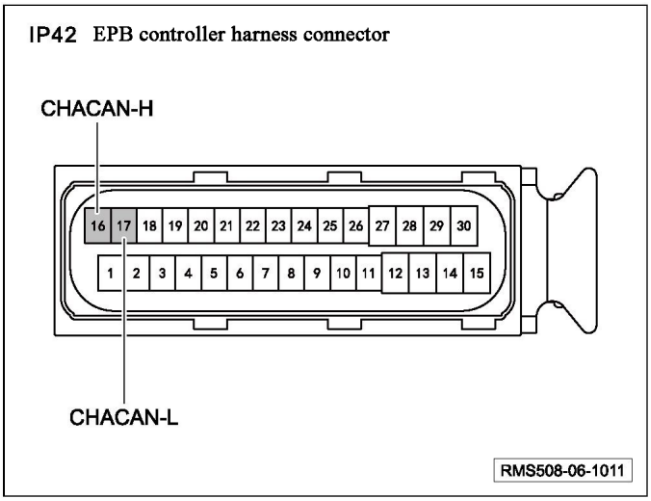
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the EPB controller and the VCU.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

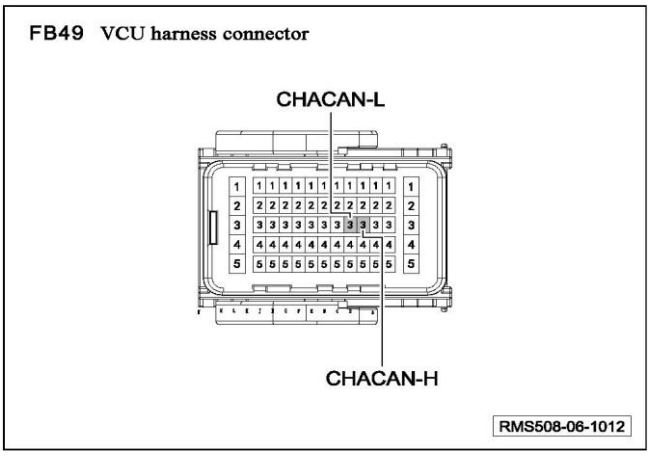
C Disconnect the VCU system harness connector FB49.

D Measure the resistance between terminal 16 of the EPB controller harness connector IP42 and terminal E3 of the VCU system harness connector FB49.

E Measure the resistance between terminal 17 of the EPB controller harness connector IP42 and terminal D3 of the VCU system harness connector FB49.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the VCU.

A Check whether the power supply and ground wires of VCU system is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU system.

A Replace the VCU system.

B Is the fault eliminated after replacing the VCU system?

Yes → The system works normally.

No

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.10.5.22 DTC: U014087, U016487

DTC	DTC definition
U014087	Communication with BCS interrupted
U016487	Loss of communication with AC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

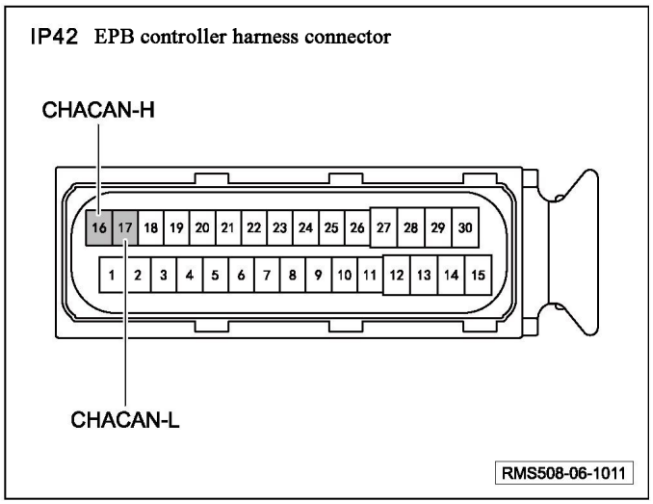
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the EPB controller and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Disconnect the body controller harness connector FB47.

D Measure the resistance between terminal 16 of the EPB controller harness connector IP42 and terminal 4 of the body controller harness connector FB47.

E Measure the resistance between terminal 17 of the EPB controller harness connector IP42 and terminal 17 of the body controller harness connector FB47.

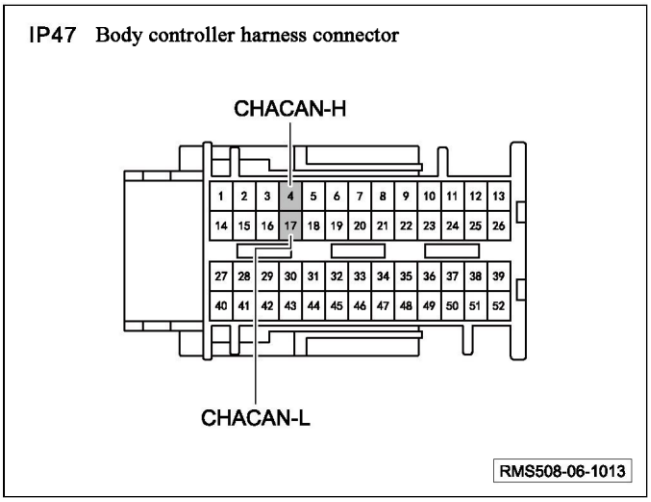
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the

standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.10.5.23 DTC: U015187

DTC	DTC definition
U015187	Communication with ABM interrupted

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

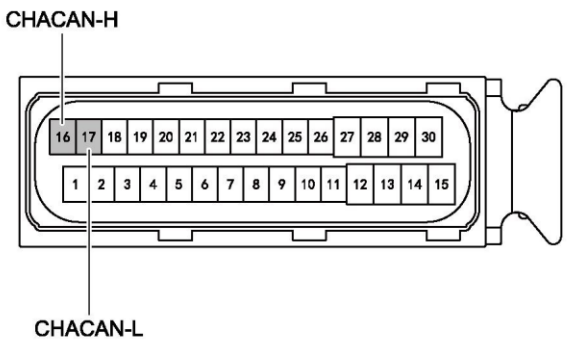
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the EPB controller and the airbag ECU.

IP42 EPB controller harness connector



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Disconnect airbag ECU harness connector IP36.

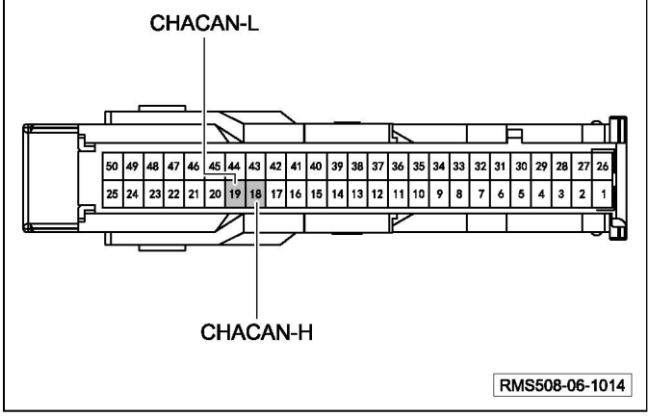
D Measure the resistance between terminal 16 of EPB controller harness connector IP42 and terminal 18 of airbag ECU harness connector IP36.

E Measure the resistance between terminal 17 of EPB controller harness connector IP42 and terminal 19 of airbag ECU harness connector IP36.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

IP36 Airbag ECU harness connector



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.10.5.24 DTC: U015587

DTC	DTC definition
U015587	Communication with IC interrupted

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

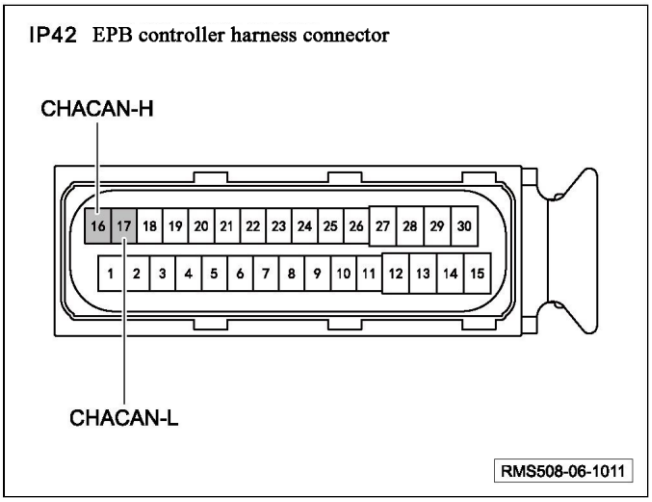
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the EPB controller and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

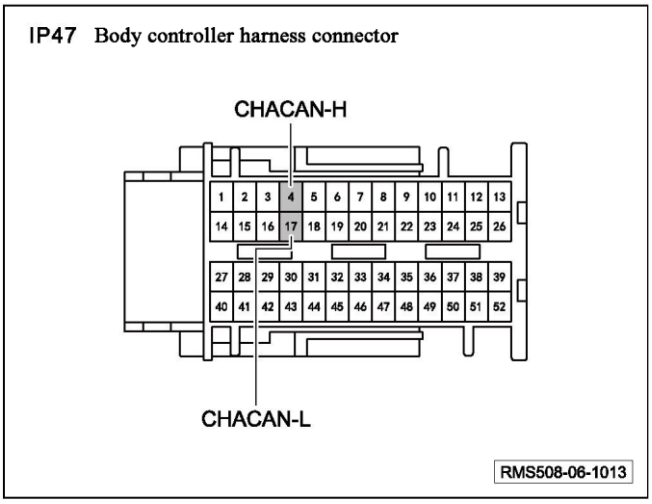
C Disconnect the integrated body controller harness connector IP47.

D Measure the resistance between terminal 16 of EPB controller harness connector IP42 and terminal 4 of body controller harness connector IP47.

E Measure the resistance between terminal 17 of EPB controller harness connector IP42 and terminal 17 of body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.

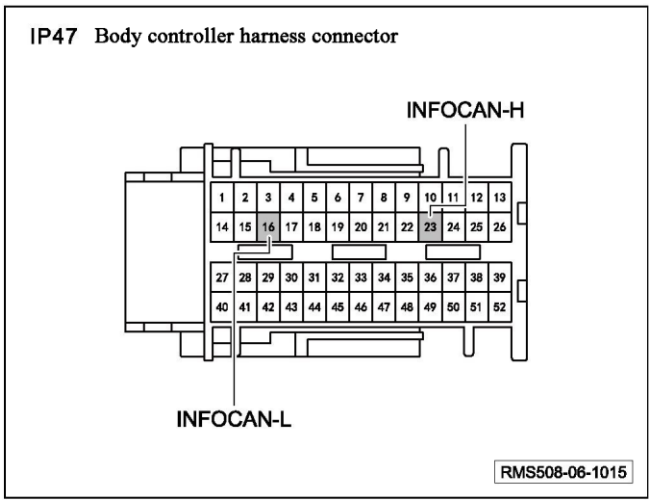
A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness



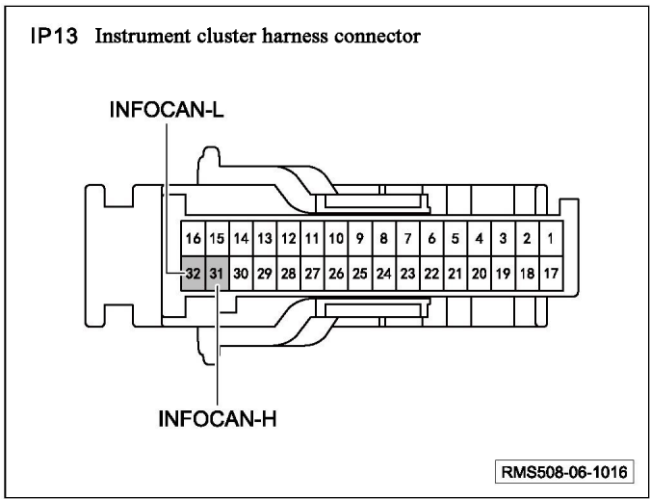
connector IP13.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.10.5.25 DTC: U007488

DTC	DTC definition
U007488	Bus off fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

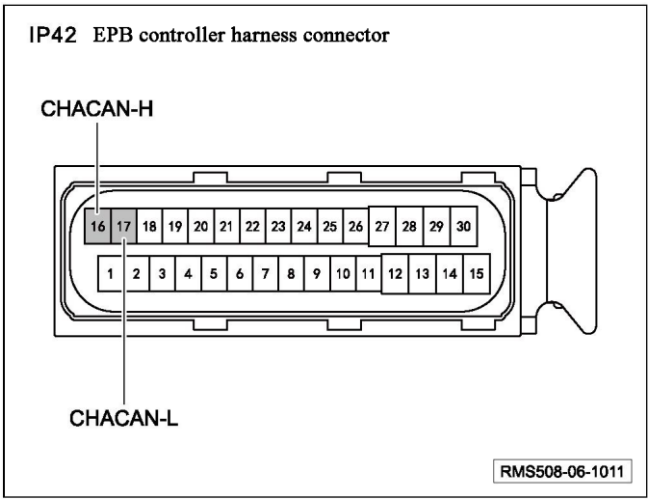
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit of EPB controller.



A Turn the start switch to "OFF" position.

B Disconnect EPB controller harness connector IP42.

C Measure the resistance of circuit between terminals 16 and 17 of the EPB controller harness connector IP42.

Standard resistance value: about **120Ω**

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

3.10.6 Removal and installation

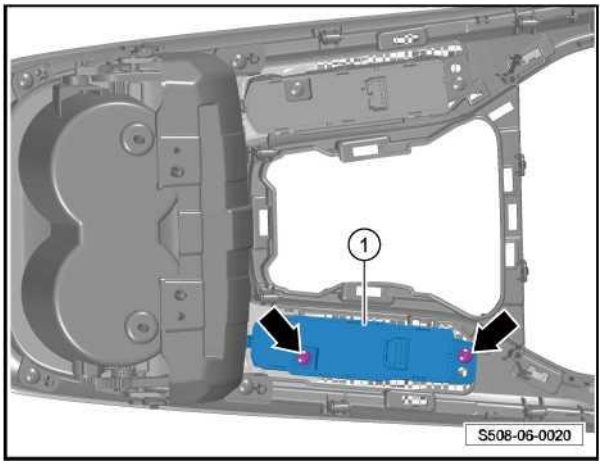
3.10.6.1 Removal and installation of EPB switch

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



4 Remove the EPB switch.

a. Unscrew fixing screws (see arrows), and remove the EPB switch ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

3.10.6.2 Release of EPB emergency parking

Operation steps

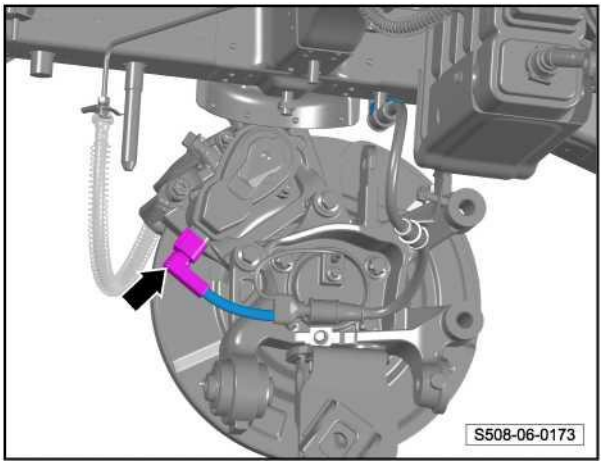
Tip:

This section introduces steps for releasing the EPB emergency parking on the left side, which can be basically referred to for the right side.

1 Turn off all the electrical appliances and turn off the Start switch.

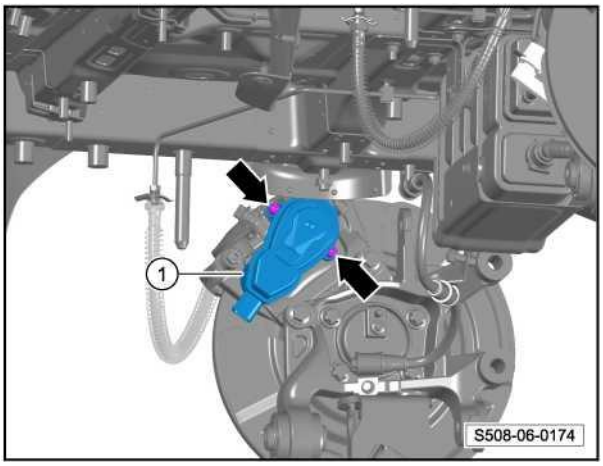
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

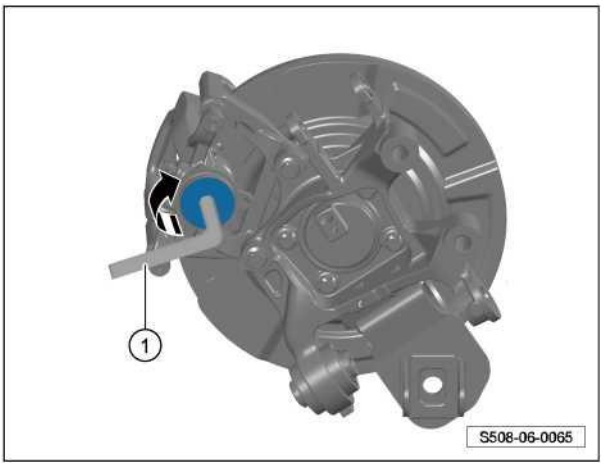


4 Release the EPB emergency parking

a. Disconnect the connector (see arrow) of the EPB drive motor harness.



b. Unscrew fixing bolts (see arrows) of the EPB drive motor harness, and remove the EPB drive motor ①.



c. Rotate the screw rod along the direction of arrow with an appropriate tool, and release the EPB parking lock.

3.10.6.3 Removal and installation of EPB drive motor

Disassembly procedures

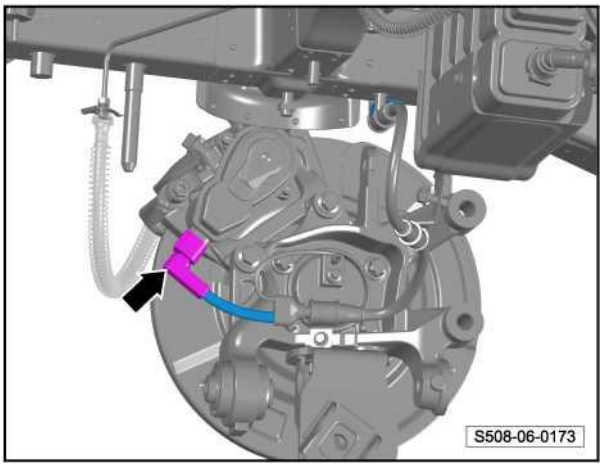
Tip:

The removal and installation procedures are only for the left EPB drive motor, which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

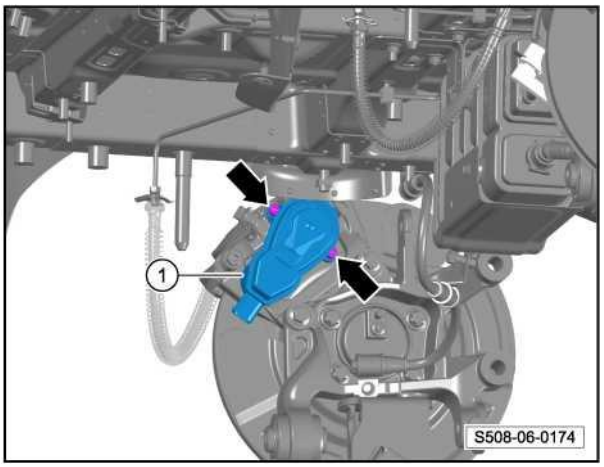
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



4 Remove the EPB drive motor

a. Disconnect the connector (see arrow) of the EPB drive motor harness.



b. Unscrew fixing bolts (see arrows) of the EPB drive motor, and remove the EPB drive motor ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

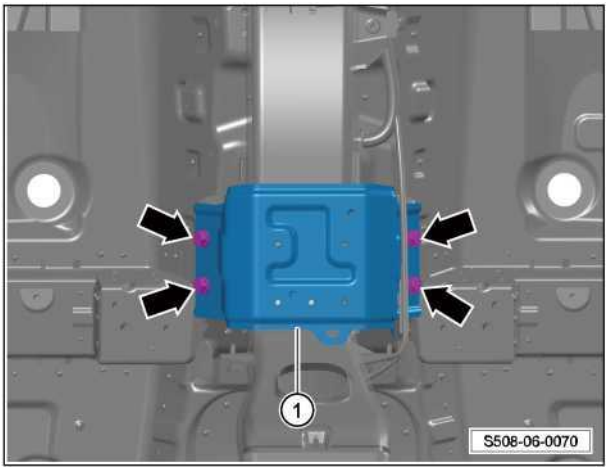
3.10.6.4 Removal and installation of EPB controller assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

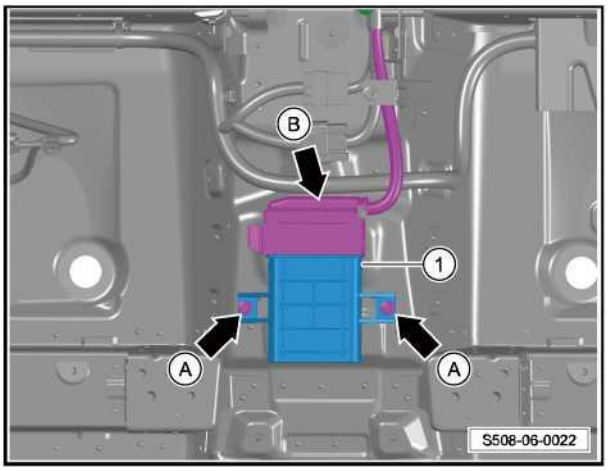
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly



4 Remove the EPB controller assembly

a. Unscrew fixing bolts (see arrows), and remove the armrest storage box mounting bracket ①.



b. Unscrew fixing bolts (see arrow A) of the EPB controller assembly.

c. Disconnect the connector (see arrow B) of the EPB controller assembly, and remove the EPB controller assembly ①.

- Tightening torque of bolt (see arrow **A**): **10±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

After replacing a new EPB controller assembly, use a diagnostic scanner for after-sales matching of the EPB controller assembly. Refer to 1.4.2.6 After-sales matching after module replacement.

3.11 Brake safety control system

3.11.1 Specification

3.11.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection of brake bracket assembly with brake safety control system	All-metal hexagon flange locking nut M8	25±2
Connection of front wheel speed sensor and front brake	Hexagon head flange bolt M6×12	10±1
Connection of rear wheel speed sensor and rear brake	Hexagon head flange bolt M6×12	10±1
Rear wheel speed sensor and body connection	Hexagon head flange bolt M8×16	25±2
Connection of rear wheel speed sensor and rear upper arm	Hexagon head flange nut M8	25±2
	Hexagon head flange bolt M8×20	
Connection of yaw rate sensor with vehicle body	Hexagon flange nut M6	10±1
Connection of brake pipe with brake safety control system	Supplier's nuts	16±2

3.11.2 Description and operation

3.11.2.1 Overview

Overview

The brake safety control (BSC) system is an advanced decoupled electro-hydraulic braking system, incorporating vacuum booster, electronic vacuum pump and ABS/ESC functionality. BSC can provide power assistance for vehicle braking according to the driver's brake demand "as required", and can provide advanced control functions such as ABS, EBD, TCS, ESC, CST and CRBS to improve vehicle stability and comfort and enhance braking energy recovery efficiency.

ESC (electronic stability control system)

When the running vehicle takes a sudden turn, the ESC system judges the intent of the driver according to the steering wheel angle and the vehicle speed and continuously compares that information with actual vehicle conditions. If the vehicle oversteers or understeers, the ESC makes corrections by applying braking forces to the wheels to help the driver improve the vehicle's stability.

TCS (traction control system)

TCS can prevent driving wheels from slipping during acceleration by reducing engine power. If necessary, TCS applies braking forces for the purpose of control, so as to prevent the slipping of driving wheels. Under unfavorable running conditions, TCS makes the vehicle easier to start, accelerate, and go uphill.

HBA (hydraulic brake assist)

When the driver quickly presses the brake pedal, HBA can identify that the vehicle is experiencing an emergency and quickly increase the braking pressure to the maximum value. ABS is therefore activated more quickly to shorten the braking distance.

HHC (hill hold control)

Park the vehicle steadily on a ramp, engage the gear and prepare to start. After the brake pedal is released, HHC can apply a certain hydraulic pressure in the brake pipe to prevent the vehicle from sliding. The hydraulic pressure can be maintained for a maximum duration of 1.5s. If the driver does not start by accelerating after 1.5s, the vehicle slides.

CDP (deceleration control for parking brake)

When the EPB switch is pulled up, CDP starts to work and the vehicle brakes at a constant deceleration (the deceleration is 0.4g if only the EPB switch is pulled up without depressing the brake pedal; the deceleration is 0.8g if the EPB switch is pulled up and the brake pedal is pressed at the same time) until the vehicle comes to a stop. If the driver releases EPB, CDP stops functioning.

HDC (hill descent control)

The HDC system is a set of auxiliary system, which helps the driver to go downhill slowly, for example, when moving forward and reversing on a steep slope or mountain road in winter.

HDC brakes actively to help the driver to control the speed when going downhill. During HDC operation, ABS will be activated when the wheel slip rate exceeds the ABS trigger limit. It enables the driver to drive downhill, or even reverse, in a safe and stable manner.

Wheel speed sensor

The wheel speed sensor assembly is a very important part of the ESC. It can measure the number of turns of wheels and then generate an AC signal, which is transmitted to the brake safety control system.

Yaw rate sensor

The yaw rate sensor is a very important part of the ESC. It can record the motion of vehicle around the vertical axis, determine whether the vehicle is sliding, and transmit the information to the brake safety control system.

Anti-lock Braking System (ABS)

The hydraulic system of ABS to drive the brake has two independent circuits. Each circuit passes through the vehicle diagonally (the front left wheel brake is connected with the rear right wheel brake, etc.) and acts. If one circuit fails, two wheels can still be braked.

In case of a sudden brake or application of brake on a slippery road, ABS helps to prevent the wheels from locking or slipping, so that you can keep the steering control.

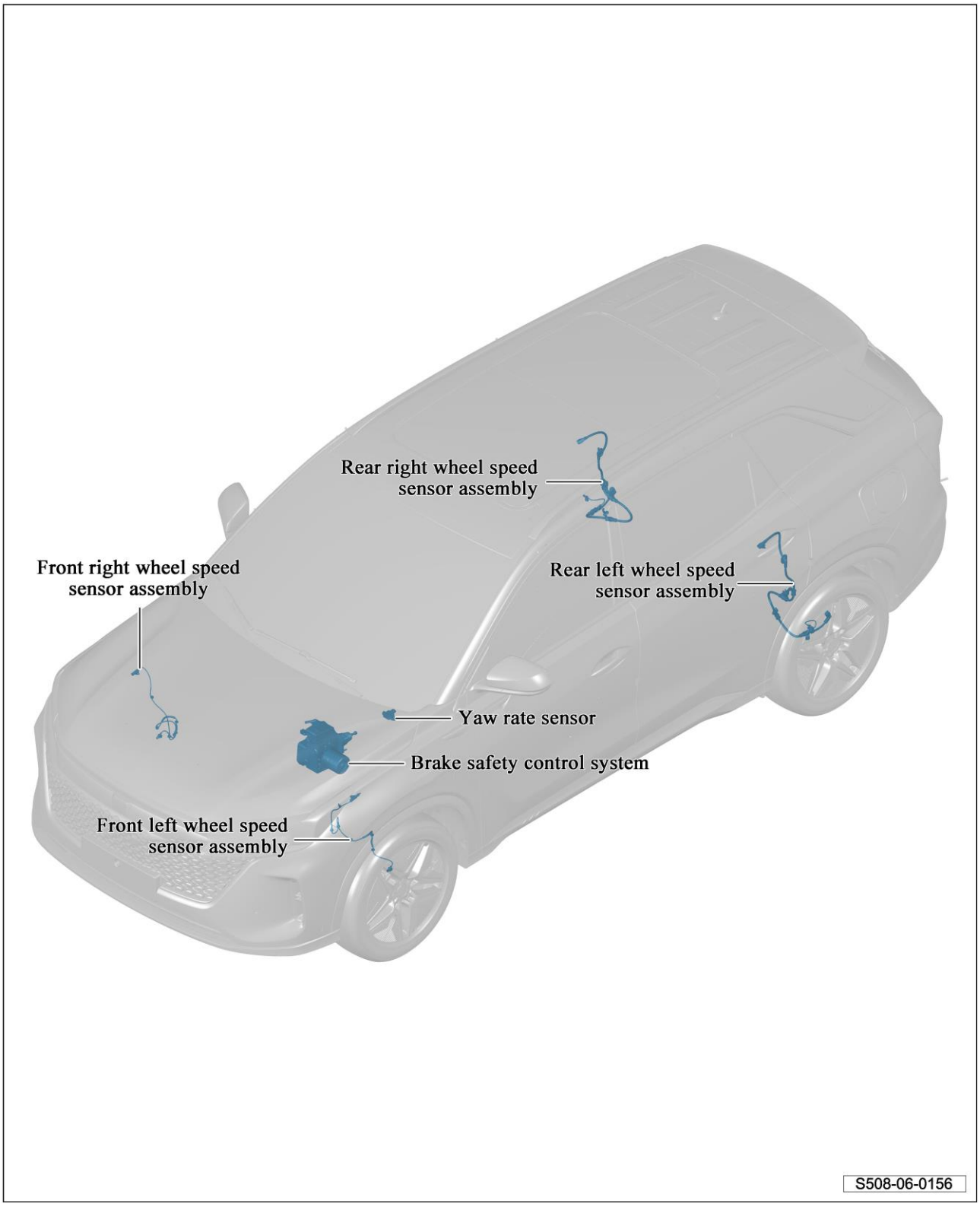
When front wheel tires slip, you cannot exercise steering control. That is to say, although you are turning the steering wheel, the vehicle keeps running forward. ABS helps to prevent locking and, since rapid pulsating braking is much faster than human reaction, helps to maintain steering control.

Do not press the brake pedal in a pulsating manner; otherwise, ABS may fail. When turning the steering wheel to avoid danger, always maintain strong and stable pressure on the brake pedal so that ABS functions.

When the ABS is operating, a vibration may be felt from the brake pedal and noise may be heard. This is normal because ABS is providing rapid pulsating braking.

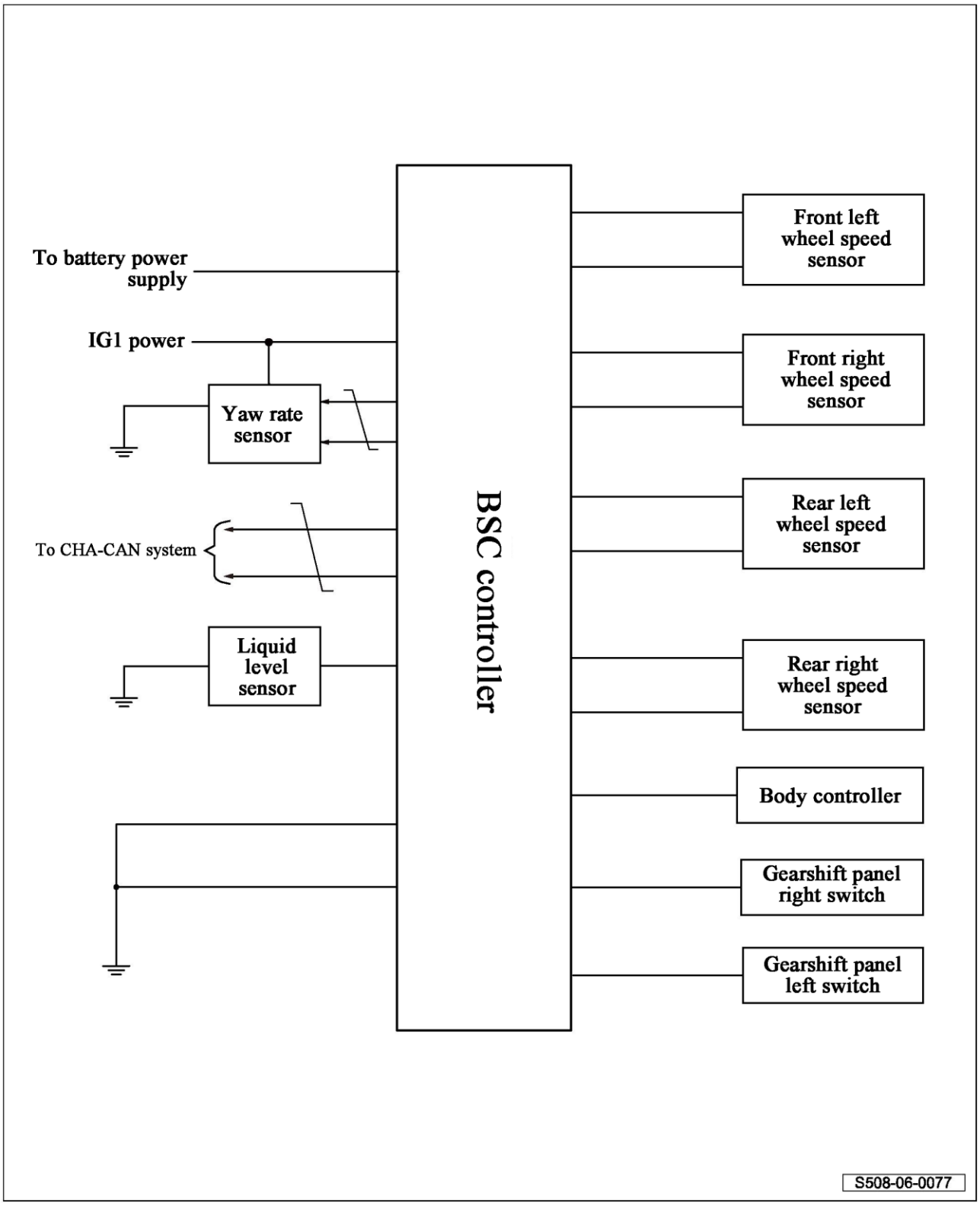
3.11.3 Component position

3.11.3.1 Component position



3.11.4 Electrical schematic diagram

3.11.4.1 Electrical schematic diagram



3.11.5 Diagnosis information and steps

3.11.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the BSC with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

3.11.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

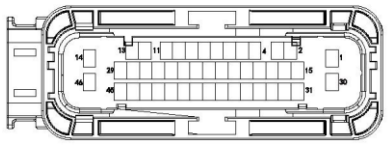
b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

3.11.5.3 ECU terminals

Brake safety control system harness connector (FB57)

FB57 Brake safety control system harness connector



RMS508-06-1044

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
1	6.0/black	Ground	—	0V
5	0.35/Light green	CHA CAN-H	—	—
7	0.5/light white	Front left wheel speed -	—	—
8	0.35/light green-red	BSC activation enable	—	—
11	0.35/green-white	Yaw rate CAN-H	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
14	6.0/red-white	Battery power supply	The start switch is put to any position	Battery voltage
19	0.35/Light green and white	CHA CAN-L	—	—
20	0.5/gray	Rear right wheel speed +	—	—
21	0.5/light-blue	Front left wheel speed +	—	—
23	0.5/brown-black	Rear left wheel speed -	—	—
25	0.35/green-black	Yaw rate CAN-L	—	—
26	0.5/red-yellow	Front right wheel speed signal	—	—
33	0.35/green-brown	ESP switch	—	—
35	0.35/green, pink, red	HDC button	—	—
36	0.5/yellow-red	IG1 power	Put the start switch to “ON” position	Battery voltage
37	0.5/gray-black	Rear right wheel speed -	—	—
38	0.35/black-brown	Brake fluid level signal	—	—
39	0.5/brown-black	Rear left wheel speed +	—	—
40	0.5/gray-blue	AUTO HOLD	—	—
42	0.5/red	Front right wheel speed power supply	—	—
46	6.0/red	Battery power supply	The start switch is put to any position	Battery voltage

3.11.5.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
600	Front left wheel speed	Front left wheel speed	0	296	km/h
600	Front right wheel speed	Front right wheel speed	0	296	km/h

600	Rear left wheel speed	Speed of rear left wheel	0	296	km/h
600	Rear right wheel speed	Wheel speed-rear right	0	296	km/h
601	Solenoid voltage	Solenoid valve_voltage	0	20	V
601	Motor bus voltage	Motor bus	0	20	V
601	Pressure of piston pump	BSC_plunger pressure	0	300	bar
601	Master cylinder pressure	BSC_simulator pressure	0	300	bar
601	Brake pedal stroke	BSC_input rod stroke	0	50	mm
602	Injection state	Filling status	0	255	-
603	Offline testing state	Dcm logoff test status	0	255	-
604	Disable the speed limit detection	Dcm disable LmtMon	0	255	-
CF00	Battery voltage	Solenoid valve_voltage_Phy	0	255	V
CF01	Vehicle speed	Vehicle_ pd_filtering	0	3000	km/h
CF02	Engine speed when the fault occurs	Engine speed	0	16383.75	rpm
CF03	Mileage when the fault occurs	Odometer	0	1677721.4	km
CF05	Time (year) when the fault occurs	Year	2000	2059	year
CF05	Time (month) when the fault occurs	Month	1	12	month
CF05	Time (date) when the fault occurs	Daytime	1	31	day
FD43	Factory Mode	g_Dcm BSC assembly mode	0	255	-

3.11.5.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
C110100	UBVR (PIN46) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference.	1. The power cord has an abnormal contact. 2. The power module in the	1. Plug and unplug the connector again 2. Check the harness

		3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	assembly is short- and open-circuited.	
C110200	ECU fault (hardware/microprocessor)	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. Chip internal fault 2. The motor is damaged. 3. Motor operation fault	Restart the vehicle after it stops for 5min, or plug and unplug the BSC connector again after the complete vehicle loses power.
C110300	ECU internal control module fault (program running)	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The driver chip is damaged. 2. The power supply has undervoltage or overvoltage. 3. Circuit fault 4. Poor heat dissipation 5. The circuit is short-circuited.	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110400	Error in calibration of sensor signal in the position of master cylinder	1. When two pedal signals fail at the same time, the system enters the No Assistance mode, and all functions except feedback fail. 2. When the difference between them exceeds 5%, the brake depth is larger.	1. Signal interference 2. Installation deviation 3. Sensor deviation	1. Check the installation 2. Replace the BSC brake assembly
C110500	Fault of SMV valve 1	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. Open circuit 2. Short circuit to ground 3. Short circuit to power 4. Overtemperature	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
C110600	Fault of SMV valve 2	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. Open circuit 2. Short circuit to ground 3. Short circuit to power 4. Overtemperature	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110700	Fault of POV valve 1	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. Open circuit 2. Short circuit to ground 3. Short circuit to power 4. Overtemperature	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110800	Fault of POV valve 2	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. Open circuit 2. Short circuit to ground 3. Short circuit to power 4. Overtemperature	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110900	Fault of SSV valve	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. Open circuit 2. Short circuit to ground 3. Short circuit to power 4. Overtemperature	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110A00	Fault of FDV valve	No	1. Open circuit	1. Plug and

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
			2. Short circuit to ground 3. Short circuit to power 4. Overtemperature	unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110B00	Front left inlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has happened. 5. Overcurrent 6. The self-check of overcurrent comparator fails.	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110C00	Front left outlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has happened. 5. Overcurrent 6. The self-check of overcurrent comparator fails.	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110D00	Front right inlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
			happened. 5. Overcurrent 6. The self-check of overcurrent comparator fails.	
C110E00	Front right fluid outlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has happened. 5. Overcurrent 6. The self-check of overcurrent comparator fails.	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C110F00	Rear left fluid inlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has happened. 5. Overcurrent 6. The self-check of overcurrent comparator fails.	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C111000	Rear left fluid outlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has happened. 5. Overcurrent	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
			6. The self-check of overcurrent comparator fails.	
C111100	Rear right inlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has happened. 5. Overcurrent 6. The self-check of overcurrent comparator fails.	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C111200	Rear right fluid outlet valve fault	Functions of ABS, TSC and VDC are affected. These 3 functions cannot be realized, and the other functions are not affected.	1. Open circuit 2. Short circuit to ground 3. Over-temperature is happening. 4. Over-temperature has happened. 5. Overcurrent 6. The self-check of overcurrent comparator fails.	1. Plug and unplug the connector again 2. Check the harness 3. Replace the BSC brake assembly
C111300	The liquid level sensor circuit is open.	Functions other than feedback, foundation braking and ABS fail.	1. The signal line is open. 2. The signal line is short-circuited to power. 3. The signal line is	Check the brake fluid level sensor harness

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
			short-circuited to ground. 4. Too little brake fluid	
C111400	BSC OFF switch fault	Affect the VDC function, which fails.	1. The switch is stuck. 2. The driver misoperates.	1. Check whether the switch is stuck. 2. Check whether someone has been pressing the switch.
C111500	AVH switch fault	AVH function fails	1. The switch is stuck. 2. The driver misoperates.	1. Check whether the switch is stuck. 2. Check whether someone has been pressing the switch.
C111600	Brake system temperature too high/ brake pedal and accelerator pedal signal unreasonable	No	1. Pedal jamming 2. Driver's misoperation	1.Check whether the pedal is jammed 2. The driver cannot depress two pedals at the same time during operation.
C111700	Master cylinder position sensor A circuit voltage too high	All functions fail when both pedals B and RHP become faulty, which are not affected when either pedal becomes faulty.	Circuit to power supply	Check the harness.
C111800	Master cylinder position sensor A circuit voltage too low	All functions fail when both pedals B and RHP become faulty, which are not affected when either pedal becomes faulty.	Circuit to ground	Check the harness.
C111900	The main cylinder position sensor A	All functions fail when both pedals B and RHP become	1. Sensor fault 2. The pedal	1. Check the wiring harness

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
	does not work normally.	faulty, which are not affected when either pedal becomes faulty.	installation position deviates largely.	2. Check whether the sensor is installed normally.
C111A00	Master cylinder position sensor B circuit voltage too high	All functions fail when both pedals A and RHP become faulty, which are not affected when either pedal becomes faulty.	Circuit to power supply	Check the harness.
C111B00	Master cylinder position sensor B circuit voltage too low	All functions fail when both pedals A and RHP become faulty, which are not affected when either pedal becomes faulty.	Circuit to ground	Check the harness.
C111C00	The main cylinder position sensor B does not work normally.	All functions fail when both pedals A and RHP become faulty, which are not affected when either pedal becomes faulty.	1. Sensor fault 2. The pedal installation position deviates largely.	1. Check the wiring harness 2. Check whether the sensor is installed normally.
C111D00	The pressure sensor A has an abnormal signal.	All functions fail when both pedals A and B become faulty, which are not affected when either pedal becomes faulty.	Sensor fault	1. Check the wiring harness 2. Check whether the sensor is installed normally.
C111E00	Pressure sensor A circuit voltage too low	All functions fail when both pedals A and B become faulty, which are not affected when either pedal becomes faulty.	Circuit short-circuited to ground	Check the harness.
C111F00	Pressure sensor A circuit voltage too high	All functions fail when both pedals A and B become faulty, which are not affected when either pedal becomes faulty.	The circuit is short to power.	Check the harness.
C112000	The pressure sensor B has an abnormal	B. The system is in the No Assistance status, and all	Sensor fault	1. Check the wiring harness

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
	signal.	functions except feedback fail.		2. Check whether the sensor is installed normally.
C112100	Pressure sensor B circuit voltage too low	B. The system is in the No Assistance status, and all functions except feedback fail.	Circuit short-circuited to ground	Check the harness.
C112200	Pressure sensor B circuit voltage too high	B. The system is in the No Assistance status, and all functions except feedback fail.	The circuit is short to power.	Check the harness.
C112300	Brake booster motor position sensor A circuit voltage too low	B. The system is in the No Assistance status, and all functions except feedback fail.	1. The signal line is short-circuited to ground. 2. The signal disc wears.	Check the harness.
C112400	Brake booster motor position sensor A circuit voltage too high	B. The system is in the No Assistance status, and all functions except feedback fail.	The signal is short-circuited to power.	Check the harness.
C112500	Abnormal circuit voltage of brake booster motor position sensor A	B. The system is in the No Assistance status, and all functions except feedback fail.	1. Signal interference 2. The signal disc is not even.	1. Check the wiring harness 2. Replace the brake assembly
C112600	Abnormal load of brake booster motor	B. The system is in the No Assistance status, and all functions except feedback fail.	1. Signal interference 2. The signal disc is not even.	Check the harness.
C112700	Abnormal power supply of electric actuator	B. The system is in the No Assistance status, and all functions except feedback fail.	1. The internal drive fails. 2. The incorrect program version is used. 3. The assembly is damaged.	1. Update the program to the latest version 2. Replace the assembly
C112800	The stroke of master cylinder is greater than expected.	B. The system is in the No Assistance status, and all functions except feedback fail.	1. SSV is stuck. 2. The RHP sensor becomes faulty.	1. Update the program to the latest version 2. Check the

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
			3. Leakage	circuit of pressure sensor 3. Check the master cylinder for leakage 4. Replace the assembly
C112900	Front left wheel speed sensor open-circuited	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. Open circuit 2. Over-temperature/overcurrent	Check the harness.
C112A00	Front left wheel speed sensor signal wire short-circuited to ground wire	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Short circuit to ground	Check the harness.
C112B00	Front left wheel speed sensor signal line short-circuited to power supply line	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Short to power	Check the harness.
C112C00	Abnormal air gap of front left wheel speed sensor	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. Installation problem 2. Wheel speed sensor fault	1. Check the wiring harness 2. Check the installation 3. Check the type of wheel speed sensor
C112D00	Error in the installation direction of front left wheel speed sensor	No	The wheel speed sensor is not installed in a correct direction.	Installation inspection
C112E00	Front right wheel speed sensor open-circuited	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking	1. Open circuit 2. Over-temperature/overcurrent	Check the harness.

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
		are not affected.		
C112F00	Front right wheel speed sensor signal wire short-circuited to ground wire	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Short circuit to ground	Check the harness.
C113000	Front right wheel speed sensor signal line short-circuited to power supply line	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Short to power	Check the harness.
C113100	Abnormal air gap of front right wheel speed sensor	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. Installation problem 2. Wheel speed sensor fault	1. Check the wiring harness 2. Check the installation 3. Check the type of wheel speed sensor
C113200	Wrong installation direction of right front wheel speed sensor	No	The wheel speed sensor is not installed in a correct direction.	1. Check the installation
C113300	Rear left wheel speed sensor open-circuited	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. Open circuit 2. Over-temperature/overcurrent	Check the harness.
C113400	Rear left wheel speed sensor signal wire short-circuited to ground wire	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Short circuit to ground	Check the harness.
C113500	Rear left wheel speed sensor signal line short-circuited to power supply line	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking	Short to power	Check the harness.

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
		are not affected.		
C113600	Abnormal air gap of rear left wheel speed sensor	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. Installation problem 2. Wheel speed sensor fault	1. Check the wiring harness 2. Check the installation 3. Check the type of wheel speed sensor
C113700	Error in the installation direction of rear left wheel speed sensor	No	The wheel speed sensor is not installed in a correct direction.	Installation inspection
C113800	Rear right wheel speed sensor open-circuited	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. Open circuit 2. Over-temperature/overcurrent	Check the harness.
C113900	Rear right wheel speed sensor signal wire short-circuited to ground wire	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Short circuit to ground	Check the harness.
C113A00	Rear right wheel speed sensor signal line short-circuited to power supply line	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Short to power	Check the harness.
C113B00	Abnormal air gap of rear right wheel speed sensor	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. Installation problem 2. Wheel speed sensor fault	1. Check the wiring harness 2. Check the installation 3. Check the type of wheel speed sensor
C113C00	Error in the installation direction of rear right wheel speed sensor	No	The wheel speed sensor is not installed in a correct direction.	Installation inspection

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
C113D00	Error in mutual calibration of wheel speed sensor signal	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	1. The vehicle is on the drum. 2. Wheel speed sensor fault	1. Check the wiring harness 2. Check the installation 3. Check the type of wheel speed sensor 4. Check whether the vehicle is on the drum.
C113E00	Front left wheel speed sensor signal protocol error	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	The type of wheel speed sensor mismatches.	Check the type of wheel speed sensor
C113F00	Front right wheel speed sensor signal protocol error	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	The type of wheel speed sensor mismatches.	Check the type of wheel speed sensor
C114000	Rear left wheel speed sensor signal protocol error	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	The type of wheel speed sensor mismatches.	Check the type of wheel speed sensor
C114100	Right rear wheel speed sensor signal protocol error	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	The type of wheel speed sensor mismatches.	Check the type of wheel speed sensor
C114200	Vehicle model variable code error	Functions of ABS, TSC, VDC, HBA, CDP, HDC, HHC, AVH and CST cannot be realized, and those of RBS and foundation braking are not affected.	Vehicle model not configured	Update the program

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
C114300	Brake hydraulic circuit leakage	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. Leakage 2. Air in the pipeline	Inspect the pipeline
C114400	Exhaust not completed	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	Manually set the exhaust through the equipment	Write the filling status after exhaust is completed.
C114500	Brake hydraulic circuit leakage 1	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	The pipeline leaks.	Inspect the pipeline
C114600	Abnormal working time of ABS system	No	1. Wheel speed fault 2. The adhesion road is extremely low. 3. The ABS control module becomes faulty.	1. Check the wheel speed sensor 2. Check the road surface 3. Check the program version
C114700	The VDC system has an abnormal working time.	No	1. Wheel speed fault 2. The adhesion	1. Check the wheel speed sensor

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
			road is extremely low. 3. The VDC control module becomes faulty.	2. Check the road surface 3. Check the program version
U240B00	Steering angle sensor uncalibrated	VDC function fails.	EPS not calibrated	Calibrate EPS
C114900	Ax signal status bit error	Functions of VDC, HHC, AVH and CST fail.	1. Sensor fault 2. The message is interfered.	Check the sensor
C114A00	Ax signal value error	Functions of VDC, HHC, AVH and CST fail.	1. Sensor fault 2. The message is interfered.	Check the sensor
C114B00	Ay signal value error	VDC function fails.	1. Sensor fault 2. The message is interfered.	Check the sensor
C114C00	Ay signal status bit error	VDC function fails.	1. Sensor fault 2. The message is interfered.	Check the sensor
C114D00	Yaw signal status bit error	VDC function fails.	1. Sensor fault 2. The message is interfered.	Check the sensor
C114E00	Yaw signal value invalid	VDC function fails.	1. Sensor fault 2. The message is interfered.	Check the sensor
C114F00	Configuration error of Yaw rate sensor parameter	Functions of VDC, HHC, AVH and CST fail.	1. Sensor fault 2. The message is interfered.	Check the sensor
C115000	Yaw rate sensor calibration error	Functions of VDC, HHC, AVH and CST fail.	1. Sensor fault 2. The message is interfered.	Check the sensor
C115100	Yaw rate sensor signal communication timeout	Functions of VDC, HHC, AVH and CST fail.	1. Sensor fault 2. The message is interfered.	Check the sensor
C115200	Error in CRC,Counter value of message of yaw rate sensor	Functions of VDC, HHC, AVH and CST fail.	1. Sensor fault 2. The message is interfered.	Check the sensor

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
C115300	Yaw rate sensor subnet Busoff	Functions of VDC, HHC, AVH and CST fail.	1. Sensor fault 2. The message is interfered.	Check the sensor
B111717	Too high battery voltage	No	1. The power supply is abnormal 2. Abnormal line	Check the power supply lines
B111716	Too low battery voltage	No	1. The power supply is abnormal 2. Abnormal line	Check the power supply lines
U240000	EMS_1BA checksum OR scroll counter error	No	The message is abnormal.	Check the message
U240100	VCU111 checksum OR scroll counter error	Functions of VDC, HHC, AVH, CST and HDC fail.	The message is abnormal.	Check the message
U240200	VCU107 checksum OR scroll counter error	Functions of VDC, HHC, AVH, CST, HDC, ABS and TCS fail.	The message is abnormal.	Check the message
U240300	VCU185 checksum OR scroll counter error	No	The message is abnormal.	Check the message
U240400	VCU187 checksum OR scroll counter error	Brake feedback function fails.	The message is abnormal.	Check the message
U240500	VCU114 checksum OR scroll counter error	Brake feedback function fails.	The message is abnormal.	Check the message
U240600	MCU217 checksum OR scroll counter error	Functions of VDC, HHC, AVH, CST, HDC and TCS fail.	The message is abnormal.	Check the message
U240700	EPS178 checksum OR scroll counter error	VDC fails.	The message is abnormal.	Check the message
U240800	EPB1C5 checksum OR scroll counter error	CDP and AVH fail.	The message is abnormal.	Check the message
U240900	ABM385 checksum OR scroll counter error	AVH fails.	The message is abnormal.	Check the message

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
U010087	Lost communication with EMS	—	Bus node loss	1. Check whether the EMS node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U029387	Lost communication with VCU	—	Bus node loss	1. Check whether the VCU node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U011087	Lost communication with MCU	—	Bus node loss	1. Check whether the MCU node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U013187	Lost communication with EPS	—	Bus node loss	1. Check whether the EPS node sends messages normally 2. Check

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
				whether CANH and CANL of the ESC connector do not work normally.
U012887	Lost communication with EPB	—	Bus node loss	1. Check whether the EPB node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U015187	Lost communication with ABM	—	Bus node loss	1. Check whether the ABM node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U014087	Lost communication with BCM	—	Bus node loss	1. Check whether the BCM node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.

C110000	UBVR (PIN14) power supply circuit open	1. All functions are degraded. 2. The depth of brake pedal can be controlled as a reference. 3. Switch to the No Assistance mode, and coordinate the power feedback braking of VCU for auxiliary braking.	1. The power cord has an abnormal contact. 2. The power module in the assembly is short- and open-circuited.	1. Plug and unplug the connector again 2. Check the harness
U016487	Lost communication with AC	—	Bus node loss	1. Check whether the AC node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U018687	Lost communication with IVI	—	Bus node loss	1. Check whether IVI node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U015587	Lost communication with IC	—	Bus node loss	1. Check whether the IC node sends messages normally 2. Check whether CANH and CANL of the ESC connector do not work normally.
U007488	Vehicle net BUS OFF	Functions of the brake safety system are limited.	BUS OFF	Check whether CANH and CANL of the ESC connector do not work normally.

3.11.5.6 DTC: B111717, B111716.....

DTC	DTC definition
B111717	Too high battery voltage
B111716	Too low battery voltage
C110000	UBVR (PIN14) power supply circuit open
C110100	UBVR (PIN46) power supply circuit open

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses LSB01, LSB02 and LF31 of the brake safety control system.

A Check whether fuses LSB01, LSB02 and LF31 are blown.

No → Go to Step 5.

Yes

Step 4	Maintain circuits of fuses LSB01, LSB02 and LF31.

A Check whether circuits of fuses LSB01, LSB02 and LF31 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

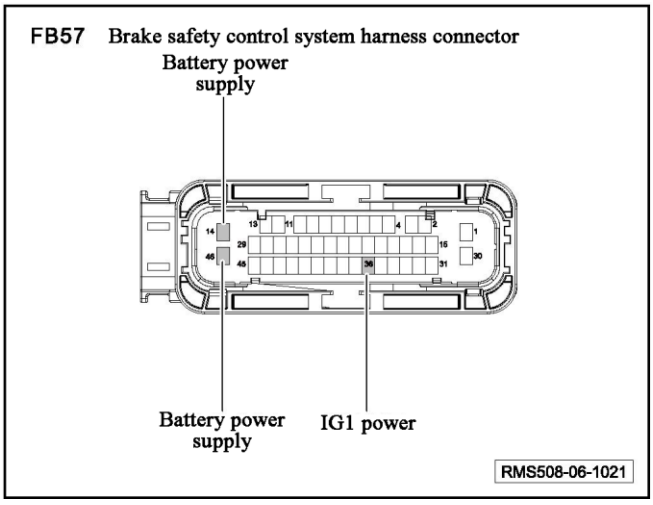
Rated values of fuses: **LSB01 60A**, **LSB02 60A** and **LF31 5A**

D Confirm whether the brake safety control system works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 14, 36 and 46 of the brake safety control system harness connector FB57 and the body ground.

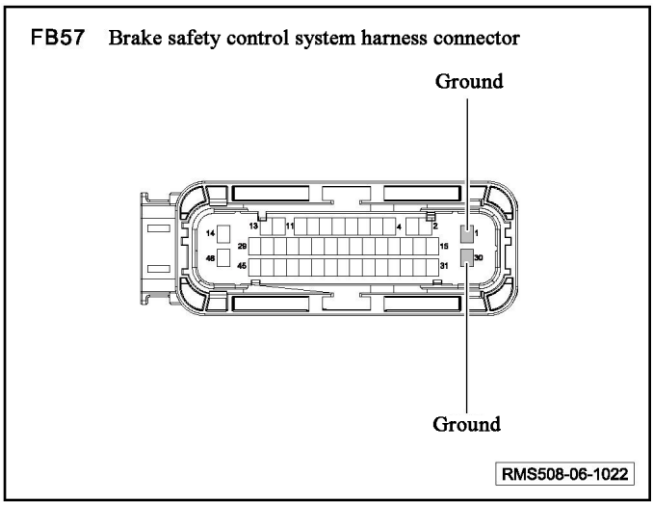
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Measure the resistance between terminals 1 and 30 of the brake safety control system harness connector FB57 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.11.5.7 DTC: C110200, C110300 ...

DTC	DTC definition
C110200	ECU fault (hardware/microprocessor)
C110300	ECU internal control module fault (program running)
C114200	Vehicle model variable code error
C114600	Abnormal working time of ABS system
C114700	The VDC system has an abnormal working time.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the brake safety control system, and flash ECU.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the “ON” position, and flash ECU as prompted by the diagnostic scanner.

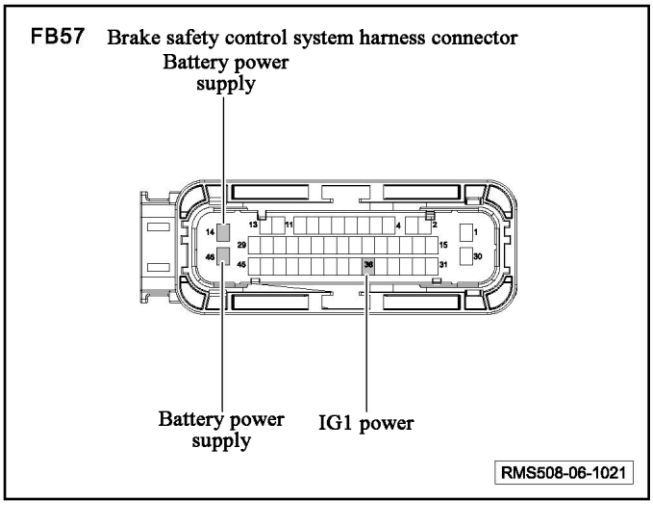
C Clear the DTC and read it again.

D Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the power circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 14, 36 and 46 of the brake safety control system harness connector FB57 and the body ground.

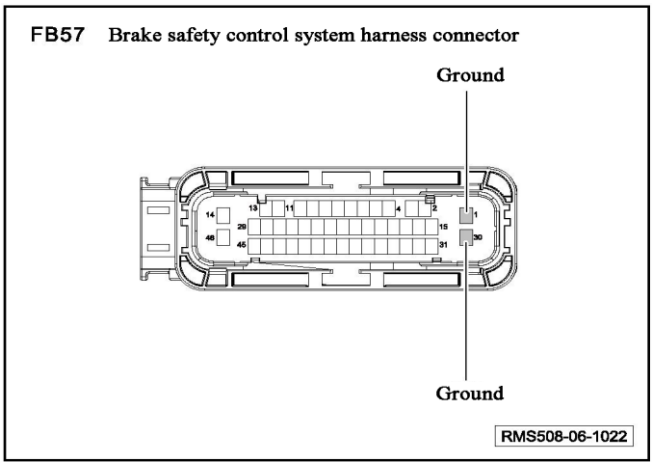
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 4	Check the ground circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Measure the resistance between terminals 1 and 30 of the brake safety control system harness connector FB57 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.8 DTC: C112900, C112A00 ...

DTC	**DTC definition**
C112900	Front left wheel speed sensor open-circuited
C112A00	Front left wheel speed sensor signal wire short-circuited to ground wire
C112B00	Front left wheel speed sensor signal line short-circuited to power supply line
C112C00	Abnormal air gap of front left wheel speed sensor
C112D00	Error in the installation direction of front left wheel speed sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Drive the vehicle at a speed above 30km/h for at least 5min and carry out the simulation test of fault

symptom on empty and safe roads.

E Read the trouble code again after road test.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the output signal of the front left wheel speed sensor.

A Connect the diagnostic scanner to OBD interface.

B Put the Start switch to “ON” position.

C Read the data flow of the front left wheel speed sensor and check whether the data flow is normal.

Yes → Go to Step 9.

No

Step 3	Check the connection of front left wheel speed sensor harness connector.

A Check whether the harness connector of front left wheel speed sensor is connected correctly.

No → Connect the harness connector correctly.

Yes

Step 4	Check the front left wheel speed sensor installation.

A Inspect whether the front wheel speed sensor LH is correctly installed.

No → Install the front left wheel speed sensor correctly.

Yes

Step 5	Check whether the circuit between the front left wheel speed sensor and the brake safety control system is open-circuited.

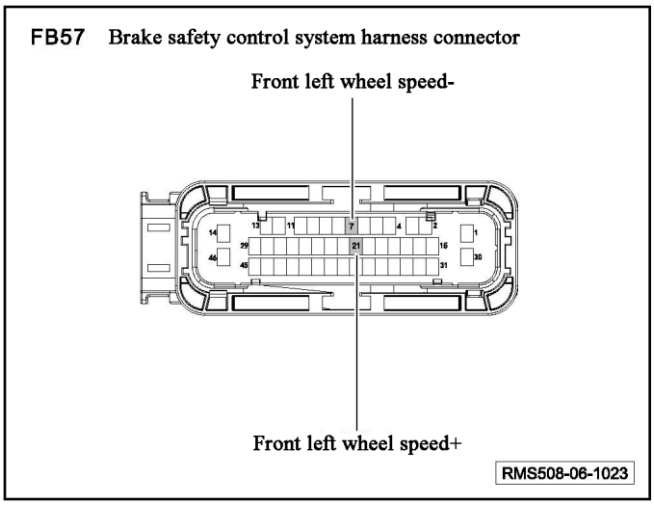
A Turn the start switch to "OFF" position.

B Disconnect the front left wheel speed sensor harness connector FB16.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance of circuit between terminal 1 of the front left wheel speed sensor harness connector FB16 and terminal 7 of the brake safety control system harness connector FB57.

E Measure the resistance of circuit between terminal 2 of the front left wheel speed sensor harness connector FB16 and terminal 21 of the

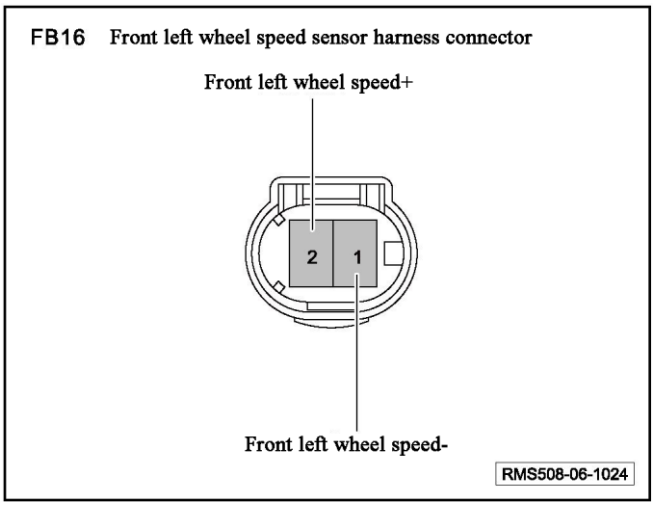


brake safety control system harness connector FB57.

Standard resistance value: <1Ω

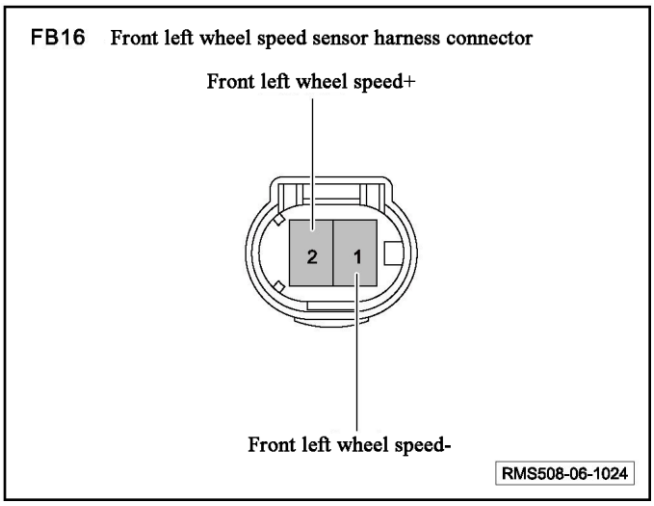
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 6	Check whether the circuit of the front left wheel speed sensor is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the front left wheel speed sensor harness connector FB16.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance between terminal 1 of the front left wheel speed sensor harness connector FB16 and the body ground.

E Measure the resistance between terminal 2 of the front left wheel speed sensor harness connector FB16 and the body ground.

Standard resistance value: 10 kΩ or higher

F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check whether the circuit of the front left wheel speed sensor is short-circuited to power supply.

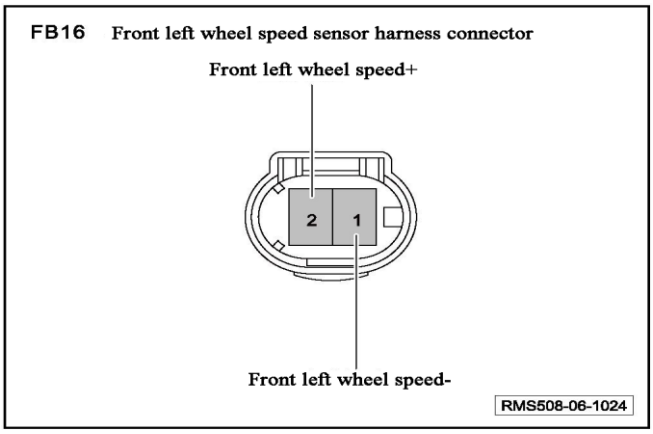
A Turn the start switch to "OFF" position.

B Disconnect the front left wheel speed sensor harness connector FB16.

C Disconnect the brake safety control system harness connector FB57.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 1 of the front left wheel speed sensor harness connector



FB16 and the body ground.

F Measure the voltage between terminal 2 of the front left wheel speed sensor harness connector FB16 and the body ground.

Standard voltage value: **0V**

G Make sure that the voltage conforms to the standard value.

No

Replace or repair the harness or connector.

Yes

Step 8	Replace the front left wheel speed sensor.

A Replace the front left wheel speed sensor.

B Is the fault eliminated after replacing the front left wheel speed sensor?

Yes → The system works normally.

No

Step 9	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

3.11.5.9 DTC: C112E00, C112F00 ...

DTC	**DTC definition**
C112E00	Front right wheel speed sensor open-circuited
C112F00	Front right wheel speed sensor signal wire short-circuited to ground wire
C113000	Front right wheel speed sensor signal line short-circuited to power supply line
C113100	Abnormal air gap of front right wheel speed sensor
C113200	Wrong installation direction of right front wheel speed sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Drive the vehicle at a speed above 30km/h for at least 5min and carry out the simulation test of fault symptom on empty and safe roads.

E Read the trouble code again after road test.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for

intermittent fault.

Yes

Step 2	Check the output signal of the front right wheel speed sensor.

A Connect the diagnostic scanner to OBD interface.

B Put the Start switch to “ON” position.

C Read the data flow of the front right wheel speed sensor and check whether the data flow is normal.

Yes → Go to Step 9.

No

Step 3	Check the connection of front right wheel speed sensor harness connector.

A Check whether the harness connector of front right wheel speed sensor is connected correctly.

No → Connect the harness connector correctly.

Yes

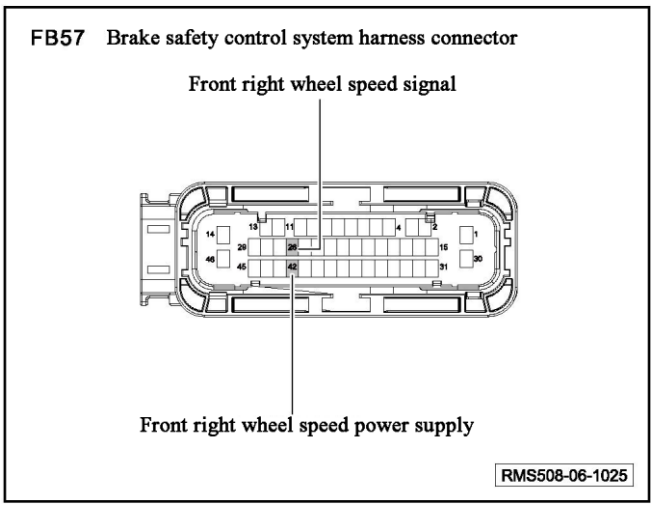
Step 4	Check the front right wheel speed sensor installation.

A Check whether the front right wheel speed sensor is installed correctly.

No → Install the front right wheel speed sensor correctly.

Yes

Step 5	Check whether the circuit between the front right wheel speed sensor and the brake safety control system is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the front right wheel speed sensor harness connector FB34.

C Disconnect the brake safety control system harness connector FB57.

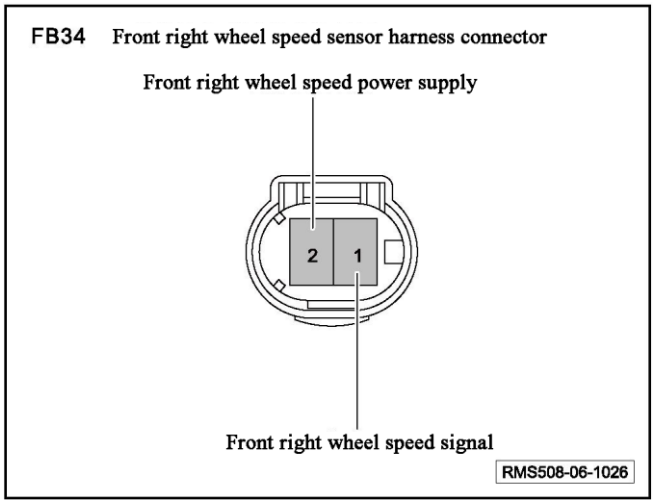
D Measure the resistance of circuit between terminal 1 of the front right wheel speed sensor harness connector FB34 and terminal 26 of the brake safety control system harness connector FB57.

E Measure the resistance of circuit between terminal 2 of the front right wheel speed sensor harness connector FB34 and terminal 42 of the brake safety control system harness connector FB57.

Standard resistance value: <1Ω

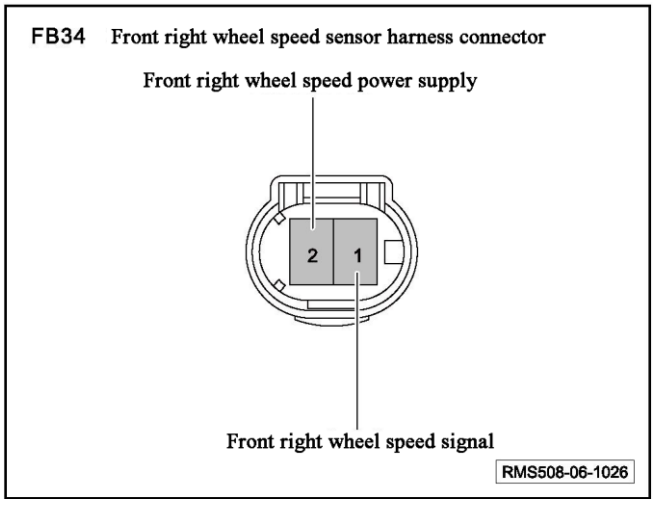
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 6	Check whether the circuit of the front right wheel speed sensor is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the front right wheel speed sensor harness connector FB34.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance between terminal 1 of the front right wheel speed sensor harness connector FB34 and the body ground.

E Measure the resistance between terminal 2 of the front right wheel speed sensor harness connector FB34 and the body ground.

Standard resistance value: 10 kΩ or higher

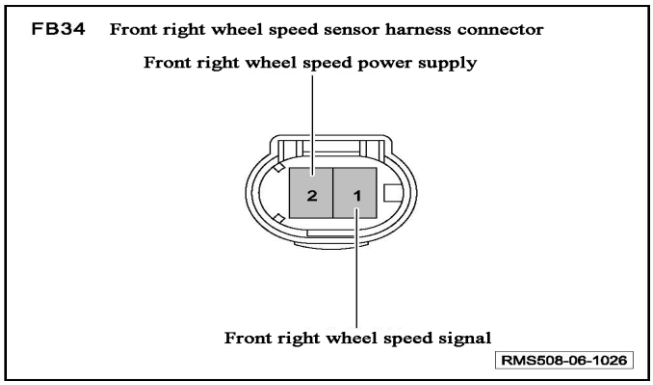
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check whether the circuit of the front right wheel speed sensor is short-circuited to power supply.

A Turn the start switch to "OFF" position.



B Disconnect the front right wheel speed sensor harness connector FB34.

C Disconnect the brake safety control system harness connector FB57.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 1 of the front right wheel speed sensor harness connector FB34 and the body ground.

F Measure the voltage between terminal 2 of the front right wheel speed sensor harness connector FB34 and the body ground.

Standard voltage value: **0V**

G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 8	Replace the front right wheel speed sensor.

A Replace the front right wheel speed sensor.

B Is the fault eliminated after replacing the front right wheel speed sensor?

Yes → The system works normally.

No

Step 9	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

3.11.5.10 DTC: C113300, C113400 ...

DTC	**DTC definition**
C113300	Rear left wheel speed sensor open-circuited
C113400	Rear left wheel speed sensor signal wire short-circuited to ground wire
C113500	Rear left wheel speed sensor signal line short-circuited to power supply line
C113600	Abnormal air gap of rear left wheel speed sensor
C113700	Error in the installation direction of rear left wheel speed sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Drive the vehicle at a speed above 30km/h for at least 5min and carry out the simulation test of fault symptom on empty and safe roads.

E Read the trouble code again after road test.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for

intermittent fault.

Yes

Step 2	Check the output signal of the rear left wheel speed sensor.

A Connect the diagnostic scanner to OBD interface.

B Put the Start switch to “ON” position.

C Read the data flow of the rear left wheel speed sensor and check whether the data flow is normal.

Yes → Go to Step 9.

No

Step 3	Check the connection of rear left wheel speed sensor harness connector.

A Check whether the harness connector of rear left wheel speed sensor is connected correctly.

No → Connect the harness connector correctly.

Yes

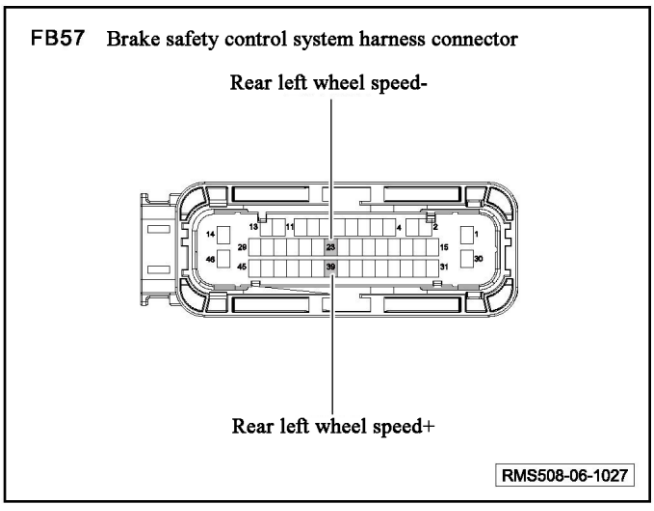
Step 4	Check the rear left wheel speed sensor installation.

A Check whether the rear left wheel speed sensor is installed correctly.

No → Install the rear left wheel speed sensor correctly.

Yes

Step 5	Check whether the circuit between the rear left wheel speed connector and the brake safety control system is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the rear left wheel speed connector harness connector BD31.

C Disconnect the brake safety control system harness connector FB57.

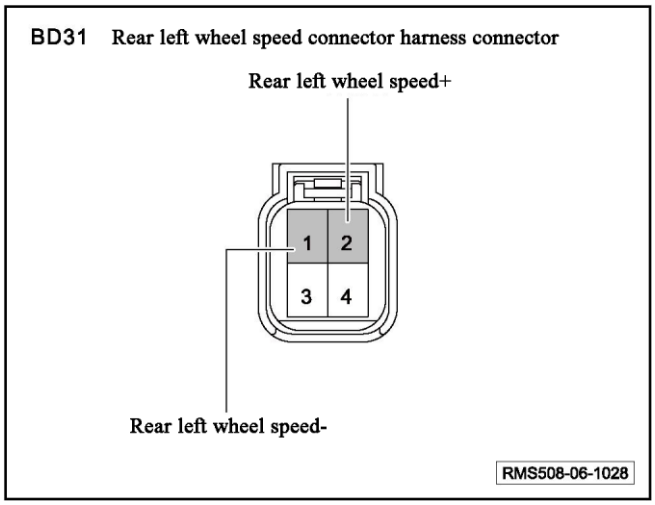
D Measure the resistance of circuit between terminal 1 of the rear left wheel speed connector harness connector BD31 and terminal 23 of the brake safety control system harness connector FB57.

E Measure the resistance of circuit between terminal 2 of the rear left wheel speed connector harness connector BD31 and terminal 39 of the brake safety control system harness connector FB57.

Standard resistance value: <1Ω

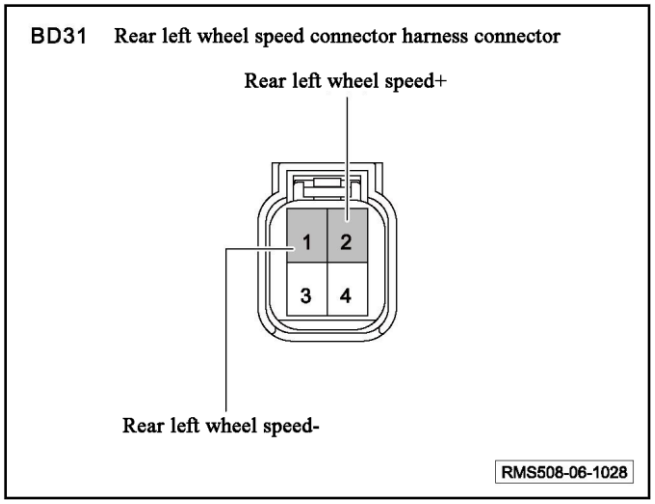
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 6	Check whether the rear left wheel speed connector circuit is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the rear left wheel speed connector harness connector BD31.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance between terminal 1 of the rear left wheel speed connector harness connector BD31 and the body ground.

E Measure the resistance between terminal 2 of the rear left wheel speed connector harness connector BD31 and the body ground.

Standard resistance value: 10 kΩ or higher

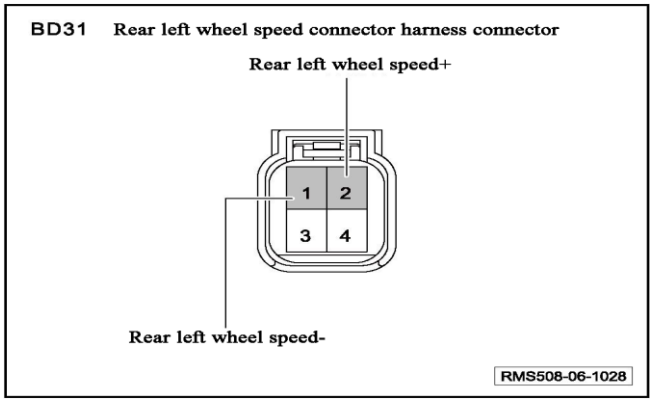
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check whether the rear left wheel speed connector circuit is short-circuited to power supply.

A Turn the start switch to "OFF" position.



B Disconnect the rear left wheel speed connector harness connector BD31.

C Disconnect the brake safety control system harness connector FB57.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 1 of the rear left wheel speed connector harness connector BD31 and the body ground.

F Measure the voltage between terminal 2 of the rear left wheel speed connector harness connector BD31 and the body ground.

Standard voltage value: **0V**

G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 8	Replace the rear left wheel speed sensor assembly.

A Replace the rear left wheel speed sensor assembly.

B Is the fault eliminated after replacing the rear left wheel speed sensor assembly?

Yes → The system works normally.

No

Step 9	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

3.11.5.11 DTC: C113800, C113900 ...

DTC	**DTC definition**
C113800	Rear right wheel speed sensor open-circuited
C113900	Rear right wheel speed sensor signal wire short-circuited to ground wire
C113A00	Rear right wheel speed sensor signal line short-circuited to power supply line
C113B00	Abnormal air gap of rear right wheel speed sensor
C113C00	Error in the installation direction of rear right wheel speed sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Drive the vehicle at a speed above 30km/h for at least 5min and carry out the simulation test of fault symptom on empty and safe roads.

E Read the trouble code again after road test.

F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for

intermittent fault.

Yes

Step 2	Check the output signal of the rear right wheel speed sensor.

A Connect the diagnostic scanner to OBD interface.

B Put the Start switch to “ON” position.

C Read the data flow of the rear right wheel speed sensor and check whether the data flow is normal.

Yes → Go to Step 9.

No

Step 3	Check the connection of rear right wheel speed sensor harness connector.

A Check whether the harness connector of rear right wheel speed sensor is connected correctly.

No → Connect the harness connector correctly.

Yes

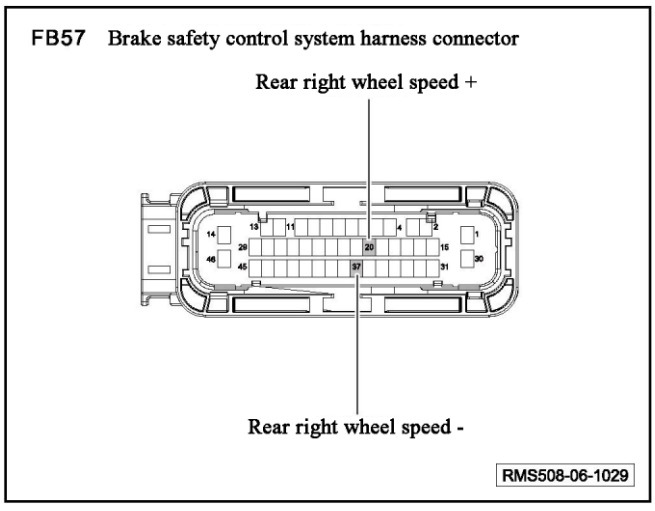
Step 4	Check the rear right wheel speed sensor installation.

A Check whether the rear right wheel speed sensor is installed correctly.

No → Install the rear right wheel speed sensor correctly.

Yes

Step 5	Check whether the circuit between the rear right wheel speed connector and the brake safety control system is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the rear right wheel speed connector harness connector BD07.

C Disconnect the brake safety control system harness connector FB57.

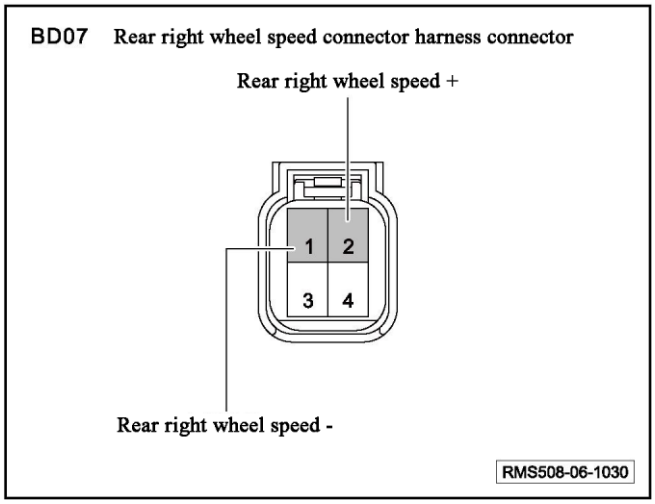
D Measure the resistance of circuit between terminal 1 of the rear right wheel speed connector harness connector BD07 and terminal 37 of the brake safety control system harness connector FB57.

E Measure the resistance of circuit between terminal 2 of the rear right wheel speed connector harness connector BD07 and terminal 20 of the brake safety control system harness connector FB57.

Standard resistance value: <1Ω

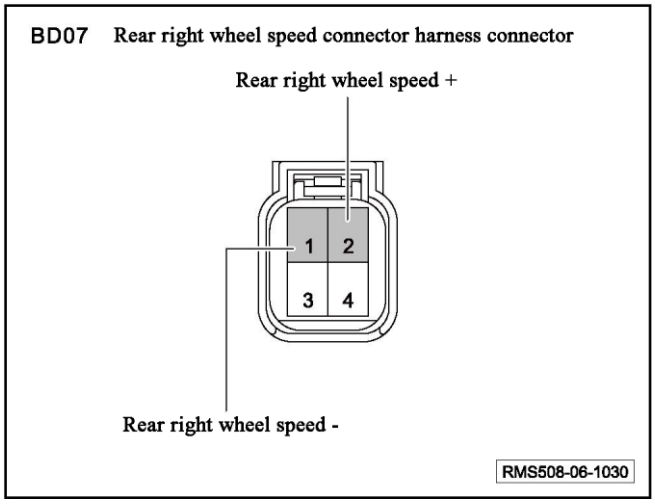
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 6	Check whether the circuit of the rear right wheel speed connector is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the rear right wheel speed connector harness connector BD07.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance between terminal 1 of the rear right wheel speed connector harness connector BD07 and the body ground.

E Measure the resistance between terminal 2 of the rear right wheel speed connector harness connector BD07 and the body ground.

Standard resistance value: 10 kΩ or higher

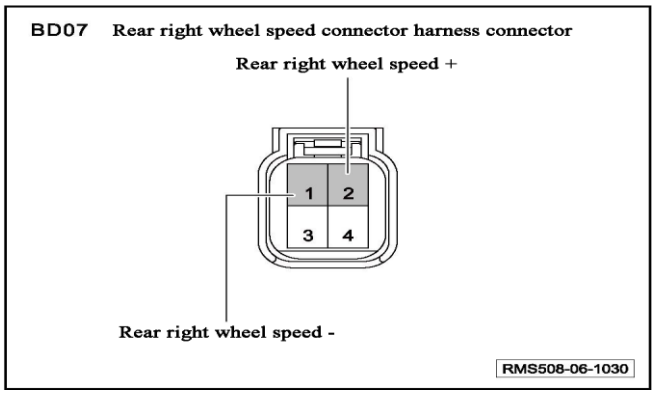
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check whether the circuit of the rear right wheel speed connector is short-circuited to power supply.

A Turn the start switch to "OFF" position.



B Disconnect the rear right wheel speed connector harness connector BD07.

C Disconnect the brake safety control system harness connector FB57.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 1 of the rear right wheel speed connector harness connector BD07 and the body ground.

F Measure the voltage between terminal 2 of the rear right wheel speed connector harness connector BD07 and the body ground.

Standard voltage value: **0V**

G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 8	Replace the rear right wheel speed sensor assembly.

A Replace the rear right wheel speed sensor assembly.

B Is the fault eliminated after replacing the rear right wheel speed sensor assembly?

Yes → The system works normally.

No

Step 9	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

3.11.5.12 DTC: C110500, C110600 ...

DTC	DTC definition
C110500	Fault of SMV valve 1
C110600	Fault of SMV valve 2
C110700	Fault of POV valve 1
C110800	Fault of POV valve 2
C110900	Fault of SSV valve
C110A00	Fault of FDV valve
C110B00	Front left inlet valve fault
C110C00	Front left outlet valve fault
C110D00	Front right inlet valve fault
C110E00	Front right fluid outlet valve fault
C110F00	Rear left fluid inlet valve fault
C111000	Rear left fluid outlet valve fault
C111100	Rear right inlet valve fault
C111200	Rear right fluid outlet valve fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses LSB01, LSB02 and LF31 of the brake safety control system.

A Check whether fuses LSB01, LSB02 and LF31 are blown.

No → Go to Step 4.

Yes

Step 3	Maintain circuits of fuses LSB01, LSB02 and LF31.

A Check whether circuits of fuses LSB01, LSB02 and LF31 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

Rated values of fuses: **LSB01 60A**, **LSB02 60A** and **LF31 5A**

D Confirm whether the brake safety control system works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the brake safety control system.

A Turn the start switch to "OFF" position.

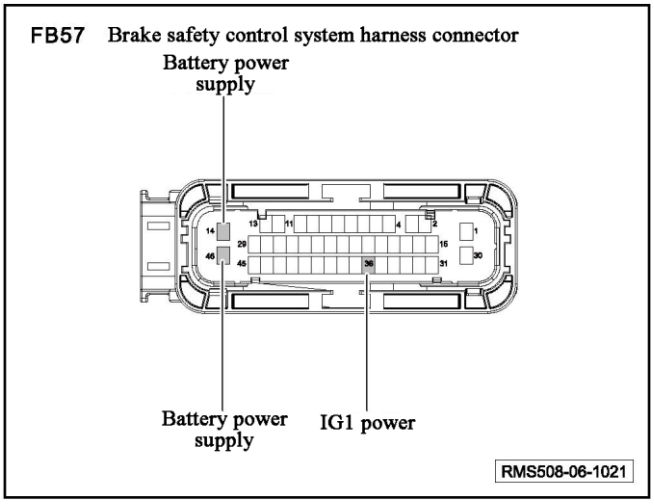
B Disconnect the brake safety control system harness connector FB57.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 14, 36 and 46 of the brake safety control system harness connector FB57 and the body ground.

Standard voltage value: **11~14V**

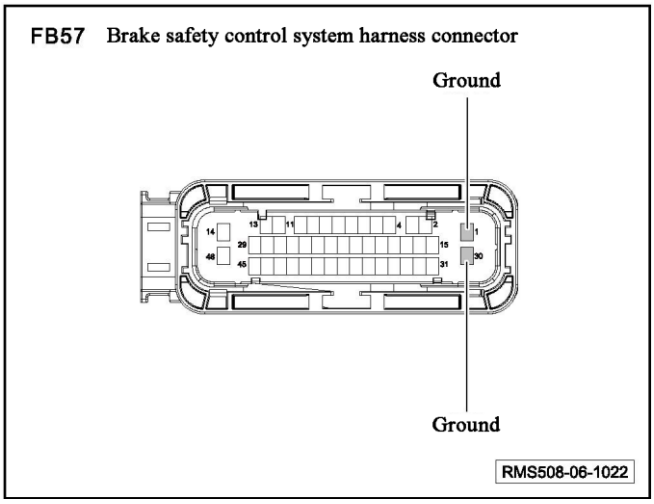
E Make sure that the voltage conforms to the standard value.



No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Measure the resistance between terminals 1 and 30 of the brake safety control system harness connector FB57 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.11.5.13 DTC: C111300

DTC	**DTC definition**

C111300	The liquid level sensor circuit is open.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

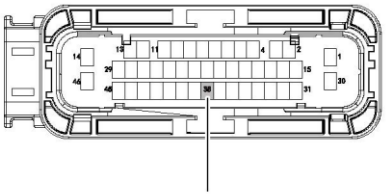
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit between the brake fluid level sensor and the brake safety control system is open-circuited.

FB57 Brake safety control system harness connector



Brake fluid level sensor signal

RMS508-06-1049

A Turn the start switch to "OFF" position.

B Disconnect the brake fluid level sensor harness connector FB08.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance of circuit between terminal 1 of the brake fluid level sensor harness connector FB08 and terminal 38 of the brake safety control system harness connector FB57.

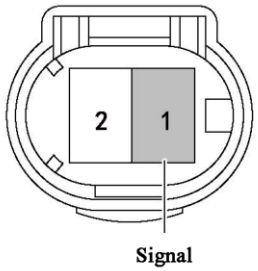
Standard resistance value: <1Ω

E Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

FB08 Brake fluid level sensor harness connector



Signal

RMS508-06-1050

Yes

Step 3	Check the ground circuit of brake fluid level sensor.

A Turn the start switch to "OFF" position.

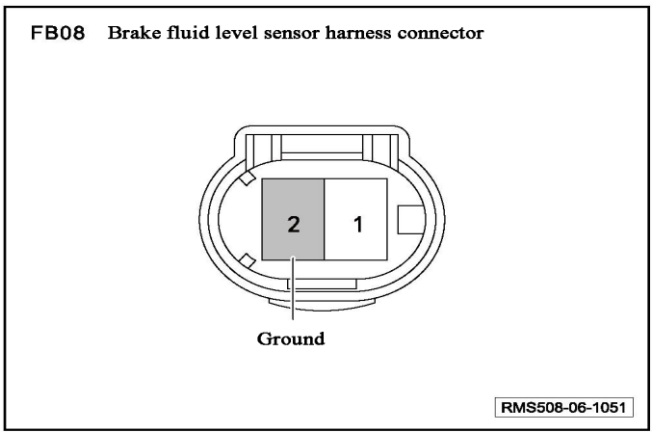
B Disconnect the brake fluid level sensor harness connector FB08.

C Measure the resistance of circuit between terminal 2 of the brake fluid level sensor harness connector FB08 and the body ground.

Standard resistance value: <1Ω

D Confirm if the resistance conforms to the standard

value



No → Replace or repair the harness or connector.

Yes

Step 4	Replace the brake fluid level sensor.

A Replace the brake fluid level sensor.

B Is the fault eliminated after replacing the brake fluid level sensor?

Yes → The system works normally.

No

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.14 DTC: C111400

DTC	DTC definition
C111400	BSC OFF switch fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the right switch component of gearshift panel.

A Check whether the button of gearshift panel right switch assembly is stuck or squeezed by foreign matters.

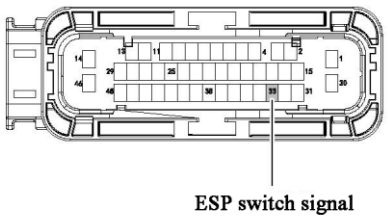
Yes → Remove foreign matters, or replace the gearshift panel right switch

assembly.

No

Step 3	Check whether the circuit between the brake safety control system and the gearshift panel right switch is open-circuited.

FB57 Brake safety control system harness connector



RMS508-06-1052

A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

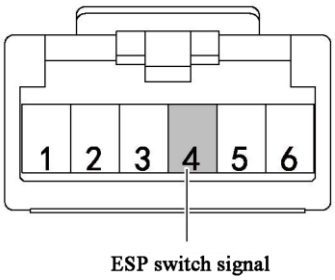
C Disconnect the gearshift panel right switch harness connector IP34.

D Measure the resistance between terminal 33 of the brake safety control system harness connector FB57 and terminal 4 of the gearshift panel right switch harness connector IP34.

Standard resistance value: <1Ω

E Confirm whether the resistance conforms to the standard.

IP34 Gearshift panel right switch harness connector



RMS508-06-1053

No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit between the brake safety control system and the gearshift panel right switch is short-circuited to power.

A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

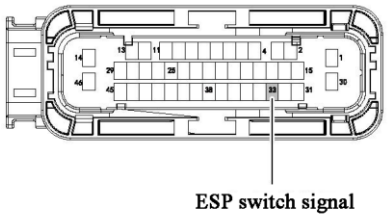
C Disconnect the gearshift panel right switch harness connector IP34.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 33 of the brake safety control system harness connector FB57 and the body ground.

Standard voltage value: **0V**

FB57 Brake safety control system harness connector



RMS508-06-1052

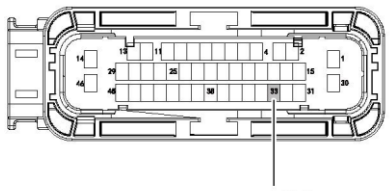
F Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

Yes

Step 5	Check whether the circuit between the brake safety control system and the gearshift panel right switch is short-circuited to grounding.

FB57 Brake safety control system harness connector



RMS508-06-1052

A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect the gearshift panel right switch harness connector IP34.

D Measure the resistance between terminal 33 of the brake safety control system harness connector FB57 and the body ground.

Standard resistance value: **10kΩ** or higher

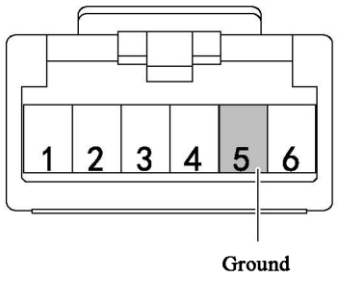
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the gearshift panel right switch.

IP34 Gearshift panel right switch harness connector



RMS508-06-1054

A Turn the start switch to "OFF" position.

B Disconnect the gearshift panel right switch harness connector IP34.

C Measure the resistance between terminal 5 of the gearshift panel right switch harness connector IP34 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the right switch component of gearshift panel.

A Replace the right switch component of gearshift panel.

B Is the fault eliminated after replacing the gearshift panel right switch assembly?

Yes → The system works normally.

No

Step 8	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

3.11.5.15 DTC: C111500

DTC	DTC definition
C111500	AVH switch fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the gearshift panel left switch assembly.

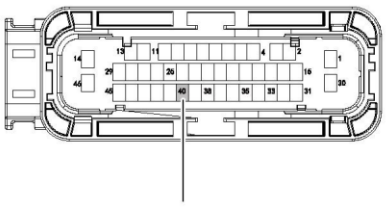
A Check whether the button of gearshift panel left switch assembly is stuck or squeezed by foreign matters.

Yes → Remove foreign matters, or replace the gearshift panel left switch assembly.

No

Step 3	Check whether the circuit between the brake safety control system and the gearshift panel left switch is open-circuited.

FB57 Brake safety control system harness connector



RMS508-06-1057

A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

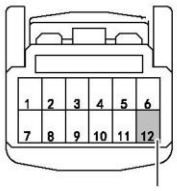
C Disconnect the gearshift panel left switch harness connector IP31.

D Measure the resistance between terminal 40 of the brake safety control system harness connector FB57 and terminal 12 of the gearshift panel left switch harness connector IP31.

Standard resistance value: <1Ω

E Confirm whether the resistance conforms to the standard.

IP31 Gearshift panel left switch harness connector



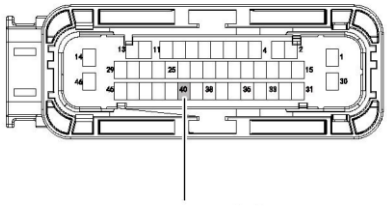
RMS508-06-1058

No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit between the brake safety control system and the gearshift panel left switch is short-circuited to power.

FB57 Brake safety control system harness connector



RMS508-06-1057

A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect the gearshift panel left switch harness connector IP31.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 40 of the brake safety control system harness connector FB57 and the body ground.

Standard voltage value: **0V**

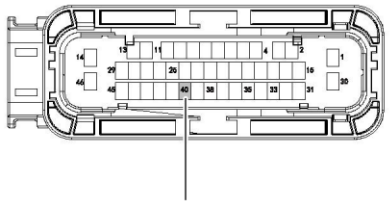
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check whether the circuit between the brake safety control system and the gearshift panel left switch is short-circuited to grounding.

FB57 Brake safety control system harness connector



AUTO HOLD switch signal

RMS508-06-1057

A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect the gearshift panel left switch harness connector IP31.

D Measure the resistance between terminal 40 of the brake safety control system harness connector FB57 and the body ground.

Standard resistance value: **10kΩ** or higher

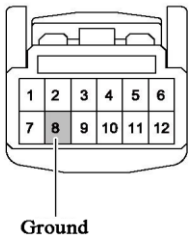
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the gearshift panel left switch.

IP31 Gearshift panel left switch harness connector



Ground

RMS508-06-1059

A Turn the start switch to "OFF" position.

B Disconnect the gearshift panel left switch harness connector IP31.

C Measure the resistance between terminal 8 of the gearshift panel left switch harness connector IP31 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the gearshift panel left switch assembly.

A Replace the gearshift panel left switch assembly.

B Is the fault eliminated after replacing the gearshift panel left switch assembly?

Yes → The system works normally.

No

Step 8	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake

safety control system?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

3.11.5.16 DTC: C110400, C111700 ...

DTC	DTC definition
C110400	Error in calibration of sensor signal in the position of master cylinder
C111700	Master cylinder position sensor A circuit voltage too high
C111800	Master cylinder position sensor A circuit voltage too low
C111900	The main cylinder position sensor A does not work normally.
C111A00	Master cylinder position sensor B circuit voltage too high
C111B00	Master cylinder position sensor B circuit voltage too low
C111C00	The main cylinder position sensor B does not work normally.
C111D00	The pressure sensor A has an abnormal signal.
C111E00	Pressure sensor A circuit voltage too low
C111F00	Pressure sensor A circuit voltage too high
C112000	The pressure sensor B has an abnormal signal.
C112100	Pressure sensor B circuit voltage too low
C112200	Pressure sensor B circuit voltage too high
C112300	Brake booster motor position sensor A circuit voltage too low
C112400	Brake booster motor position sensor A circuit voltage too high
C112500	Abnormal circuit voltage of brake booster motor position sensor A
C112600	Abnormal load of brake booster motor
C112700	Abnormal power supply of electric actuator
C112800	The stroke of master cylinder is greater than expected.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses LSB01, LSB02 and LF31 of the brake safety control system.

A Check whether fuses LSB01, LSB02 and LF31 are blown.

No → Go to Step 4.

Yes

Step 3	Maintain circuits of fuses LSB01, LSB02 and LF31.

A Check whether circuits of fuses LSB01, LSB02 and LF31 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

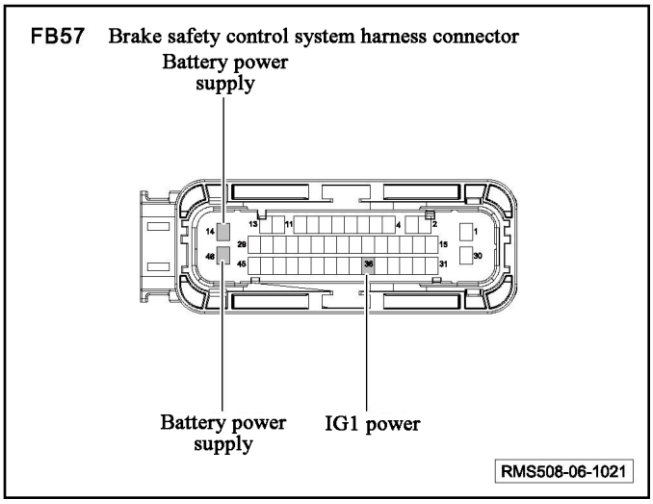
Rated values of fuses: **LSB01 60A**, **LSB02 60A** and **LF31 5A**

D Confirm whether the brake safety control system works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 14, 36 and 46 of the brake safety control system harness connector FB57 and the body ground.

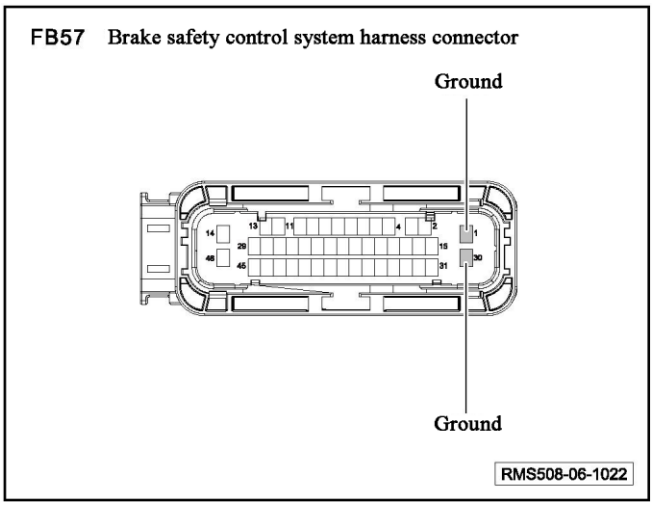
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Measure the resistance between terminals 1 and 30 of the brake safety control system harness connector FB57 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 6	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

3.11.5.17 DTC: C113D00, C113E00 ...

DTC	DTC definition
C113D00	Error in mutual calibration of wheel speed sensor signal
C113E00	Front left wheel speed sensor signal protocol error
C113F00	Front right wheel speed sensor signal protocol error
C114000	Rear left wheel speed sensor signal protocol error
C114100	Right rear wheel speed sensor signal protocol error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the model of wheel speed sensor.

A Check whether the model of wheel speed sensor is matching.

No → Replace a wheel speed sensor with correct model.

Yes

Step 3	Implement matching procedures of brake safety control system.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the “ON” position, and match the system as prompted by the diagnostic scanner.

C Clear the DTC and read it again.

D Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 4	Check the power ground circuit of the brake safety control system.

A Check whether the power ground circuit of the brake safety control system works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.18 DTC: C111600

DTC	DTC definition
C111600	Brake system temperature too high/ brake pedal and accelerator pedal signal unreasonable

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the accelerator pedal and brake pedal.

A Check whether the accelerator pedal and brake pedal are depressed at the same time.

B Check whether the accelerator pedal and brake pedal are stuck.

Yes → Please drive the vehicle correctly; and replace faulty components.

No

Step 3	Check the brake light switch.

A Check whether the brake light switch is normal.

No → Repair or replace the brake light switch.

Yes

Step 4	Check the electronic accelerator pedal position sensor.

A Check whether electronic accelerator pedal position sensor is abnormal.

No → Repair or replace the electronic accelerator pedal assembly.

Yes

Step 5	Check the power ground circuit of the brake safety control system.

A Check whether the power ground circuit of the brake safety control system works normally.

No → Repair or replace the harness.

Yes

Step 6	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.11.5.19 DTC: U010087 & U240000

DTC	DTC definition
U010087	Lost communication with EMS
U240000	EMS_1BA checksum OR scroll counter error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

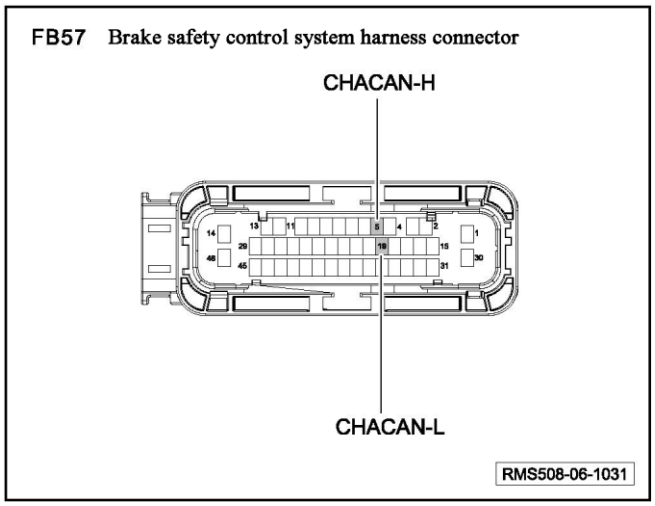
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

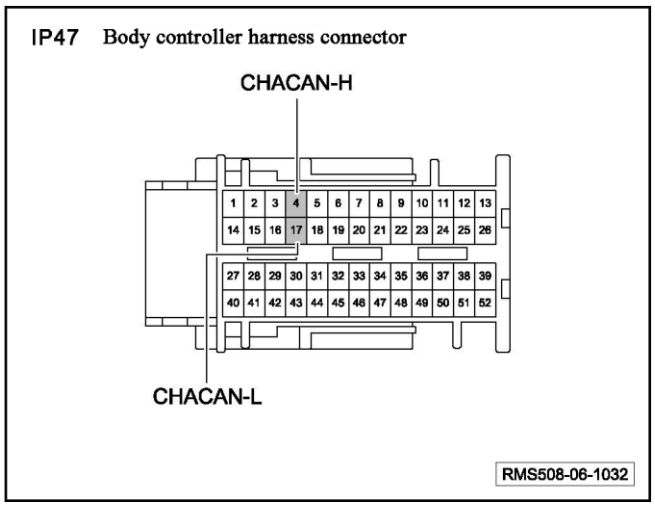
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the ECU assembly.

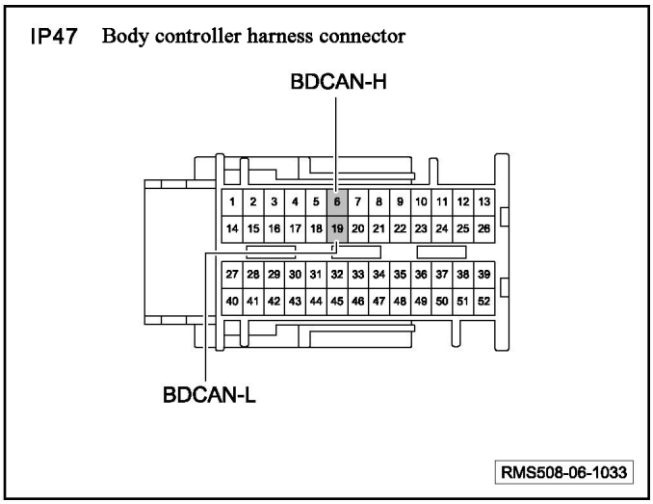
A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the ECU assembly harness connector EN01.

D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 12 of the ECU assembly harness connector EN01.

E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 11 of the ECU assembly harness



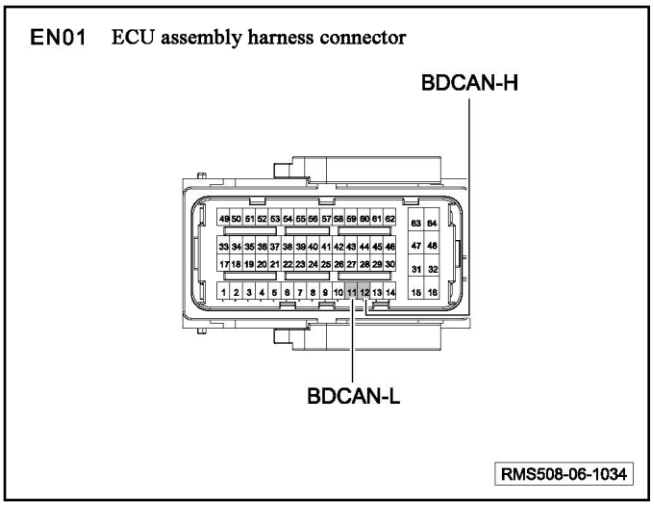
connector EN01.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.11.5.20 DTC: U029387, U240100 ...

DTC	DTC definition
U029387	Lost communication with VCU
U240100	VCU111 checksum OR scroll counter error
U240200	VCU107 checksum OR scroll counter error
U240300	VCU185 checksum OR scroll counter error
U240400	VCU187 checksum OR scroll counter error
U240500	VCU114 checksum OR scroll counter error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

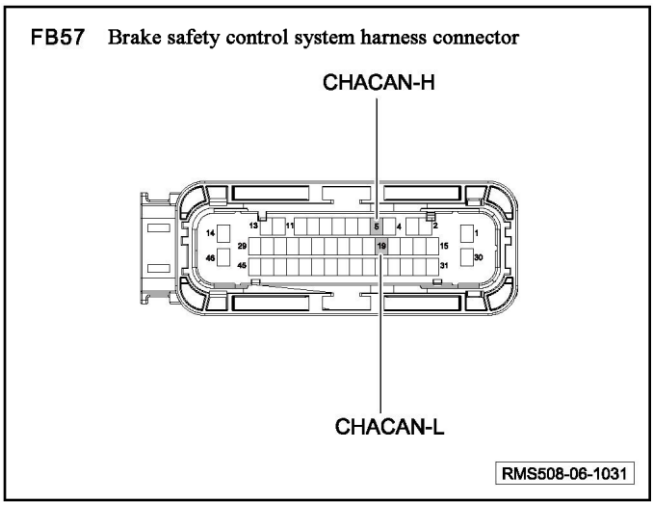
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and VCU.

FB57 Brake safety control system harness connector



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect the VCU harness connector FB49.

D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal E3 of the VCU harness connector FB49.

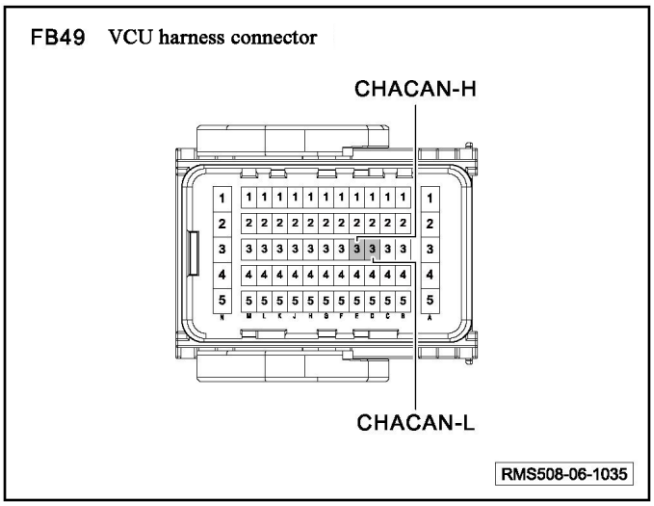
E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal D3 of the VCU harness connector FB49.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication

wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.21 DTC: U011087 & U240600

DTC	DTC definition
U011087	Lost communication with MCU
U240600	MCU217 checksum OR scroll counter error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

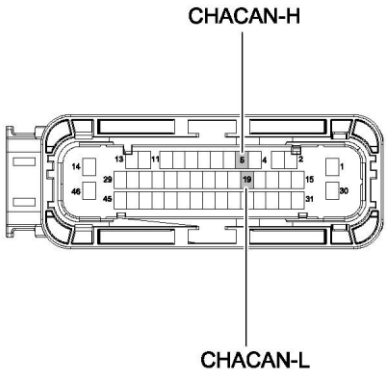
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.

FB57 Brake safety control system harness connector



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect body controller harness connector IP47

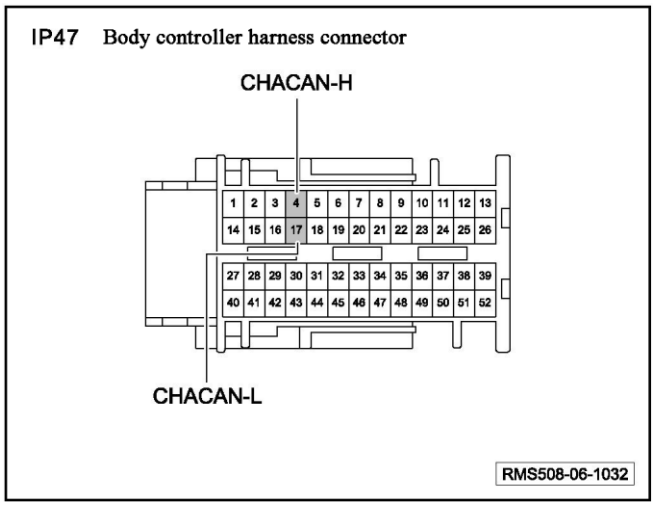
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

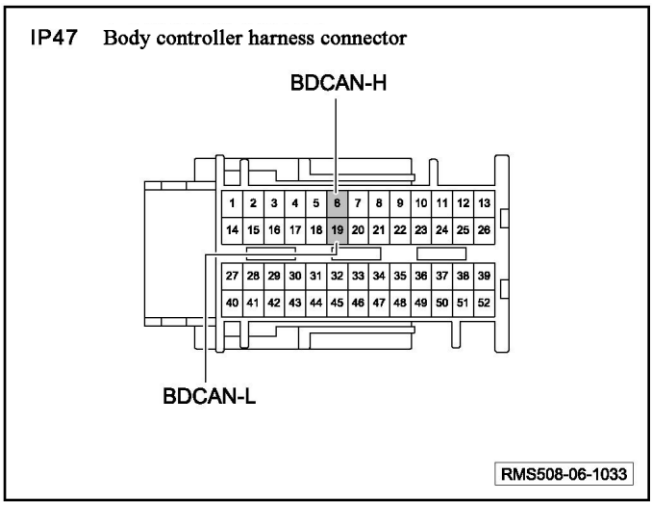
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the dual-motor controller.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

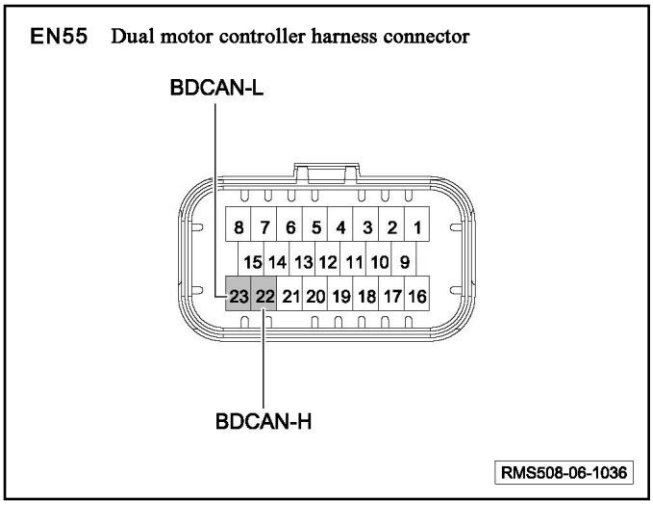
C Disconnect dual-motor harness connector EN55.

D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 22 of the dual-motor controller harness connector EN55.

E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 23 of the dual-motor controller harness connector EN55.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.11.5.22 DTC: C114300 & C114500

DTC	DTC definition
C114300	Brake hydraulic circuit leakage
C114500	Brake hydraulic circuit leakage 1

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check brake pipeline.

A Check the brake pipeline for leakage.

Yes → Replace the faulty brake pipe.

No

Step 3	Bleed the brake system.

A Bleed air from the brake system.

B Clear the DTC.

C Read the DTC again.

D Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 4	Check the power ground circuit of the brake safety control system.

A Check whether the power ground circuit of the brake safety control system works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.23 DTC: U013187 & U240700

DTC	DTC definition
U013187	Lost communication with EPS
U240700	EPS178 checksum OR scroll counter error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

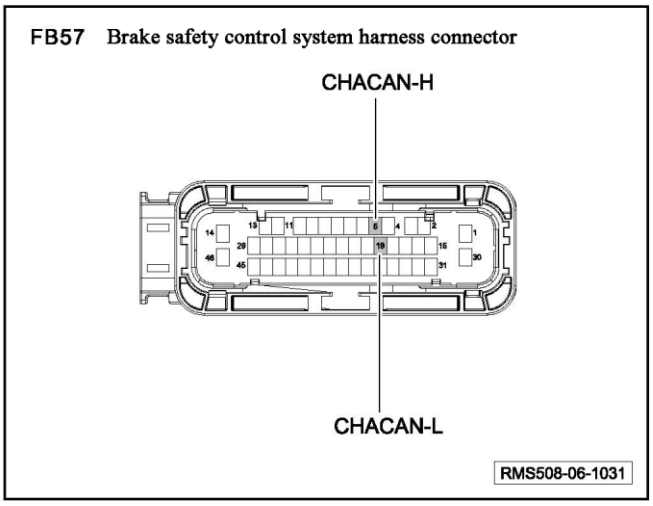
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect the EPS controller harness connector IP06.

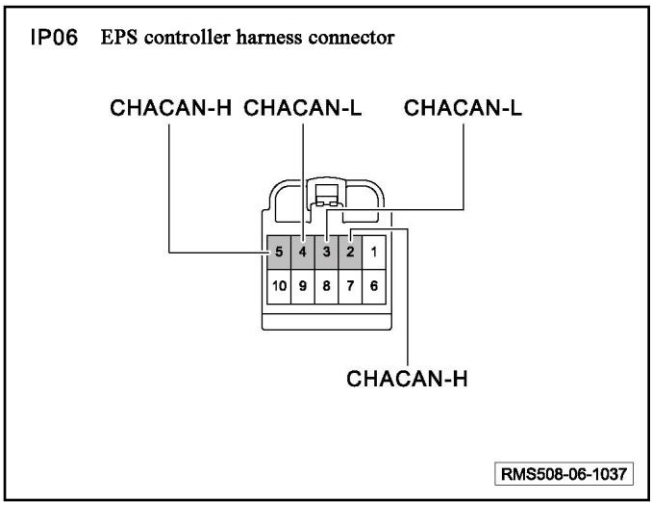
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 2/5 of the EPS controller harness connector IP06.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 3/4 of the EPS controller harness connector IP06.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the EPS controller.

A Check whether the power supply and ground wires of the EPS controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

No

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.24 DTC: U012887 & U240800

DTC	DTC definition
U012887	Lost communication with EPB
U240800	EPB1C5 checksum OR scroll counter error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

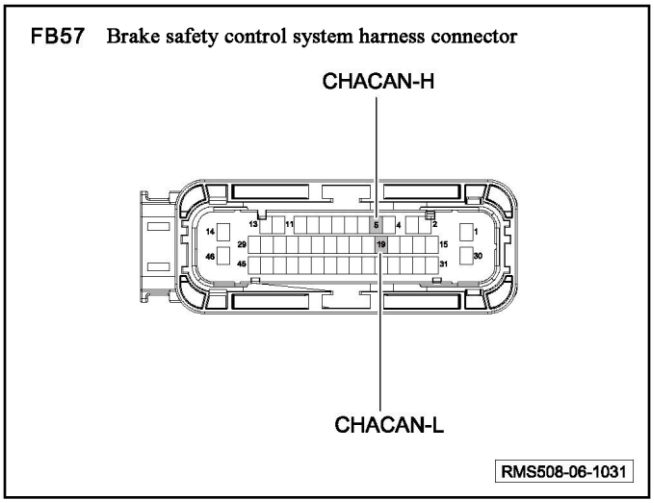
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the EPB controller.

FB57 Brake safety control system harness connector



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect EPB controller harness connector IP42.

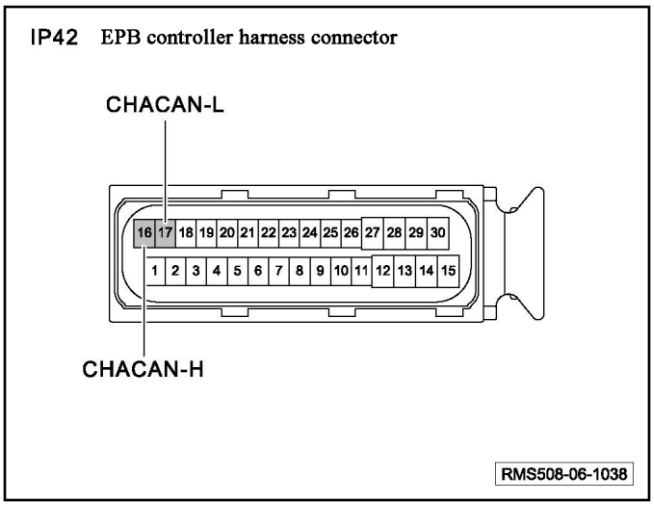
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 16 of the EPB controller harness connector IP42.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the EPB controller harness connector IP42.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

No

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.25 DTC: U015187 & U240900

DTC	DTC definition
U015187	Lost communication with ABM
U240900	ABM385 checksum OR scroll counter error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

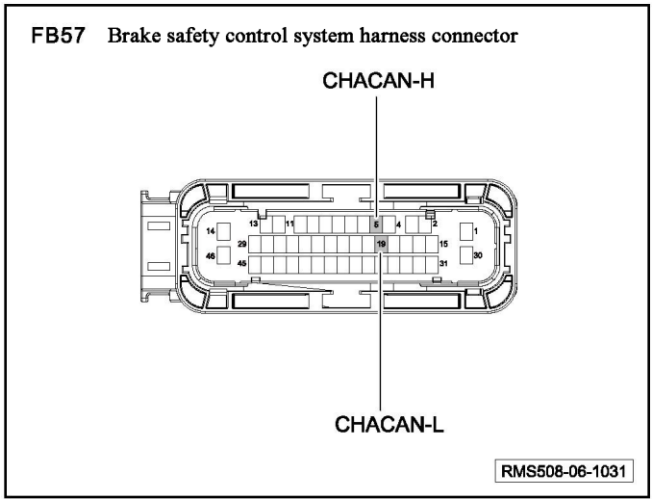
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the airbag ECU.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect airbag ECU harness connector IP36.

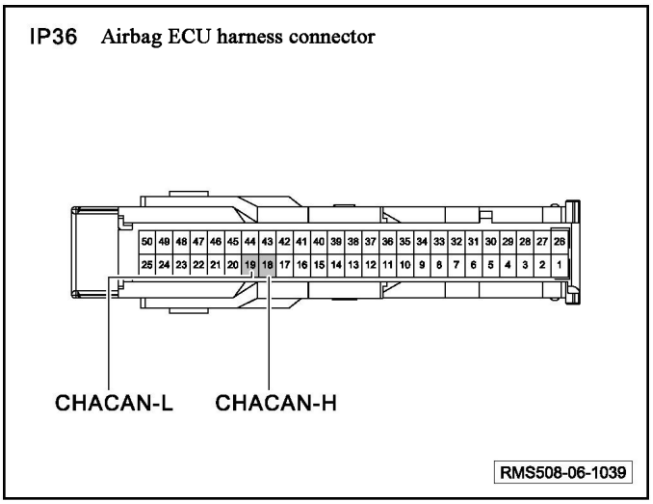
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 18 of the airbag ECU harness connector IP36.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 19 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.26 DTC: U014087 & U016487

DTC	DTC definition
U014087	Lost communication with BCM
U016487	Lost communication with AC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

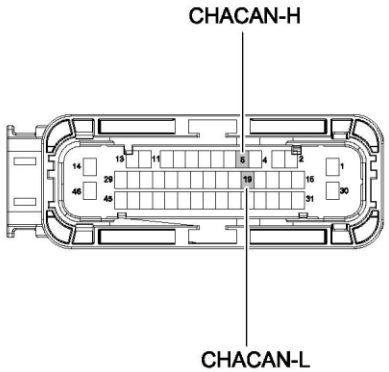
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.

FB57 Brake safety control system harness connector



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect body controller harness connector IP47

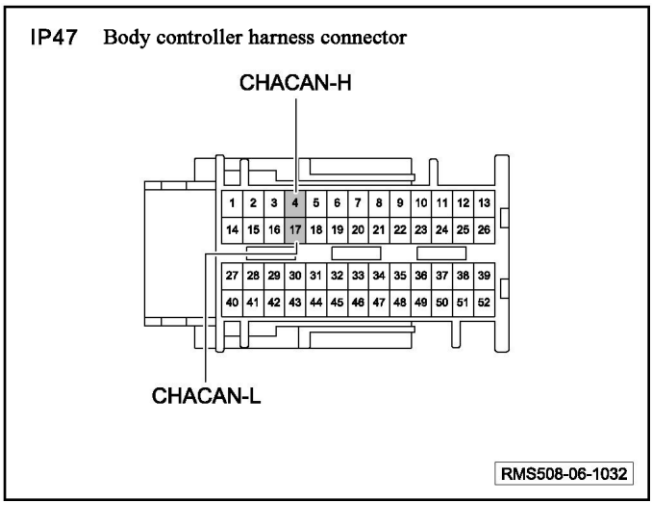
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No	Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

No

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes	The system works normally.

Next

Step 6	The diagnosis is over.

3.11.5.27 DTC: C114400

DTC	DTC definition
C114400	Exhaust not completed

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Re-bleed the air from the brake system.

A Bleed air from the brake system.

B Clear the DTC.

C Read the DTC again.

D Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the power ground circuit of the brake safety control system.

A Check whether the power ground circuit of the brake safety control system works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

3.11.5.28 DTC: U240B00

DTC	DTC definition
U240B00	Steering angle sensor uncalibrated

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Recalibrate the steering angle sensor.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the “ON” position, enter the EPS controller, and calibrate the steering angle as prompted by the diagnostic scanner.

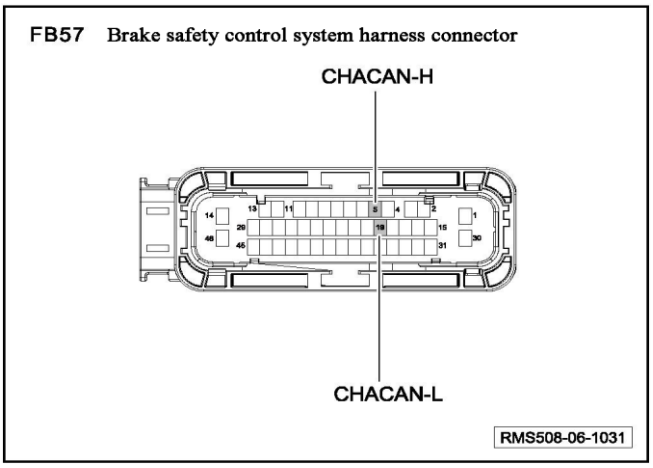
C Clear the DTC and read it again.

D Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the CAN data communication wire between the brake safety control system and the EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

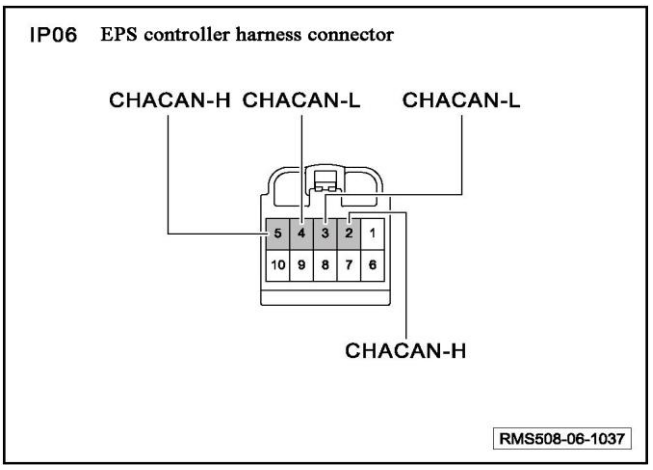
C Disconnect the EPS controller harness connector IP06.

D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 2/5 of the EPS controller harness connector IP06.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 3/4 of the EPS controller harness connector IP06.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the EPS controller.

A Check whether the power supply and ground wires of the EPS controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

No

Step 6	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.11.5.29 DTC: C114900, C114A00 ...

DTC	DTC definition
C114900	Ax signal status bit error
C114A00	Ax signal value error
C114B00	Ay signal value error
C114C00	Ay signal status bit error
C114D00	Yaw signal status bit error
C114E00	Yaw signal value invalid

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses LSB01, LSB02 and LF31 of the brake safety control system.

A Check whether fuses LSB01, LSB02 and LF31 are blown.

No → Go to Step 4.

Yes

Step 3	Maintain circuits of fuses LSB01, LSB02 and LF31.

A Check whether circuits of fuses LSB01, LSB02 and LF31 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

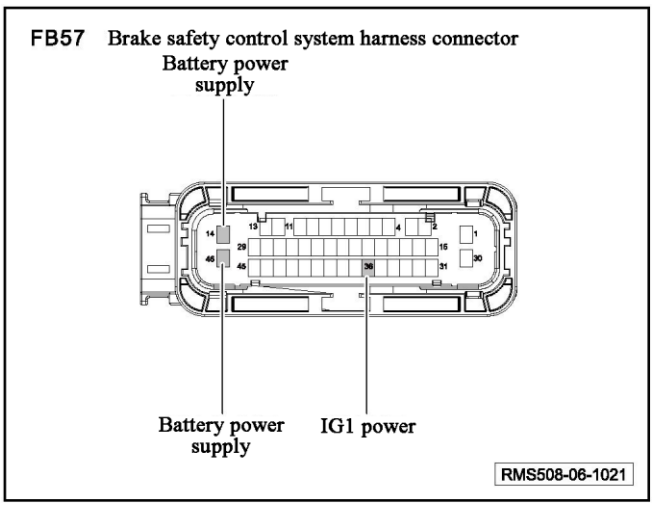
Rated values of fuses: **LSB01 60A**, **LSB02 60A** and **LF31 5A**

D Confirm whether the brake safety control system works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 14, 36 and 46 of the brake safety control system harness connector FB57 and the body ground.

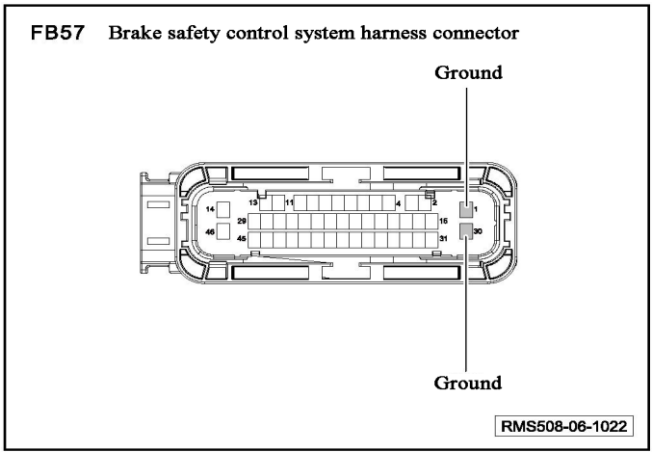
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Measure the resistance between terminals 1 and 30 of the brake safety control system harness connector FB57 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.11.5.30 DTC: U018687

DTC	DTC definition
U018687	Lost communication with IVI

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

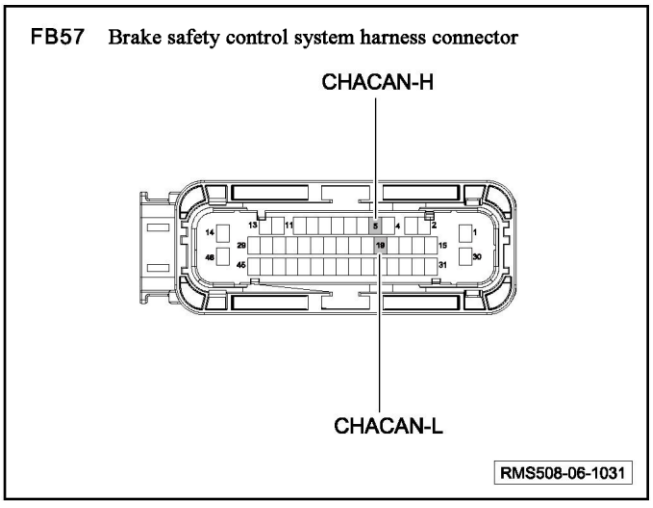
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.

FB57 Brake safety control system harness connector



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.

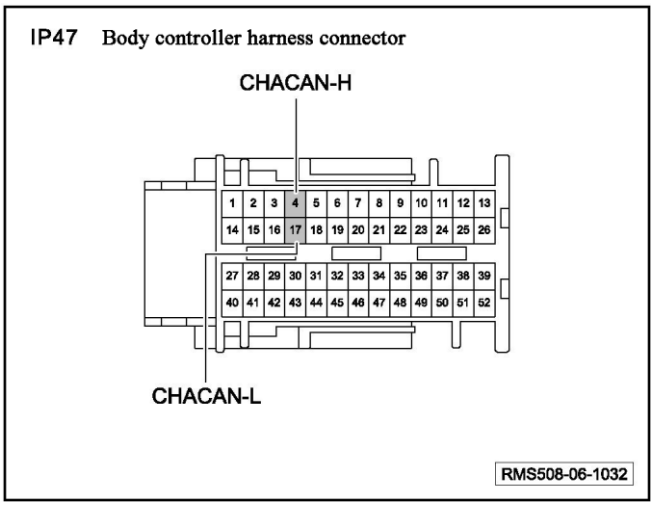
E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

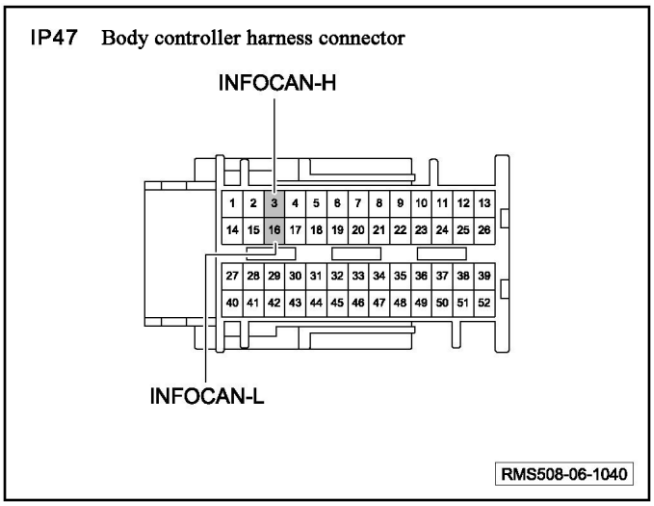
No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

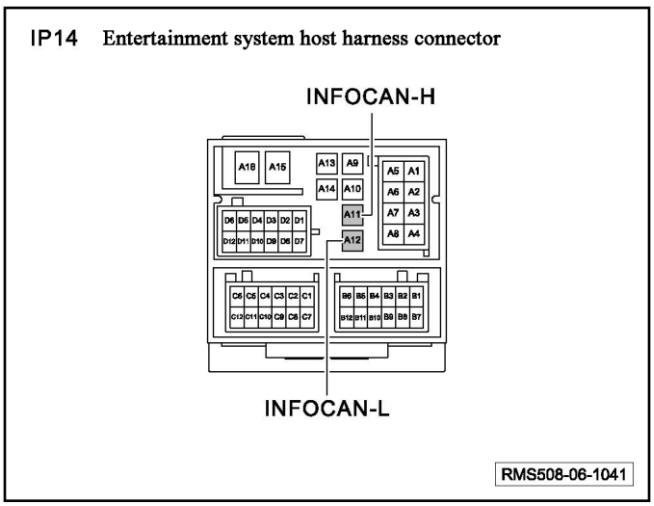
C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.11.5.31 DTC: U015587

DTC	DTC definition
U015587	Lost communication with IC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

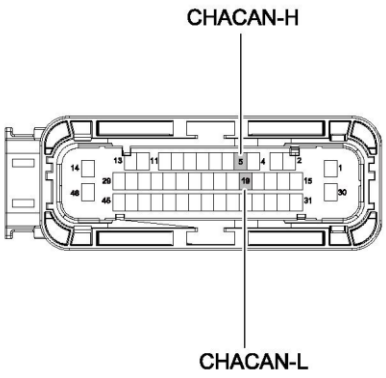
No

As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.

FB57 Brake safety control system harness connector



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect body controller harness connector IP47

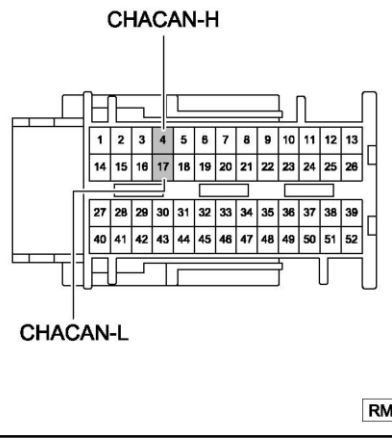
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

IP47 Body controller harness connector

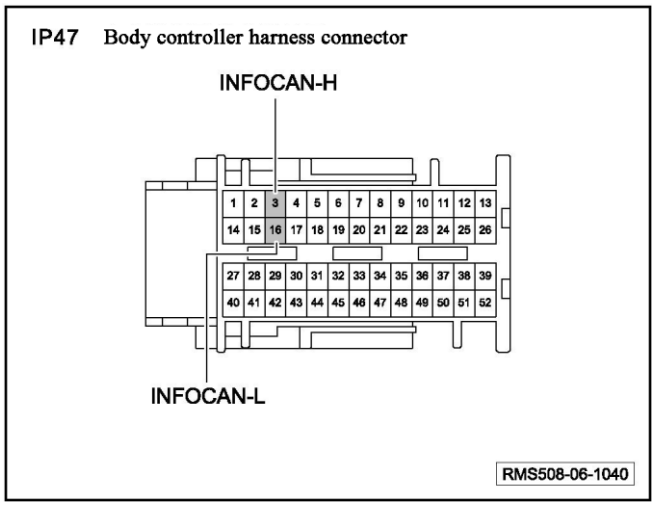


No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

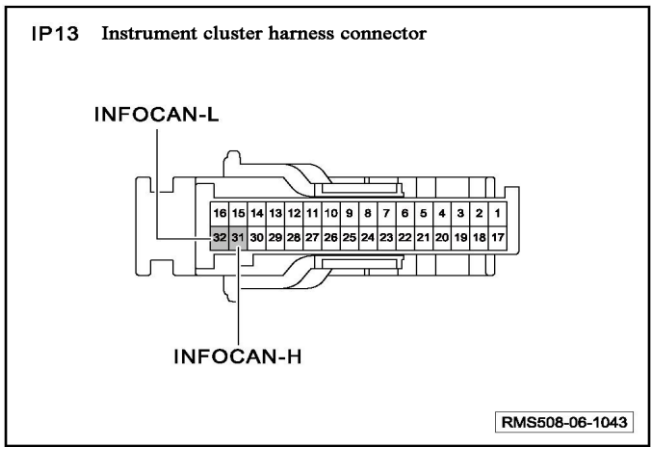
C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the instrument cluster assembly.

A Replace the instrument cluster assembly.

B Is the fault eliminated after replacing the instrument cluster assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

3.11.5.32 DTC: U007488

DTC	DTC definition
U007488	Vehicle net BUS OFF

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

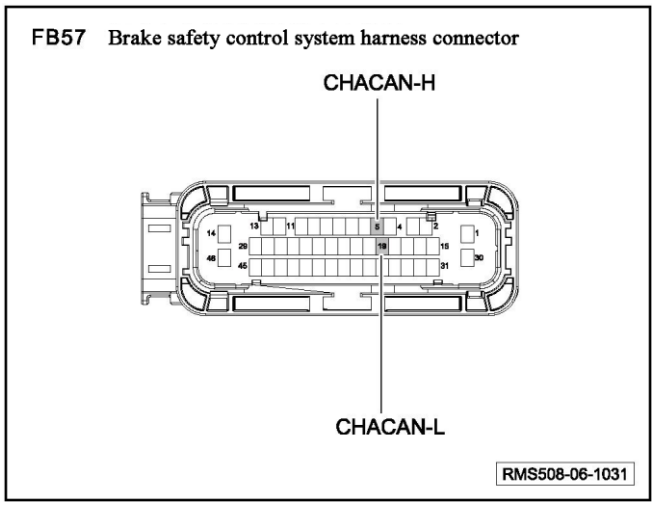
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Measure the resistance of the circuit between terminals 5 and 19 of the brake safety control system harness connector FB57.

Standard resistance value: about **120Ω**

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

3.11.5.33 DTC: C114F00 & C115000

DTC	DTC definition
C114F00	Configuration error of Yaw rate sensor parameter
C115000	Yaw rate sensor calibration error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Recalibrate the yaw rate sensor.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the “ON” position, and calibrate the yaw rate sensor as prompted by the diagnostic scanner.

C Clear the DTC and read it again.

D Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the fuse LF31 of the yaw rate sensor.

A Check whether the fuse LF31 is blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuit of fuse EF31.

A Check whether the circuit of fuse LF31 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

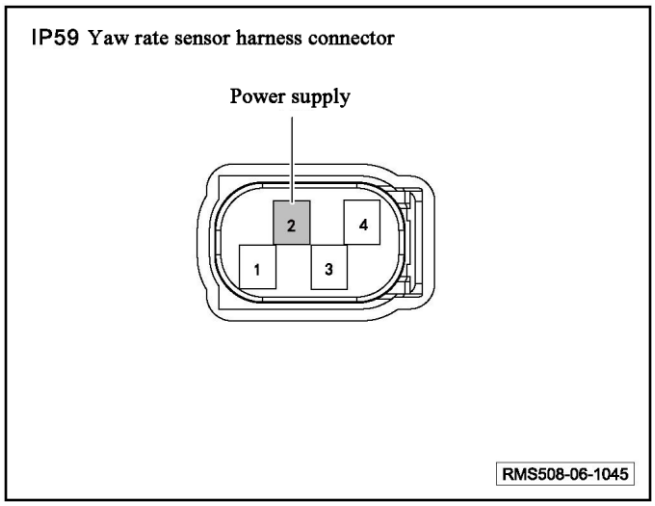
Rated value of fuse: **LF31 5A**

D Confirm whether the yaw rate sensor works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the yaw rate sensor.



A Turn the start switch to "OFF" position.

B Disconnect the yaw rate sensor harness connector IP59.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 2 of the yaw rate sensor harness connector IP59 and the body ground.

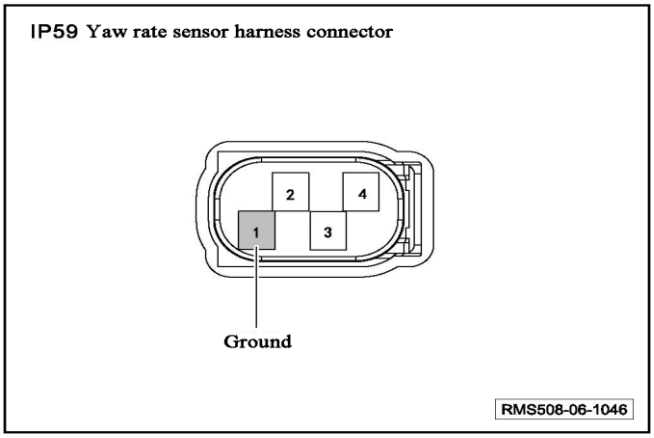
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the yaw rate sensor.



A Turn the start switch to "OFF" position.

B Disconnect the yaw rate sensor harness connector IP59.

C Measure the resistance between terminal 1 of the yaw rate sensor harness connector IP59 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the yaw sensor.

A Replace the yaw sensor.

B Is the fault eliminated after replacing the yaw rate sensor?

Yes → The system works normally.

No

Step 8	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake

safety control system?

Yes	The system works normally.

Next

Step 9	The diagnosis is over.

3.11.5.34 DTC: C115100, C115200 ...

DTC	DTC definition
C115100	Yaw rate sensor signal communication timeout
C115200	Error in CRC,Counter value of message of yaw rate sensor
C115300	Yaw rate sensor subnet Busoff

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

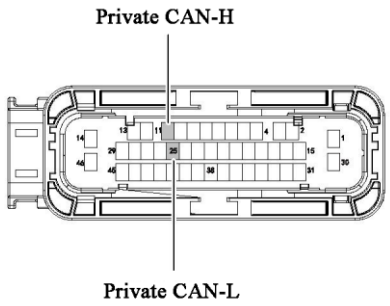
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the yaw rate sensor.

FB57 Brake safety control system harness connector



A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect the yaw rate sensor harness connector IP59.

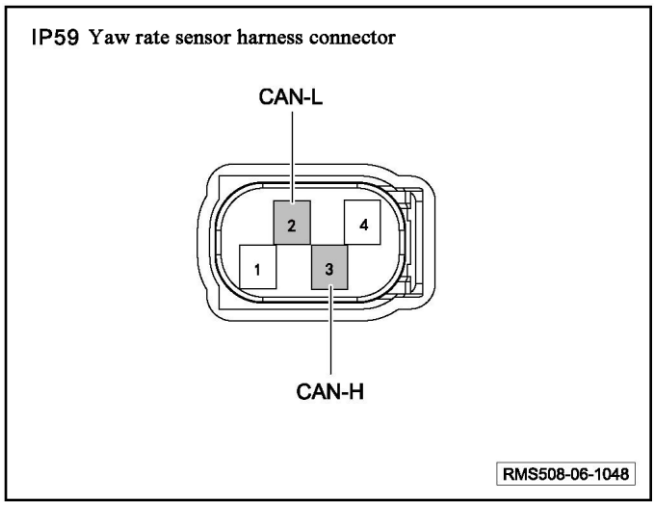
D Measure the resistance between terminal 11 of the brake safety control system harness connector FB57 and terminal 3 of the yaw rate sensor harness connector IP59.

E Measure the resistance between terminal 25 of the brake safety control system harness connector FB57 and terminal 2 of the yaw rate sensor harness connector IP59.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the yaw rate sensor.

A Check whether the power supply and ground wires of yaw rate sensor is normal.

No	Repair or replace the harness.

Yes

Step 4	Replace the yaw sensor.

A Replace the yaw sensor.

B Is the fault eliminated after replacing the yaw rate sensor?

Yes	The system works normally.

No

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes	The system works normally.

Next

Step 6	The diagnosis is over.

3.11.6 Special tool

3.11.6.1 List of special tools

S/N	Symbol	Description	Function
1		Removal tool for ball joint clip	For removal of brake safety control system ball joint and pedal bracket assembly CV joint

3.11.7 Removal and installation

3.11.7.1 Removal and installation of front wheel speed sensor assembly

Disassembly procedures

Tip:

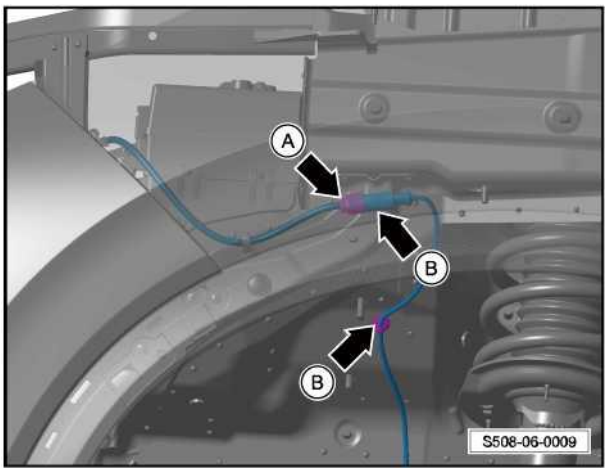
The removal and installation procedures are only for the front left wheel speed sensor assembly, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

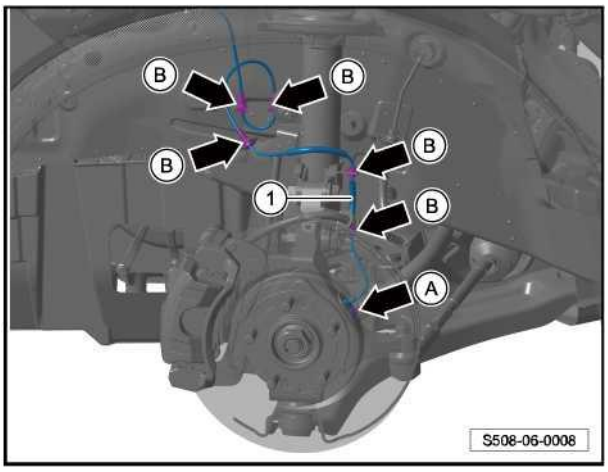
4 Remove the front left hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim



5 Remove the front wheel speed sensor assembly

a. Disconnect the connector (see arrow A) of front wheel speed sensor assembly.

b. Disengage fixing clips (see arrows B) of the front wheel speed sensor assembly.



c. Unscrew the fixing bolt (see arrow A) of front wheel speed sensor and disengage it from the front steering knuckle.

d. Disengage the fixing rubber sleeve (see arrow B) of front wheel speed sensor assembly ①.

e. Carefully take out the front wheel speed sensor assembly ①.

- Tightening torque of bolt (see arrow **A**): **10±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Clean the inner surface of mounting hole before installing front wheel speed sensor.

3.11.7.2 Removal and installation of rear wheel speed sensor assembly

Tip:

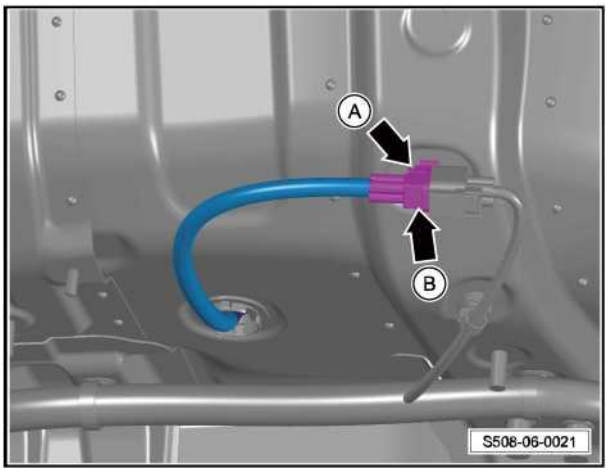
The removal and installation procedures are only for the rear left wheel speed sensor assembly, which can be basically referred to for the rear right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

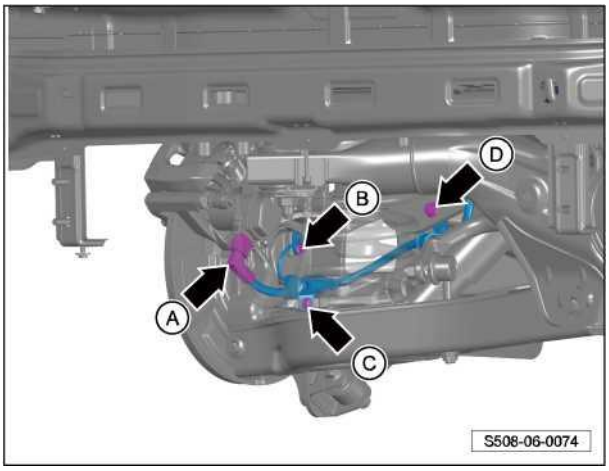
3 Remove the rear side wall lower interior trim panel assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

4 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



5 Remove the rear wheel speed sensor assembly

a. Disconnect the connector (see arrow A) of the rear wheel speed sensor, and disengage the fixing clip (see arrow B) of the harness.



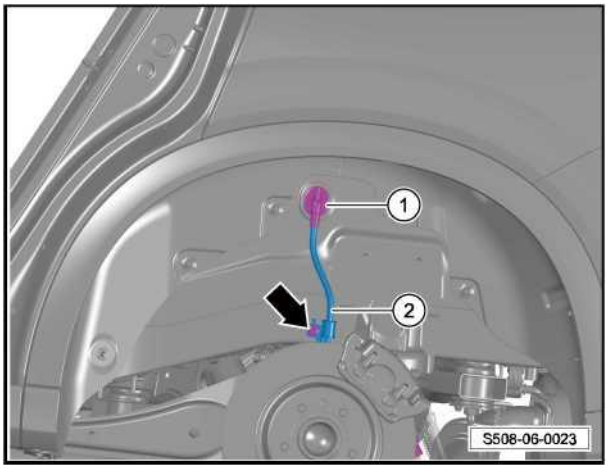
b. Lift the vehicle.

c. Disconnect the connector (see arrow A) of the EPB drive motor assembly.

d. Unscrew the fixing bolt (see arrow B), and disengage the rear wheel speed sensor from the rear hub bearing.

e. Unscrew the fixing bolt (see arrow C) and the bolt/nut (see arrow D) of the rear wheel speed sensor assembly bracket.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**
- Tightening torque of bolt (see arrow **C**): **10±1 N·m**
- Tightening torque of nut (see arrow **D**): **25±2 N·m**



f. Unscrew the fixing bolts (see the arrows) of rear wheel speed sensor assembly bracket.

g. Disengage the rear wheel speed sensor assembly protective jacket ①.

h. Remove the rear wheel speed sensor assembly ②.

- Tightening torque of bolt: 25±2 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Clean the inner surface of mounting hole before installing rear wheel speed sensor.

3.11.7.3 Removal and installation of brake safety control system

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Drain the brake fluid. Refer to 1.4.3.41 Brake fluid replacement

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel

assembly (middle).

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

7 Remove the brake fluid reservoir and accessory assembly. Refer to 3.9.5.1 Removal and installation of oil reservoir and accessory assembly

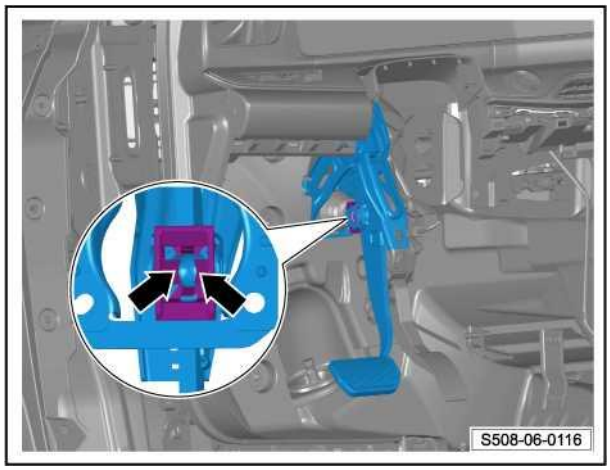
8 Remove the front wiper arm and blade component. Refer to 8.7.6.5 Removal and installation of front wiper arm and blade component

9 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component

10 Remove the front wiper motor and bracket assembly. Refer to 8.7.6.7 Removal and installation of front wiper motor and bracket assembly

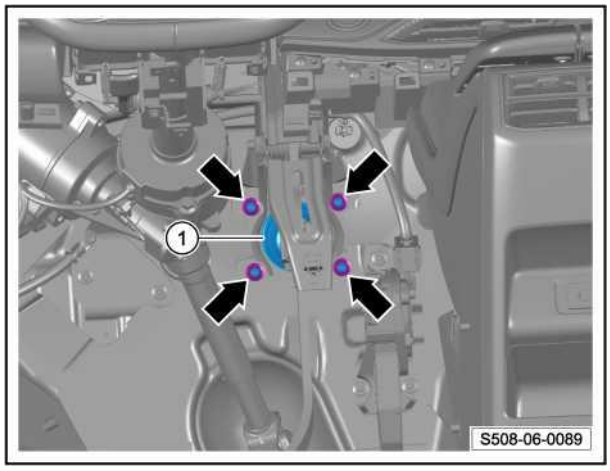
11 Remove the instrument panel left lower cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel left lower cover assembly

12 Remove the front left air-to-footwell pipe assembly. Refer to 6.5.4.7 Removal and installation of front left air-to-footwell pipe assembly.



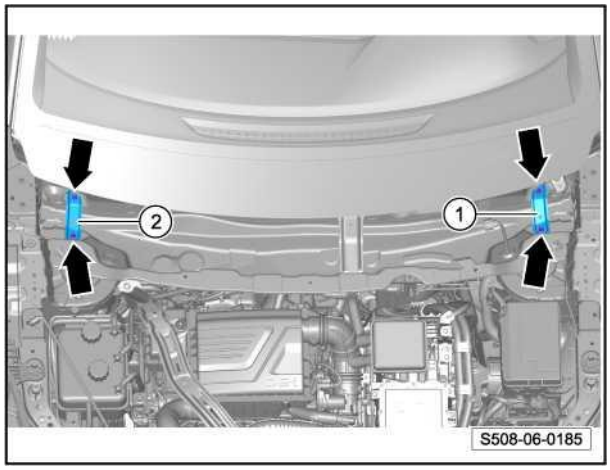
13 Remove the brake safety control system

a. At the location (see arrow), disengage the brake safety control system ball joint from the pedal bracket assembly CV joint with the removal tool for ball joint clip (refer to 3.9.5.1 List of special tools).

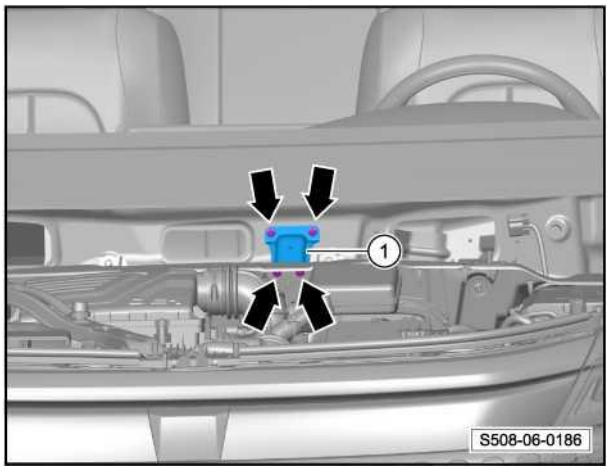


b. Unscrew nuts (see arrows) connecting the pedal bracket assembly with the brake safety control system ①.

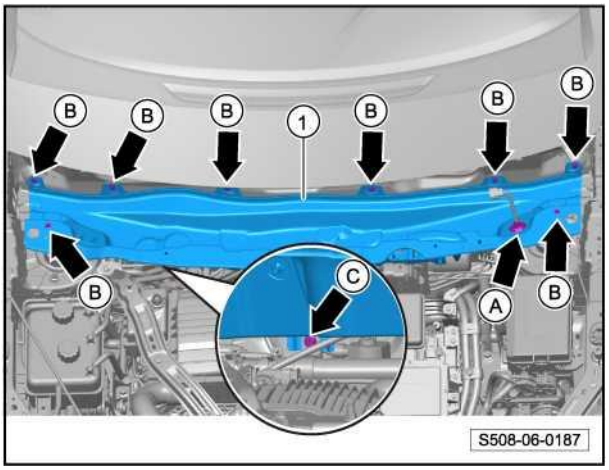
- Tightening torque of nut: **25±2 N·m**



c. Unscrew fixing bolts (see arrows), and remove gutter channel connectors (left and right) ① and ②.

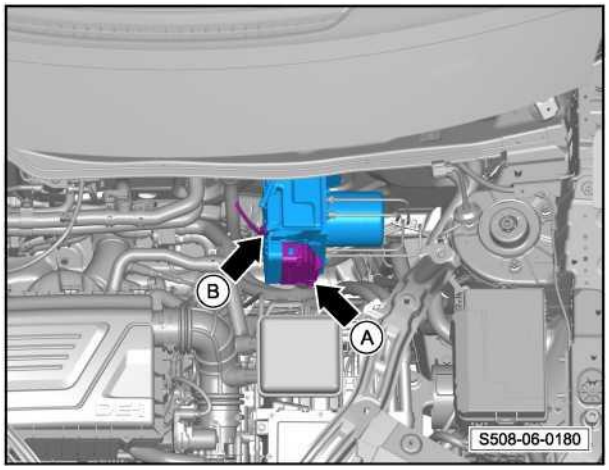


d. Unscrew fixing bolts (see arrows), and remove the wiper linkage fixing plate II assembly ①.



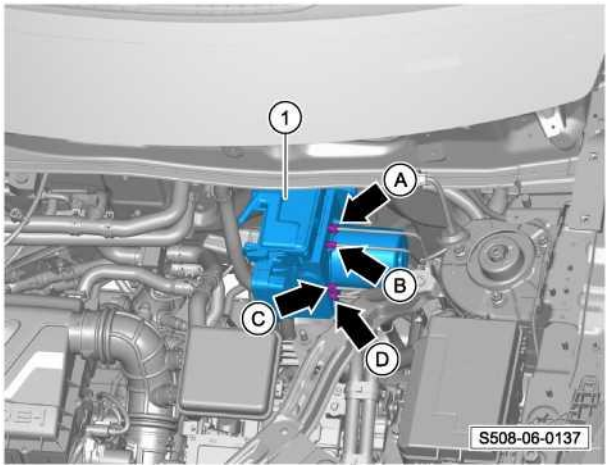
e. Disconnect the connector (see arrow A) between the engine compartment harness assembly and the front windshield gutter channel assembly.

f. Unscrew fixing bolts (see arrows B and C), and remove the front windshield gutter channel assembly c/w engine compartment upper heat insulation pad ①.



g. Disconnect the connector (see arrow A) of the brake safety control system.

h. Disconnect the connector (see arrow B) of fluid level sensor.



i. Unscrew the fixing nut (see arrow A), and disengage the brake pipe 5 assembly from the brake safety control system.

j. Unscrew the fixing nut (see arrow B), and disengage the brake pipe 4 assembly from the brake safety control system.

k. Unscrew the fixing nut (see arrow C), and disengage the brake pipe 6 assembly from the brake safety control system.

l. Unscrew the fixing nut (see arrow D), and disengage the brake pipe 3 assembly from the brake safety control system.

m. Remove the brake safety control system ①.

- Tightening torque of nut (see arrow **A**): **16±2 N·m**
- Tightening torque of nut (see arrow **B**): **16±2 N·m**
- Tightening torque of nut (see arrow **C**): **16±2 N·m**
- Tightening torque of nut (see arrow **D**): **16±2**

N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installation, add the brake fluid. See 1.4.3.10 Brake fluid inspection.

– After installation, bleed the four wheels. See 1.4.3.53 Brake system bleeding

3.11.7.4 Removal and installation of yaw rate sensor

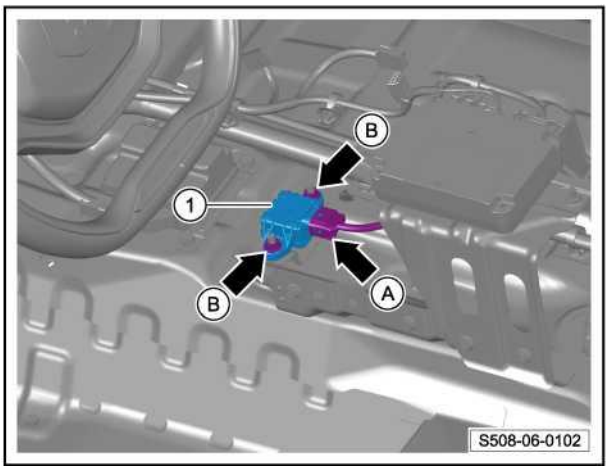
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

4 Remove the front section of rear air-to-footwell pipeline. Refer to 6.5.4.12 Removal and installation of front section of rear air-to-footwell pipeline



5 Remove the yaw rate sensor

a. Disconnect the connector (see arrow A) of yaw rate sensor.

b. Unscrew fixing nuts (see arrows B), and remove the yaw rate sensor ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

After replacing a new yaw rate sensor, use a diagnostic scanner for after-sales matching of the yaw rate sensor. Refer to 1.4.2.6 After-sales matching after module replacement

3.12 Tire pressure monitoring system

3.12.1 Description and operation

3.12.1.1 Description and operation

Overview

There are two types of tire pressure sensor systems in the current automobile industry: direct and indirect types. A direct tire pressure sensor system can directly detect the actual tire pressure. An indirect tire pressure sensor system derives the tire pressure by detecting some external parameters of the tires. The direct tire pressure sensor system can detect the tire pressure and temperature accurately. The model adopts the direct tire pressure sensor system. The tire pressure sensor system is installed to alert the driver when one or more tire(s) are under pressure. Underpressure refers to that the pressure is 25% or more lower than the rated pressure recommended by the OEM. Actual pressure lower limit of each system can be jointly determined by the system supplier and the OEM. Direct tire pressure sensor systems are divided into two classes: high-end and low-end systems. The low-end system can alert the driver when any tire is underpressure while the high-end system can both alert the driver and show which tire is underpressure.

Tire Pressure Monitor

If one or more tires is(are) obviously underinflated or overinflated, the tire pressure monitoring system will send the tire pressure warning (tire pressure alarm) through the instrument cluster. Therefore, if the tire pressure indicator on the instrument cluster goes on, the tire pressure signal shall be sent, the vehicle shall be stopped soon to check the tire, and the tire shall be inflated to the appropriate value. If the vehicle is driven when the tire is obviously underinflated, the tire will be overheated and become faulty. When the tire is underinflated, the fuel efficiency and service life of tire tread will be reduced, affecting the maneuvering and brake capabilities of vehicle.

Tire pressure, tire temperature information display and alarm

The alarm of tire pressure system includes five alarm mechanisms: low pressure alarm, high pressure alarm, high temperature alarm, low sensor battery power alarm and sensor signal loss alarm. When the tire pressure system alarms, the tire pressure system fault indicator on the instrument cluster will be on, and there will be a corresponding fault symptom text prompt.

Alarm for high tire pressure

When the high tire pressure alarm is activated, the corresponding tire alarm indicator starts to flash, the MIL of tire pressure system goes on, and the instrument cluster prompts a high pressure of tire.

Alarm for low tire pressure

When the low tire pressure alarm is activated, the corresponding tire alarm indicator starts to flash, the MIL of tire pressure system goes on, and the instrument cluster prompts a low pressure of tire.

"Low Sensor Battery" Alarm

When a certain tire pressure sensor has a low battery, the instrument cluster prompts the low sensor battery. In this case, user needs to go to the 4S store to replace a dedicated tire pressure sensor for vehicle, and match it again.

Lost sensor signal

When a certain tire pressure sensor signal is lost, the instrument cluster prompts the loss of tire pressure sensor signal. In this case, user needs to go to the 4S store to match the sensor again, replace a dedicated tire pressure sensor for vehicle if necessary, and match it again.

Alarm for high temperature

When TPMS detects a high temperature alarm of a tire, the MIL goes on, and the alarm interface pops up to display the position of tire under alarm.

Notes

The tire pressure monitoring system combines the MIL and tire pressure indicator together. When the system detects fault after it is powered on and the instrument cluster completes self-test, the indicator goes on for giving an alarm.

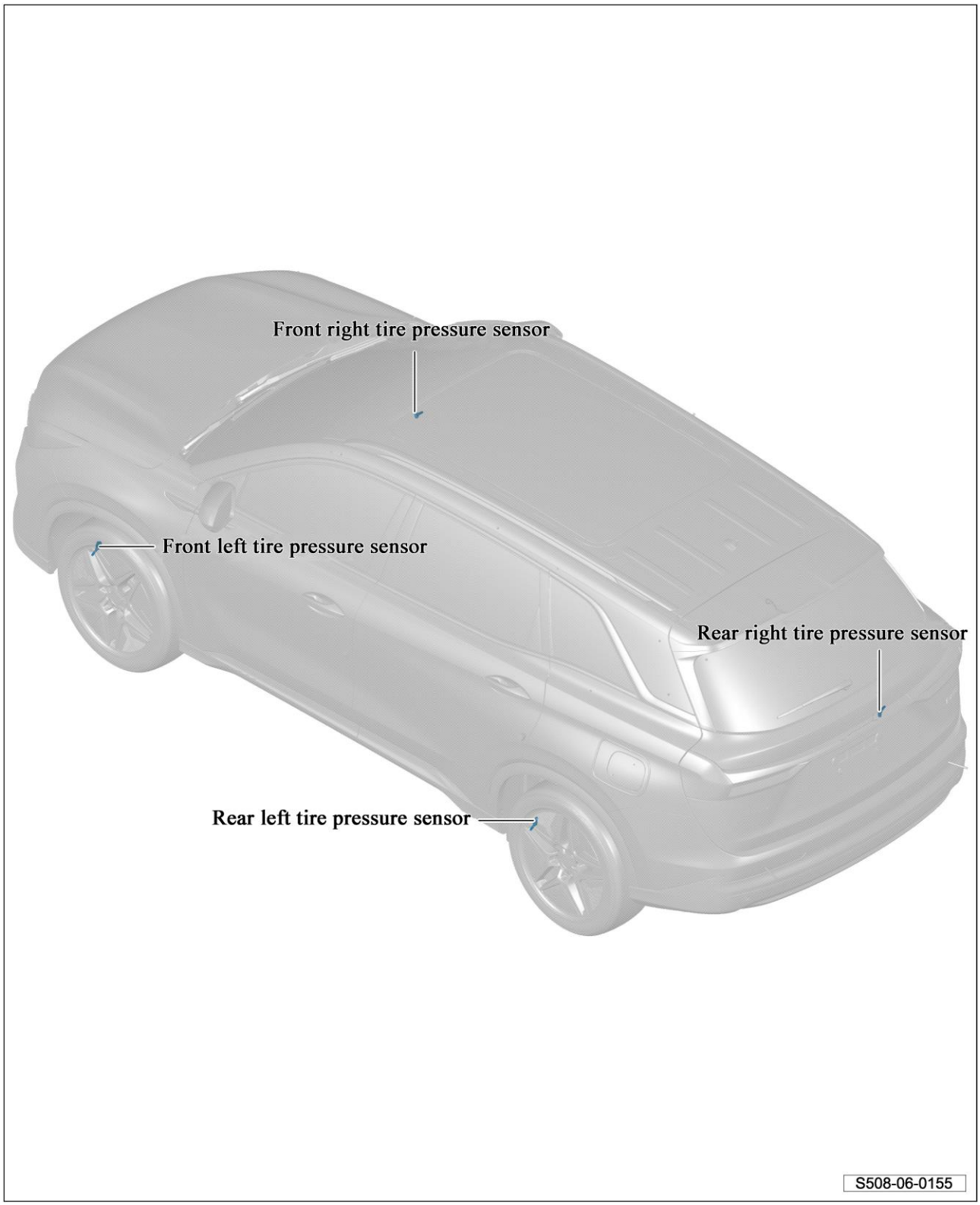
As long as there is a fault, the procedure continues when the subsequent vehicle starts. When the MIL of tire pressure monitoring system goes on, the system may not be able to detect or signal the tire underinflation and overinflation as expected.

TPMS may become faulty due to many reasons, including installing spare and alternative tires or wheels on the vehicle, which may affect the normal operation of TPMS. After one or more tire(s) or wheel(s) is(are) replaced, the MIL of TPMS shall be checked frequently to ensure that the spare or alternative tires and wheels can guarantee the continuous normal operation of TPMS.

3.12.2 Component position

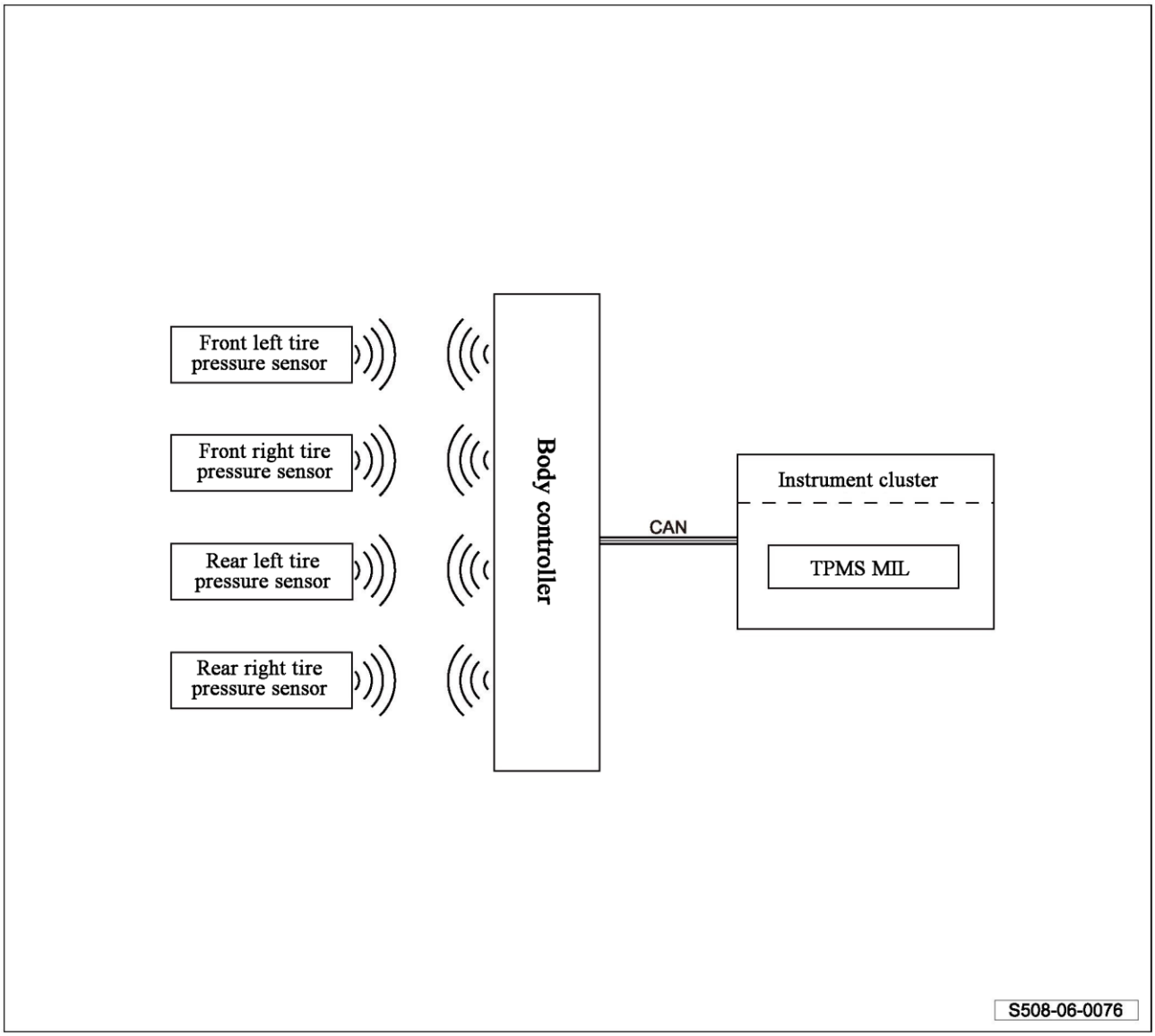
3.12.2.1 Component position

Component position



3.12.3 Electrical Schematic Diagram

3.12.3.1 Electrical schematic diagram



3.12.4 Removal and installation

3.12.4.1 Removal and installation of tire pressure sensor

Disassembly procedures

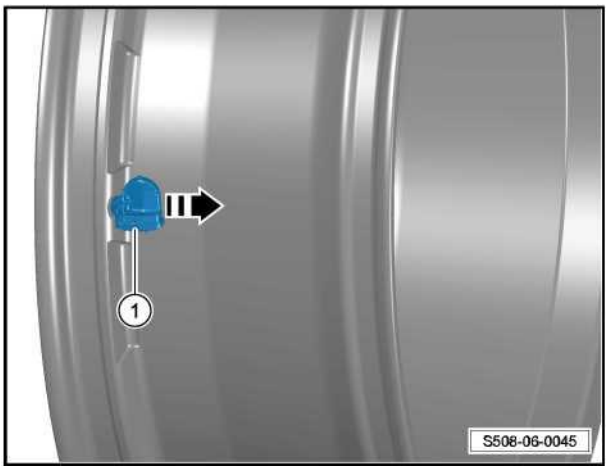
Tip:

The removal and installation procedures are only for the left tire pressure sensor, which can be basically referred to for other tire pressure sensors.

Note the position of tire pressure sensor when pressing the tire to a side with the tire removal tool to prevent the tire from being damaged.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Remove the tire. Refer to 3.4.4.2 Removal and installation of wheel tire



3 Remove the tire pressure sensor

a. Remove the tire pressure sensor ① along the direction of arrow with an appropriate tool.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

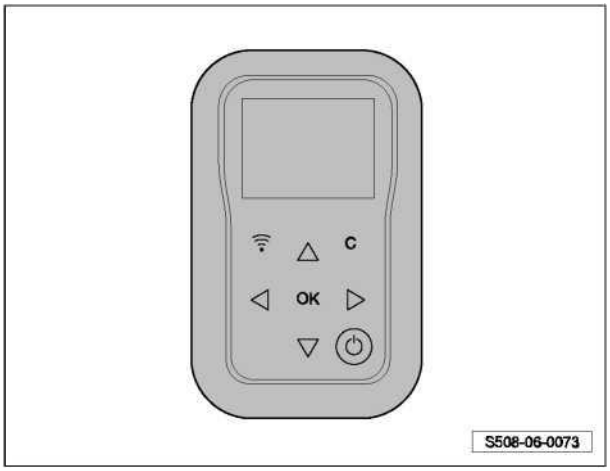
After replacing a new tire pressure sensor, match the tire pressure sensor. Refer to 1.4.2.6 After-sales matching after module replacement

3.12.4.2 TPS match

Matching procedures

Tip:

Match the tire pressure sensor when replacing the tire pressure sensor or rotating the tire



1 TPS match

a. Select “TPMS Services” in the main menu of VT-SK1, and then select the vehicle brand, model, model year and OBD learning.

b. Directly align the tool antenna with the rubber tire above the valve, and press the green trigger button, as prompted by the tool. After all the four wheels are activated successfully, the screen prompts to connect the OBD module of vehicle.

c. Power on or start the vehicle, connect the tool with the OBD interface of vehicle through the OBD connecting wire, and press OK to match the tire pressure sensor.

3.13 Steering gear system

3.13.1 Specification

3.13.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connecting the steering column assembly with the steering support structure assembly	Hexagon head flange nut M8	25±2
Connecting the steering column assembly with the steering support structure assembly	Hexagon head flange bolt M8×1.25	25±2
Locking the steering wheel	Hexagon nut with serrated flange M12×1.25	35±3
Connection of steering gear lower shaft and steering assembly	Hexagon head flange bolt	32±2
Connection of steering gear to front subframe	Hexagon head flange bolt c/w plain washer cluster M12×1.25	110±6
Connecting the steering box heat shield with the subframe	Hexagon head flange bolt M6×12	10±1
Connecting the tie rod and ball joint assembly with the front brake assembly	Hexagon flange locking nut with non-all-metal insert M12×1.25	60±6
Installing the track rod toe-in locking nut	Type 1 hexagon nut	80±5

3.13.2 Description and operation

3.13.2.1 Description and operation

Steering System Overview

The steering system has the main component of two-way output pinion and rack-type steering box. The driver operates the steering wheel to transmit the power to the gear of steering box through upper and lower steering shafts. The rack of steering box obtains the linear force to drive it to move leftward and rightward when the gear rotates. The linear force is then transmitted to the steering knuckle through the track rod, so as to change the driving direction of vehicle wheels.

Steering wheel and upper steering shaft

The basic functions of the steering wheel and upper steering shaft are as follows:

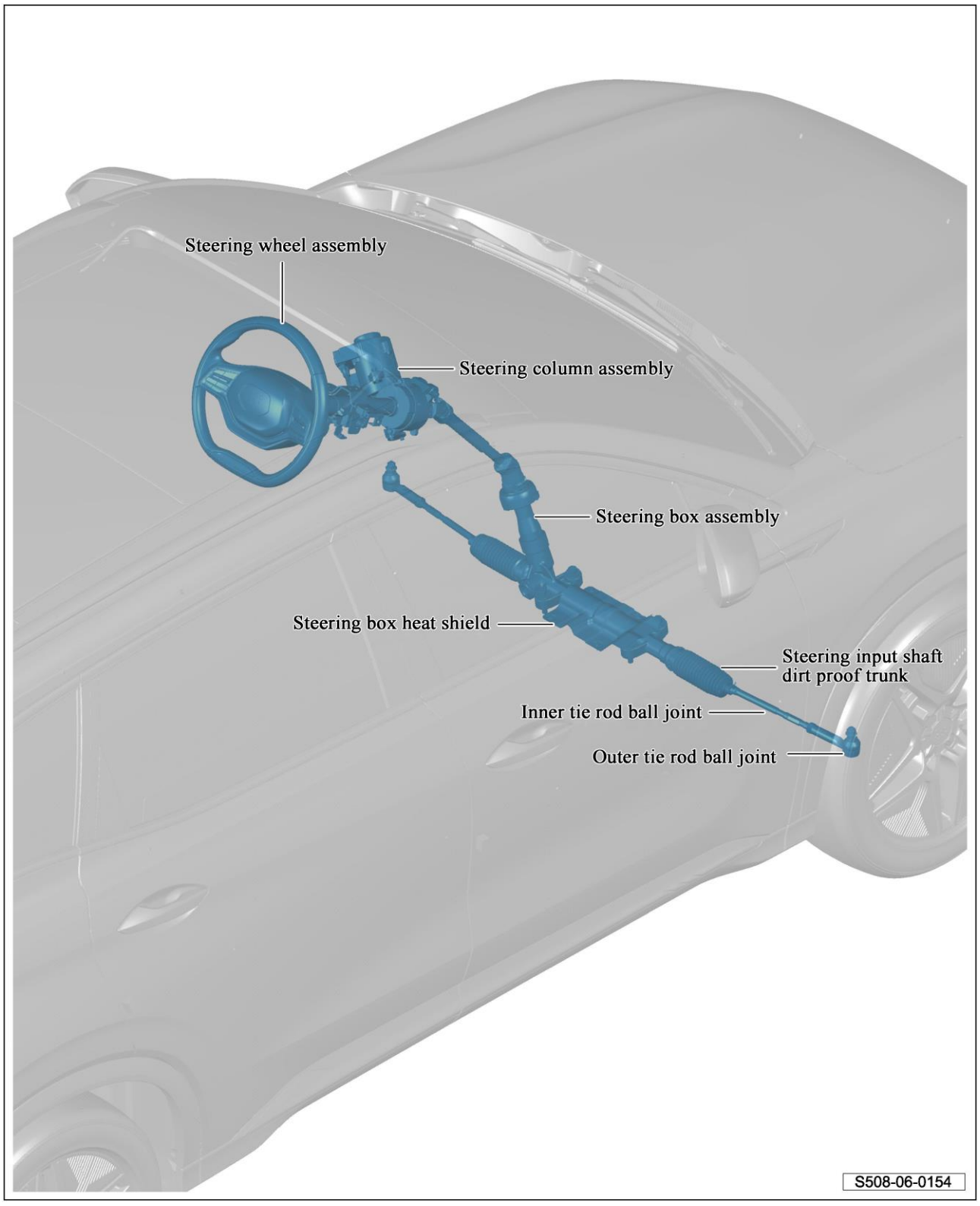
– Vehicle steering: The driver controls the driving direction of the whole vehicle by directly controlling the steering wheel, which is the first link between the driver and the vehicle. The steering wheel is fastened to the upper steering shaft, and the driving direction of the whole vehicle can be controlled by turning the steering wheel.

– Convenience for driver: In addition to the main steering functions of the vehicle, the steering wheel and upper steering shaft are also equipped with the following components: horn button, turn signal control switch, lighting system control switch, wiper washer switch, upper steering shaft angle adjustment handle, etc. This greatly improves the driver's maneuverability of the complete vehicle.

– Protect the driver: The airbag module on the steering wheel and the collapse structure of the upper steering shaft provide certain safety protection for the driver, which can reduce the degree of injury to the driver in case of an accident.

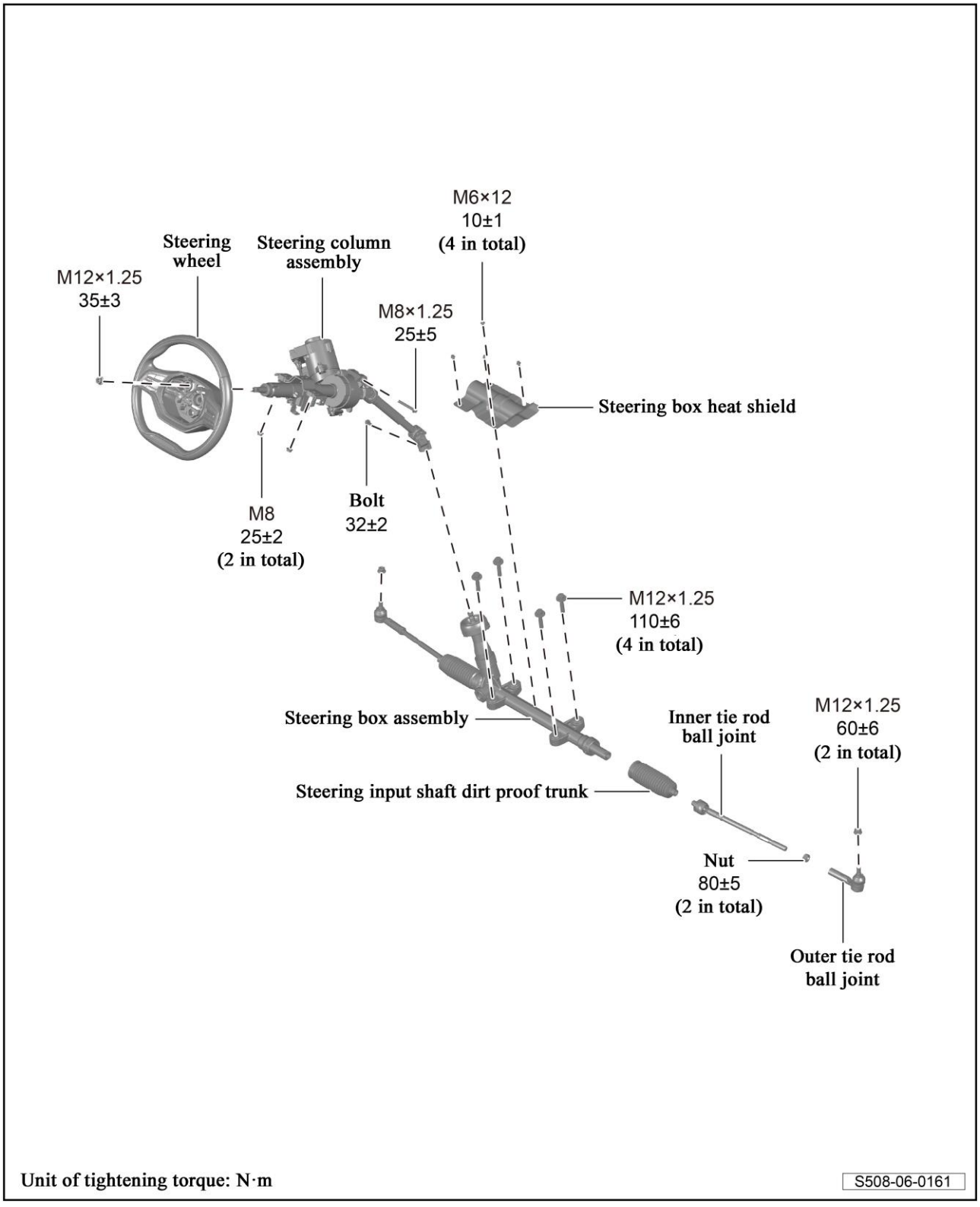
3.13.3 Component position

3.13.3.1 Component position



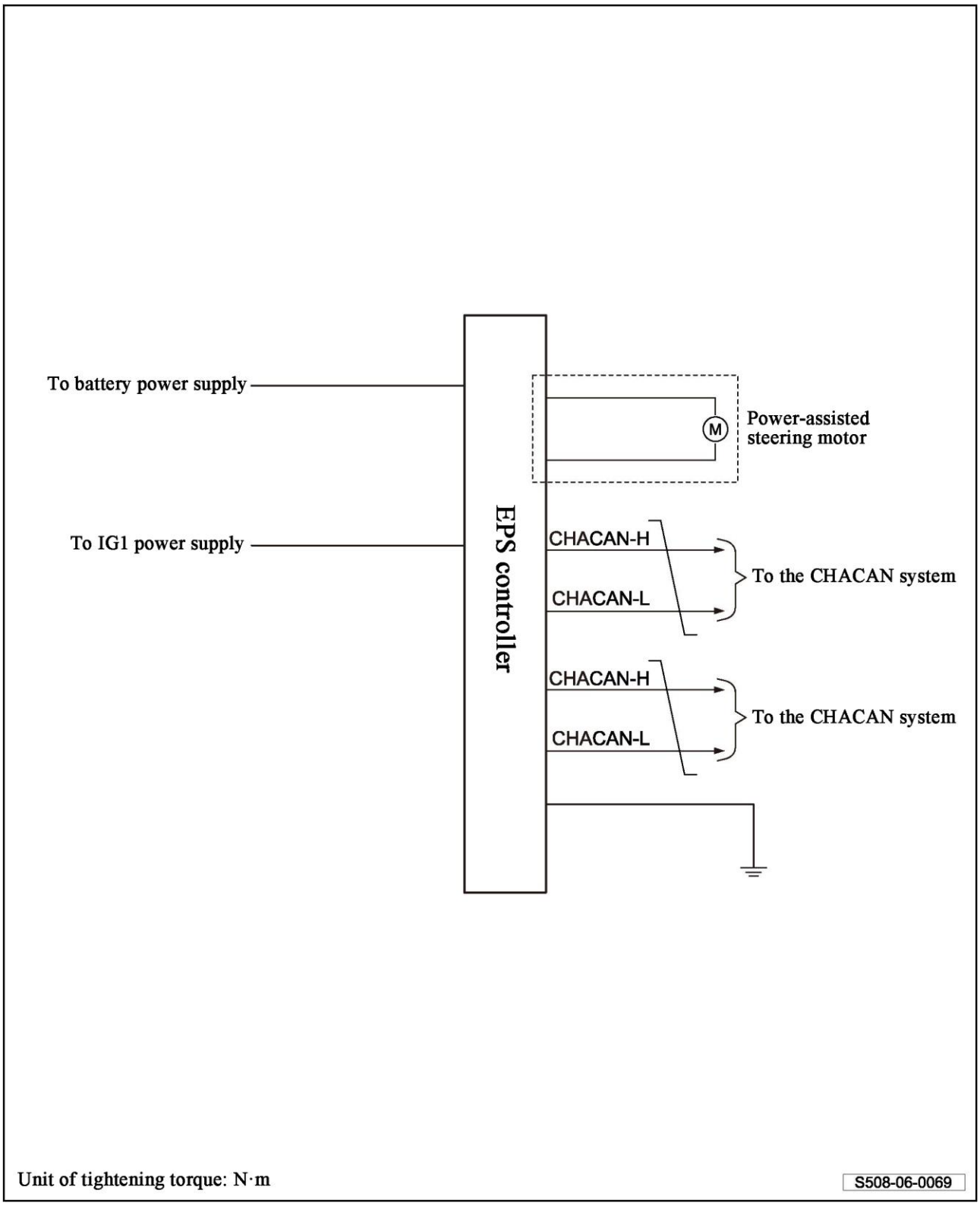
3.13.4 Exploded view

3.13.4.1 Exploded view



3.13.5 Electrical Schematic Diagram

3.13.5.1 Electrical schematic diagram



3.13.6 Diagnosis information and steps

3.13.6.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD diagnosis interface of the vehicle. By comparing the data sheet provided by EPS with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

3.13.6.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

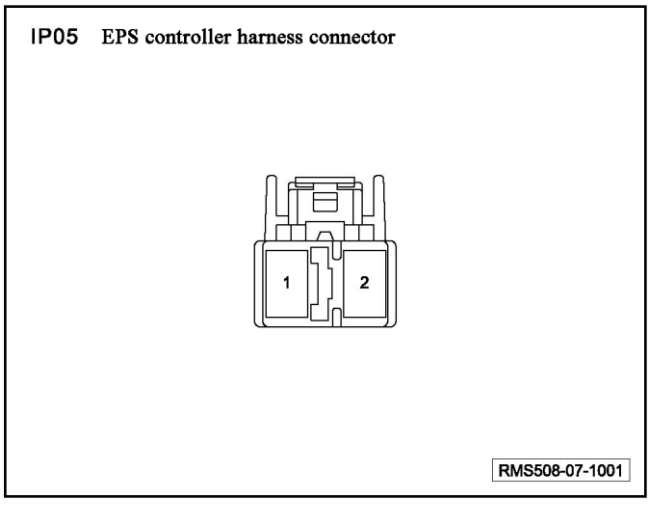
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

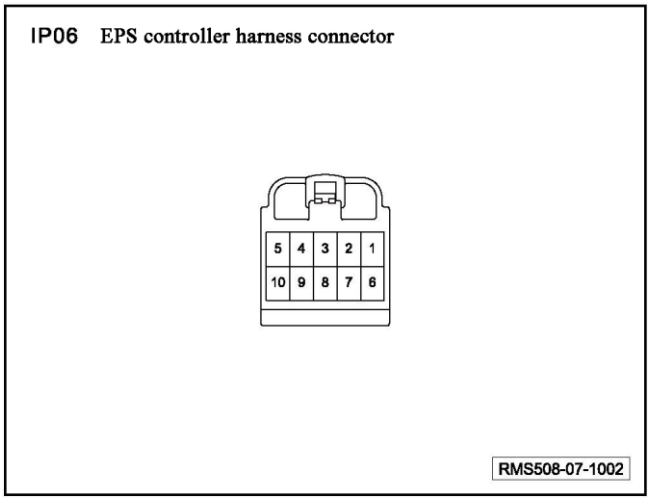
3.13.6.3 ECU terminals

EPS controller harness connector (IP05)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
1	8.0/Red	Battery power supply	The start switch is put to any position	Battery voltage
2	8.0/Black	Ground	—	0V

EPS controller harness connector (IP06)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
1	0.35/blue-red	IG1+	Put the start switch to “ON” position	Battery voltage
2	0.35/Light green	Chassis (CH)CAN-H	—	—
3	0.35 light green-white	Chassis (CH)CAN-L	—	—
4	0.35 light green-white	Chassis (CH)CAN-L	—	—
5	0.35 light green	Chassis (CH)CAN-H	—	—

3.13.6.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
0586	Steering wheel torque	-	-8	8	Nm
0587	System operation mode	-	’1	‘4	-
0588	Battery voltage	-	0	21.5	V

0589	Operation status of VCU	-	0	-	-
0592	Controller temperature	-	-256	256	°C
0594	Voltage of controller chip	-	0	7.5	V
0597	Vehicle speed	-	0	255	km/h
0599	Steering angle	-	-2048	2048	°

3.13.6.5 DTC list

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for maintenance
B111716	Battery voltage is too low	Normal assistance at 9-17V; partial assistance at 8-9V; assistance cutoff below 8V	-	-
B111717	Battery voltage is too high	Normal assistance at 9-17V; partial assistance at 17-18V; assistance cutoff above 18V	-	-
C118016	Drive axle temperature fault	Determine the limiting value of assist current based on the minimum temperature values of pre-drive, MCU and fast estimator. The upper limit of the assist current is limited to 90%.	Temperature detection circuit fault (short to power supply or open)	Power on again after cooling for a period of time, and replace the EPP assembly if it still has faults
C118017	MCU temperature fault	Determine the limiting value of assist current based on the minimum temperature values of pre-drive, MCU and fast estimator. The upper limit of the assist current is limited to 90%.	Temperature detection circuit fault (short to power supply or open)	Power on again after cooling for a period of time, and replace the EPP assembly if it still has faults
C118000	Abnormal power supply of torque sensor	There is no power	Power chip fault	Power on again, and replace the EPP assembly if there is still a fault.
C118020	Abnormal voltage of power chip	Provide assistance based the default vehicle speed (assistance reduced to 100km/h)	Power chip fault	-
C118054	EPS neutral position not calibrated	Without angle-relevant functions, and with normal assistance	1. Sensor fault 2. Calibration conditions are not met	Re-calibrate
C118100	Abnormal motor pre-	There is no power	1. Motor fault	Power it on again

	drive circuit		2. Controller pre-drive circuit fault	and the fault remains, replace the controller
C118200	Abnormal pre-drive safety mechanism	There is no power	1. Motor fault 2. Controller pre-drive circuit fault	Power on again, and replace the EPP assembly if there is still a fault.
C118300	Internal fault of motor pre-drive	There is no power	1. Motor fault 2. Controller pre-drive circuit fault	Power on again, and replace the EPP assembly if there is still a fault.
C118400	Abnormal motor position	There is no power	1. The zero point of motor is not calibrated. 2. Motor fault	Power on again, and replace the EPP assembly if there is still a fault.
C118523	Torque sensor internal fault	There is no power	1. Sensor fault 2. The torque sensor data is not true at startup.	1. Check the connection between the torque sensor and the power supply. 2. Power on again, and replace the steering column if there is still a fault.

B111716	Battery voltage is too low	Normal assistance at 9-17V; partial assistance at 8-9V; assistance cutoff below 8V	-	-
C118524	Abnormal torque sensor signal	There is no power	1. Sensor fault 2. The torque sensor data is not true at startup.	Power on again, and replace the steering column if there is still a fault.
C118649	Abnormal SENT angle signal	There is no power	1. Fault of detection circuit of EPS controller 2. Angle sensor harness short-circuited or open-circuited to power supply 3. Fault of angle sensor	1. Check the angle sensor harness 2. Replace the steering column if the harness works normally.
C118723	Abnormal signal of Hella angle sensor	No rack soft stop function	1. The angle signal has a low	If it cannot be recovered,

B111716	Battery voltage is too low	Normal assistance at 9-17V; partial assistance at 8-9V; assistance cutoff below 8V	-	-
			credibility. 2. The white gear falls off.	replace the EPS column.
C118729	Angle signal out of range	No rack soft stop function	The angle is not calibrated correctly. The sensor does not work normally.	Check the current angle
C118872	Abnormal motor phase current	There is no power	1. Any phase current has overcurrent. 2. The phase current redundancy check fails. 3. The zero current offset range of any phase is not correct.	Power on again, and replace the EPP assembly if there is still a fault.
C118941	ECU RAM fault	There is no power	Illegal use or fault of EPS controller program RAM area	Power on again, and replace the EPP assembly if there is still a fault.
C118942	ECU internal error	There is no power	1. The SRI bus becomes faulty. 2. Chip fault	Power it on again and the fault remains, replace the controller
C119061	SPB bus error	There is no power	Chip fault	Power it on again and the fault remains, replace the controller
C119000	ECU calculation error	There is no power	Abnormal MCU	Power it on again and the fault remains, replace the controller
C119001	Abnormal watchdog	There is no power	Program running error	Power it on again and the fault remains, replace the controller
U007488	CAN bus off	Set the vehicle speed to the default value (ramp down to 100km/h assistance)	On-board CAN network fault	Power it on again and the fault remains, replace the controller
C119181	Invalid ABS speed	Set the vehicle speed as the default value	Refer to fault setting conditions	Check the in-vehicle network

B111716	Battery voltage is too low	Normal assistance at 9-17V; partial assistance at 8-9V; assistance cutoff below 8V	-	-
		(ramp down to 100km/h assistance)		
C119285	Vehicle speed exceeding upper limit	Set the vehicle speed as the default value (ramp down to 100km/h assistance)	Refer to fault setting conditions	Check the in-vehicle network
U012287	frame loss of vehicle speed message	Before/after power-on, all vehicle speed messages are lost. Set the vehicle speed as the default value (ramp down to 100km/h assistance), otherwise the ESP/VCU speed assistance is adopted.	Refer to fault setting conditions	Check the in-vehicle network
U010087	Lost communication with EMS	1. Before power-on, the Ready message is lost, and there is no assistance. 2. After power-on, the Ready message is lost, and there is the normal assistance.	Refer to fault setting conditions	Check the in-vehicle network
U018687	Lost communication with IVI	RRM message loss	On-board CAN network fault	Check the in-vehicle network
U015587	Lost communication with IC	IC message loss	On-board CAN network fault	Check the in-vehicle network

3.13.6.6 DTC: B111716 & B111717

DTC	DTC definition
B111716	Battery voltage is too low
B111717	Battery voltage is too high

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses ANS6 and IF25 of the EPS controller.

A Check whether fuses ANS6 and IF25 are blown.

No → Go to Step 5.

Yes

Step 4	Maintain the circuits of fuses ANS6 and IF25.

A Check whether the circuits of fuses ANS6 and IF25 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

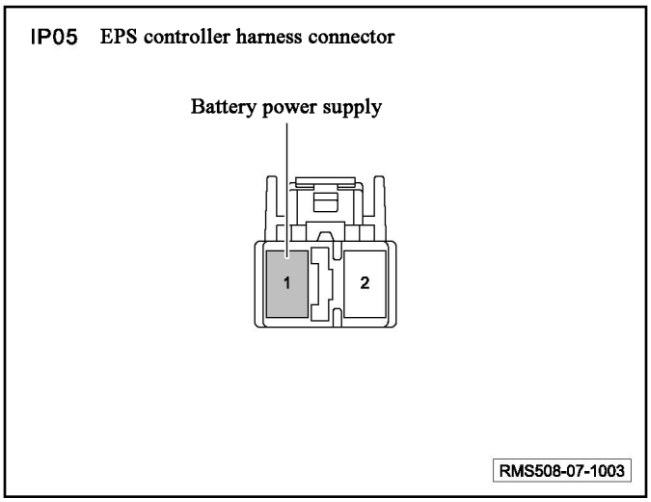
Rated values of fuses: **ANS6 80A and IF25 5A**

D Confirm whether the EPS controller works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connectors IP05 and IP06.

C Put the Start switch to “ON” position.

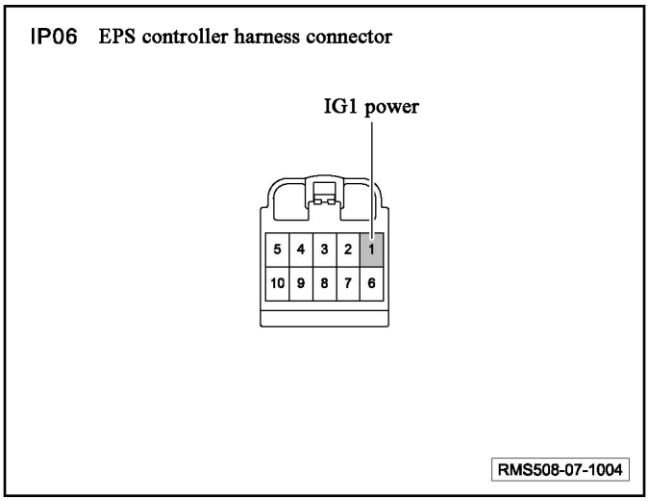
D Measure the voltage between terminal 1 of the EPS controller harness connector IP05 and the body ground.

E Measure the voltage between terminal 1 of the EPS controller harness connector IP06 and the body ground.

Standard voltage value: **11~14V**

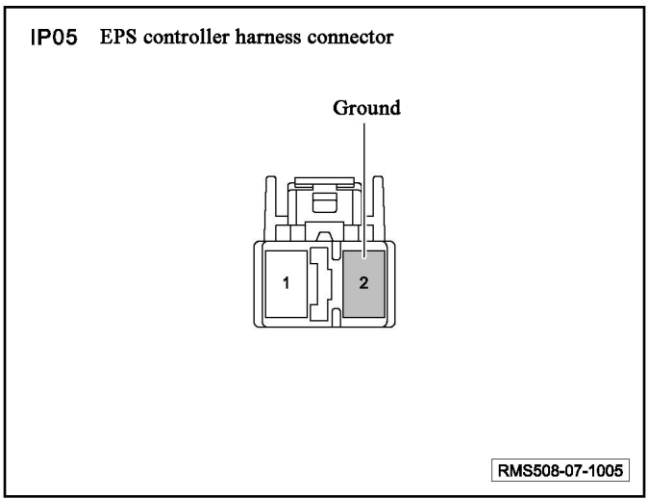
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.



Yes

Step 6	Check the ground circuit of EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP05.

C Measure the resistance between terminal 2 of the EPS controller harness connector IP05 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 7	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

3.13.6.7 DTC: C118016, C118017 ...

DTC	DTC definition
C118016	Drive axle temperature fault
C118017	MCU temperature fault
C118100	Abnormal motor pre-drive circuit
C118200	Abnormal pre-drive safety mechanism
C118300	Internal fault of motor pre-drive
C118400	Abnormal motor position
C118941	ECU RAM fault
C118942	ECU internal error
C119000	ECU calculation error
C119001	Abnormal watchdog
C119061	SPB bus error
C118020	Abnormal voltage of power chip
C118872	Abnormal motor phase current

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on and off and check again

A Power on and off again.

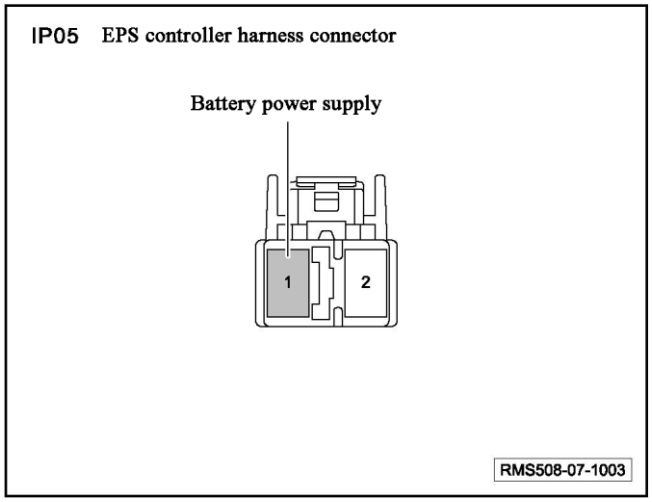
B Connect the diagnostic scanner with the OBD interface, and read and record the DTC.

C Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the power circuit of EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connectors IP05 and IP06.

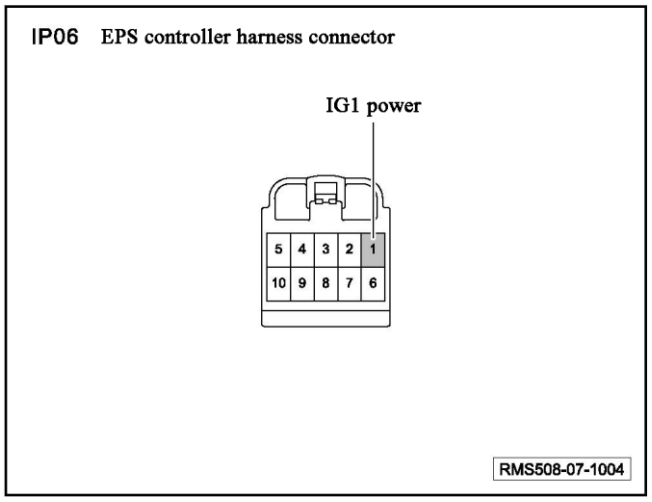
C Put the Start switch to “ON” position.

D Measure the voltage between terminal 1 of the EPS controller harness connector IP05 and the body ground.

E Measure the voltage between terminal 1 of the EPS controller harness connector IP06 and the body ground.

Standard voltage value: **11~14V**

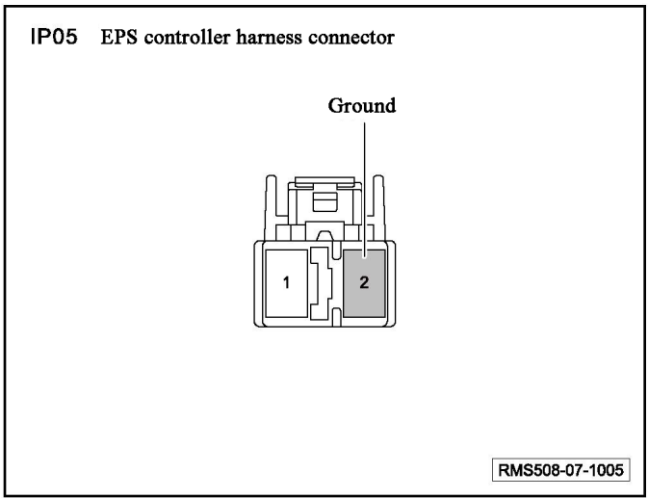
F Make sure that the voltage conforms to the standard value.



No → Repair or replace the harness.

Yes

Step 4	Check the ground circuit of EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP05.

C Measure the resistance between terminal 2 of the EPS controller harness connector IP05 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.13.6.8 DTC: C118649, C118723 ...

DTC	DTC definition
C118649	Abnormal SENT angle signal
C118723	Abnormal signal of Hella angle sensor
C118054	EPS neutral position not calibrated
C118729	Angle signal out of range

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check a signal sent by the steering angular speed sensor.

A Center the steering wheel and let the front wheels towards the front.

B Connect the diagnostic scanner to OBD interface.

C Put the start switch to the "ON" position, and enter the main interface of the diagnostic scanner.

D Read and record a position signal sent by the steering angular speed sensor as prompted on the screen of diagnostic scanner.

E Check whether a signal sent by the steering angular speed sensor is normal.

No → Reposition the steering angular speed sensor.

Yes

Step 3	Implement the steering angle calibration procedure.

A Center the steering wheel and let the front wheels towards the front.

B Connect the diagnostic scanner to OBD interface.

C Put the start switch to the "ON" position, and enter the main interface of the diagnostic scanner.

D Perform the steering angle calibration procedure according to the indications on the diagnostic scanner.

E Clear the DTC.

F Read the DTC again.

G Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 4	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

3.13.6.9 DTC: C118000, C118523 ...

DTC	DTC definition
C118000	Abnormal power supply of torque sensor
C118523	Torque sensor internal fault
C118524	Abnormal torque sensor signal

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on and off and check again

A Power on and off again.

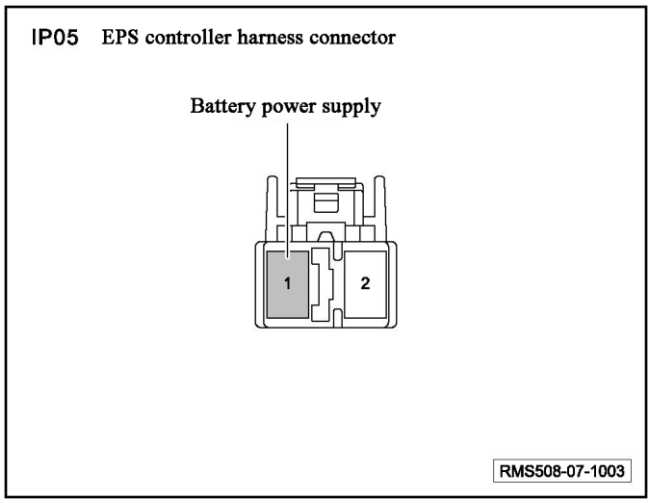
B Connect the diagnostic scanner with the OBD interface, and read and record the DTC.

C Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the power circuit of EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connectors IP05 and IP06.

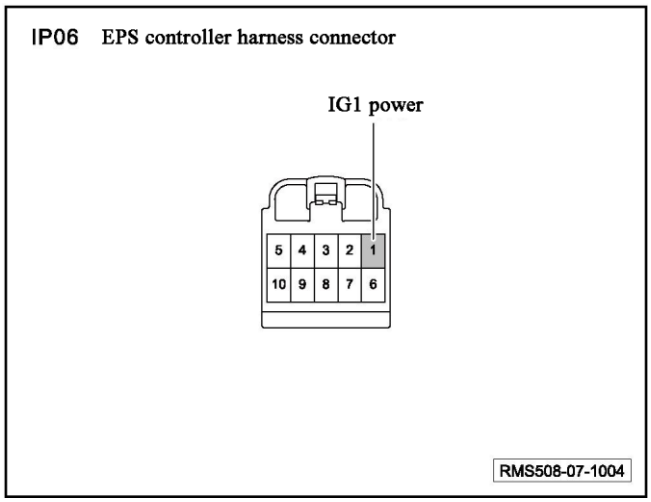
C Put the Start switch to “ON” position.

D Measure the voltage between terminal 1 of the EPS controller harness connector IP05 and the body ground.

E Measure the voltage between terminal 1 of the EPS controller harness connector IP06 and the body ground.

Standard voltage value: **11~14V**

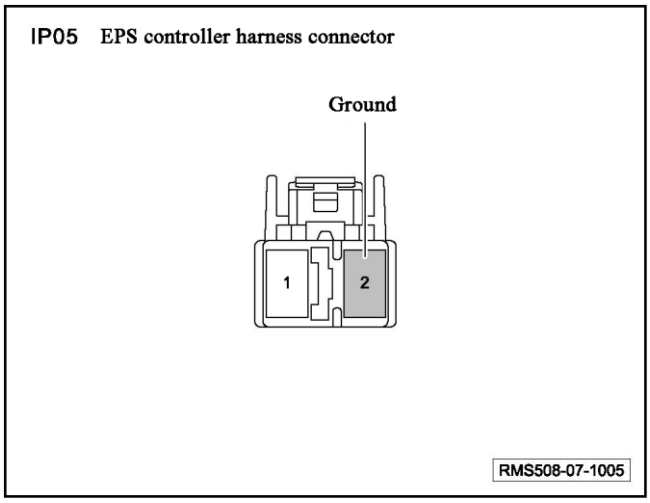
F Make sure that the voltage conforms to the standard value.



No → Repair or replace the harness.

Yes

Step 4	Check the ground circuit of EPS controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP05.

C Measure the resistance between terminal 2 of the EPS controller harness connector IP05 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

3.13.6.10 DTC: U007488

DTC	DTC definition
U007488	CAN bus off

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

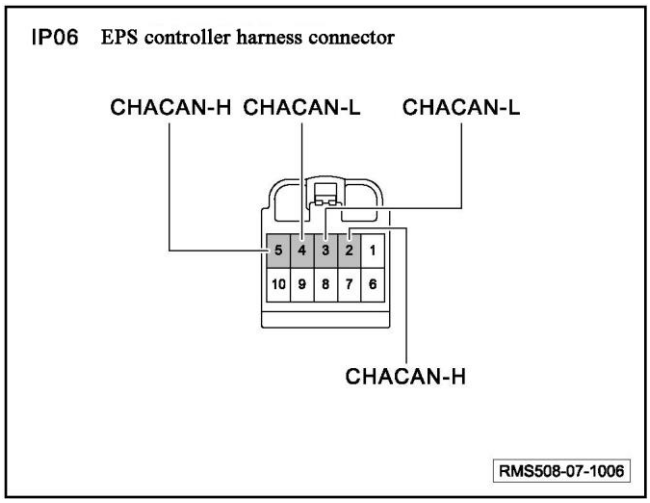
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP06.

C Measure the resistance of circuit between terminals 2 and 3 of EPS controller harness connector IP06.

D Measure the resistance of circuit between terminals 4 and 5 of EPS controller harness connector IP06.

Standard resistance value: about **120Ω**

E Confirm if the resistance conforms to the standard value

No	Repair or replace the harness.

Yes

Step 3	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes	The system works normally.

Next

Step 4	The diagnosis is over.

3.13.6.11 DTC: C119181, C119285 ...

DTC	DTC definition
C119181	Invalid ABS speed
C119285	Vehicle speed exceeding upper limit
U012287	frame loss of vehicle speed message

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for

intermittent fault.

Yes

Step 2	Check the brake safety control system.

A Connect the diagnostic scanner to OBD interface.

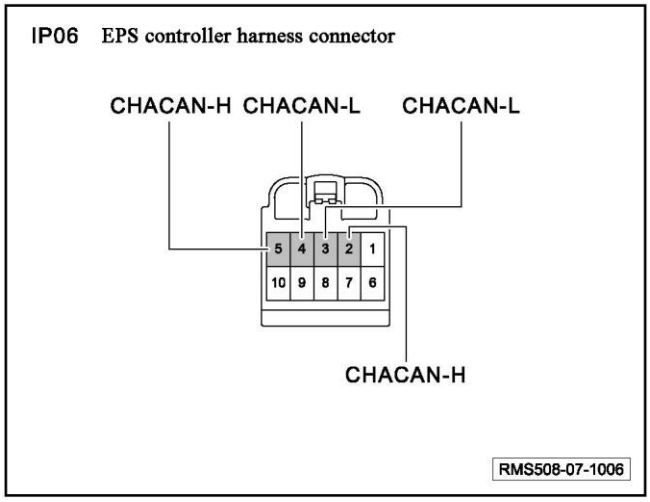
B Turn the start switch to the “ON” position, and read and record the DTC of brake safety control system.

C Check whether the DTC related to the speed signal is displayed.

Yes → Maintain faults related to speed signals of the brake safety control system preferentially.

No

Step 3	Check the CAN data communication wire between the EPS controller and the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP06.

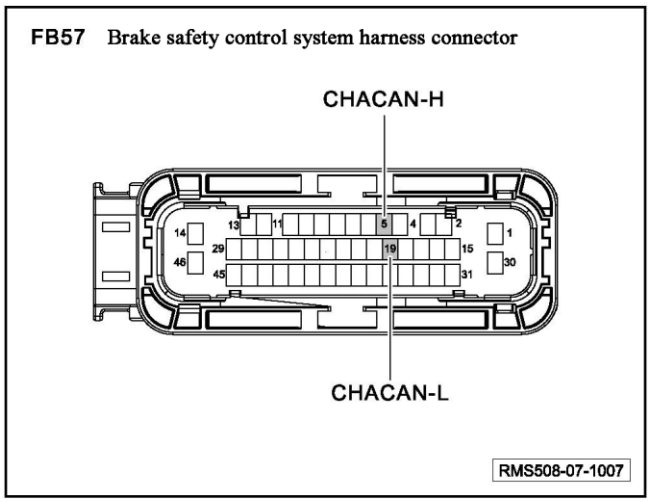
C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance between terminal 2/5 of the EPS controller harness connector IP06 and terminal 5 of the brake safety control system harness connector FB57.

E Measure the resistance between terminal 3/4 of the EPS controller harness connector IP06 and terminal 19 of the brake safety control system harness connector FB57.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.13.6.12 DTC: U010087

DTC	DTC definition
U010087	Lost communication with EMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

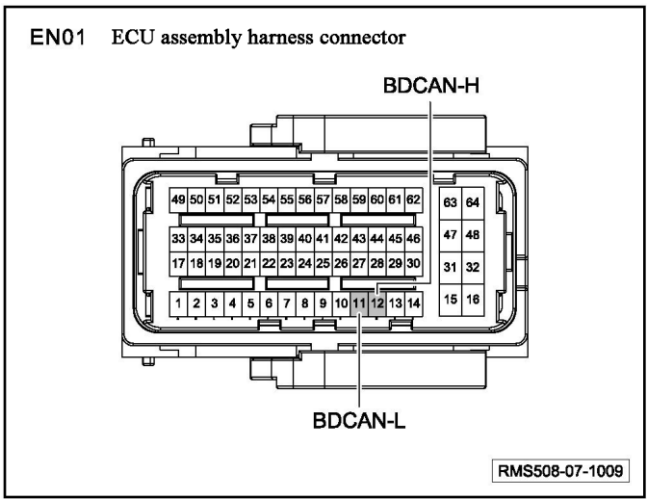
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the ECU assembly harness connector EN01.

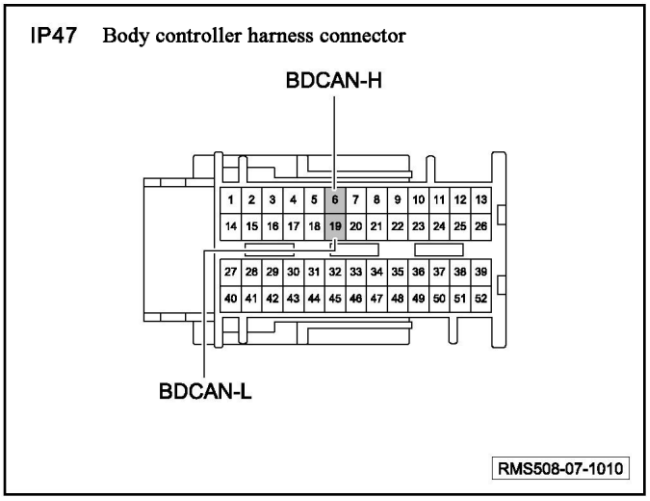
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 19 of the body controller harness connector IP47.

E Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 6 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the EPS controller and the body controller.

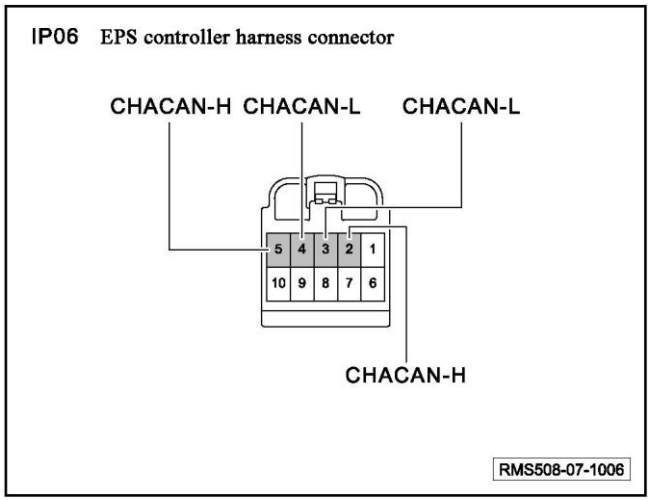
A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP06.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 2/5 of EPS controller harness connector IP06 and terminal 4 of body controller harness connector IP47.

E Measure the resistance between terminal 3/4 of EPS controller harness connector IP06 and terminal 17 of body controller harness connector



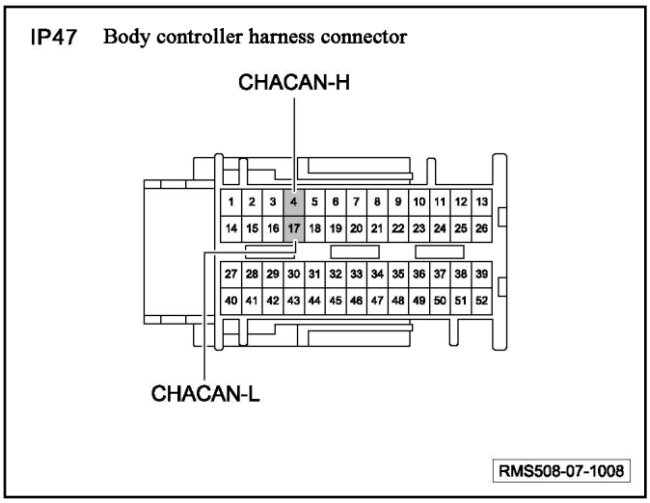
IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

As the DTCs may be triggered by intermittent fault, check for intermittent fault.



Yes

Step 4	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

No

Step 6	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.13.6.13 DTC: U018687

DTC	DTC definition
U018687	Lost communication with IVI

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

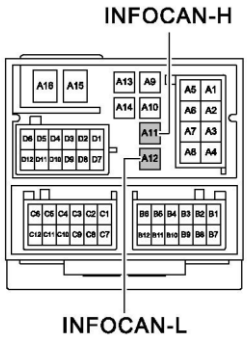
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the entertainment system host and the body controller.

IP14 Entertainment system host harness connector



RMS508-07-1011

A Turn the start switch to "OFF" position.

B Disconnect the entertainment system host harness connector IP14.

C Disconnect body controller harness connector IP47

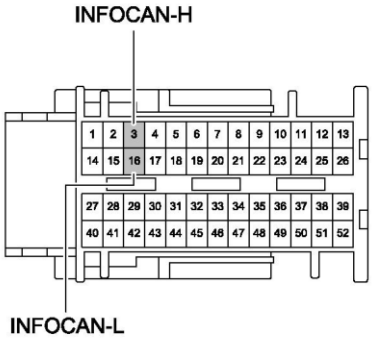
D Measure the resistance between terminal A11 of the entertainment system host harness connector IP14 and terminal 3 of the body controller harness connector IP47.

E Measure the resistance between terminal A12 of the entertainment system host harness connector IP14 and terminal 16 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

IP47 Body controller harness connector

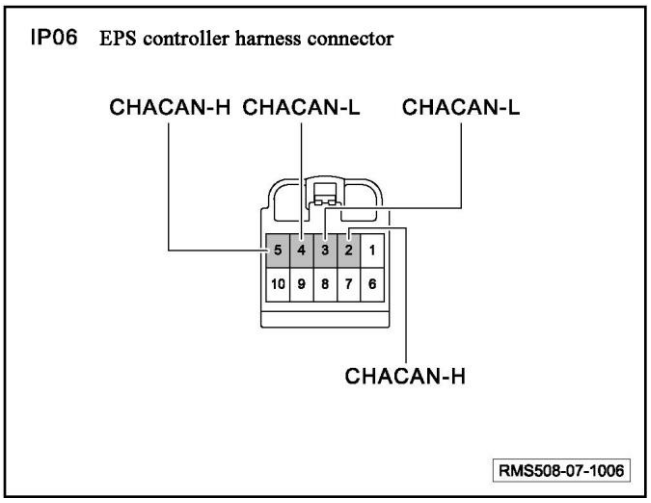


RMS508-07-1012

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the EPS controller and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP06.

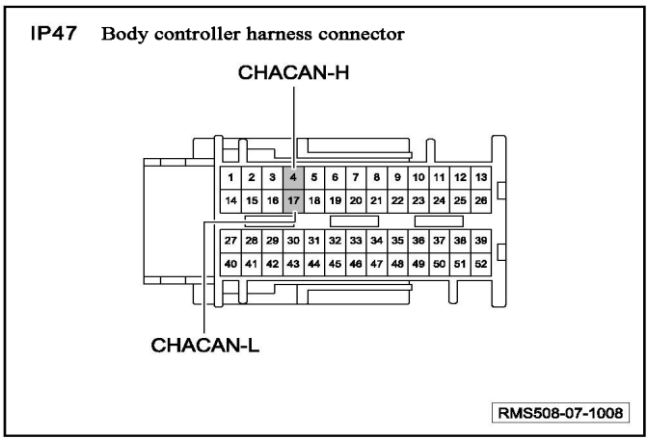
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 2/5 of EPS controller harness connector IP06 and terminal 4 of body controller harness connector IP47.

E Measure the resistance between terminal 3/4 of EPS controller harness connector IP06 and terminal 17 of body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 6	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.13.6.14 DTC: U015587

DTC	DTC definition
U015587	Lost communication with IC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

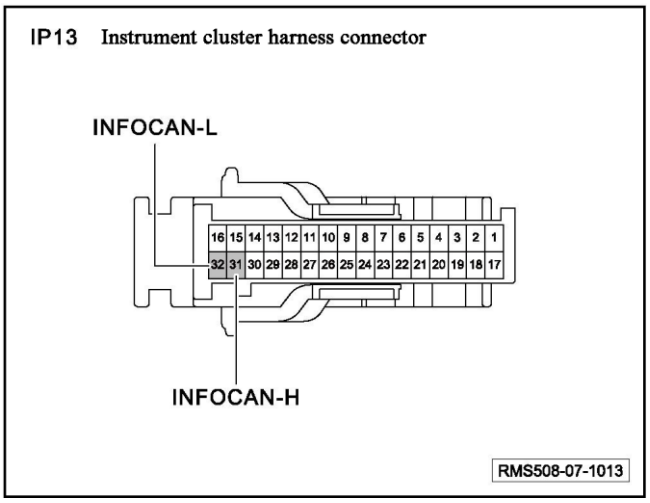
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the instrument cluster and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the instrument cluster harness connector IP13.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 31 of the combination instrument harness connector IP13 and terminal 3 of the body controller harness connector IP47.

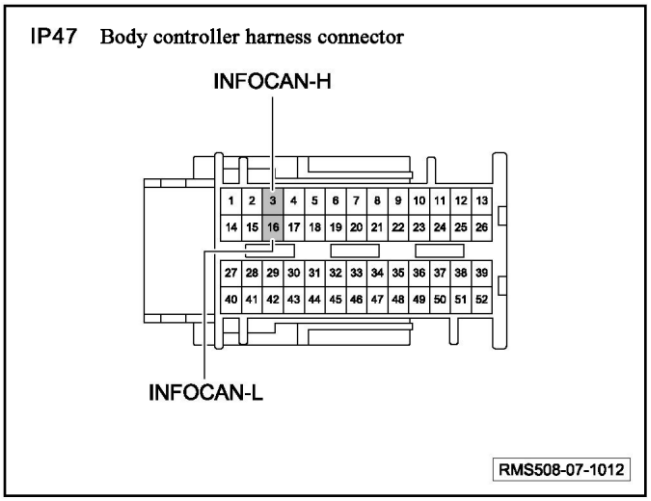
E Measure the resistance between terminal 32 of the instrument cluster harness connector IP13 and terminal 16 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

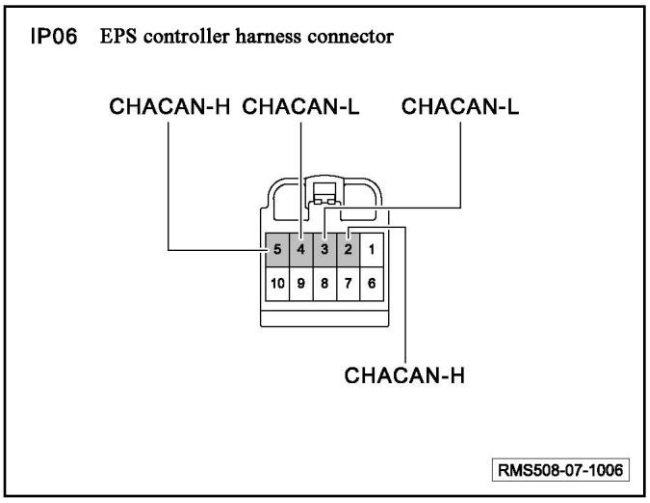
No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the EPS controller and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP06.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 2/5 of EPS controller harness connector IP06 and terminal 4 of body controller harness connector IP47.

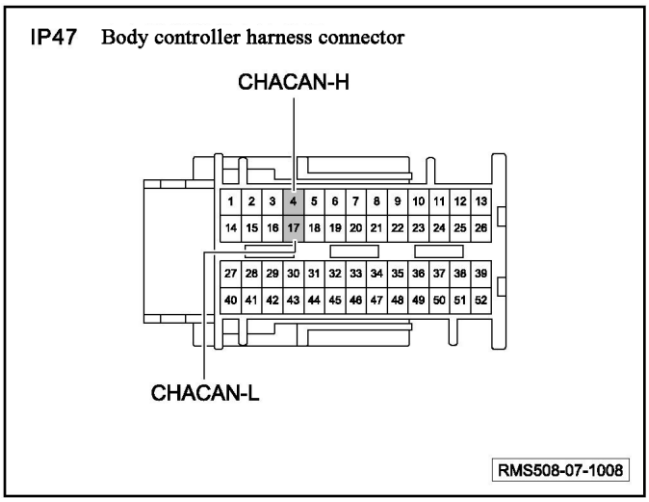
E Measure the resistance between terminal 3/4 of EPS controller harness connector IP06 and terminal 17 of body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

No

Step 6	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

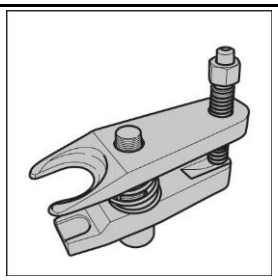
Yes → The system works normally.

Next

Step 7	The diagnosis is over.

3.13.7 Special tool

3.13.7.1 List of special tools

S/N	Symbol	Description	Function
2		Removal tool for ball joint	For separating the ball joint from the steering knuckle assembly

3.13.8 Removal and installation

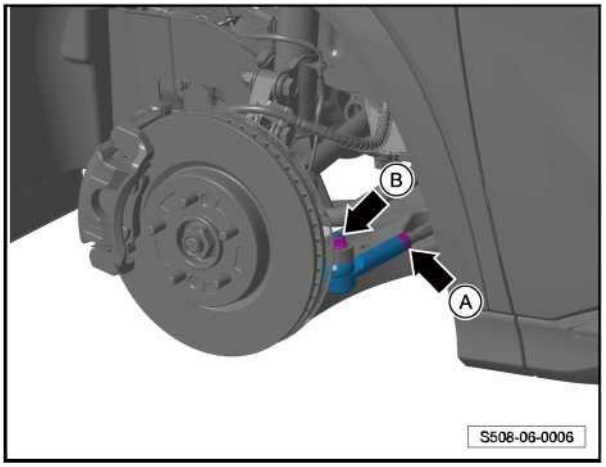
3.13.8.1 Removal and installation of outer tie rod ball joint

Disassembly procedures

Tip:

The removal and installation procedures are only for the left outer tie rod ball joint, which can be basically referred to for the right one.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the outer tie rod ball joint.

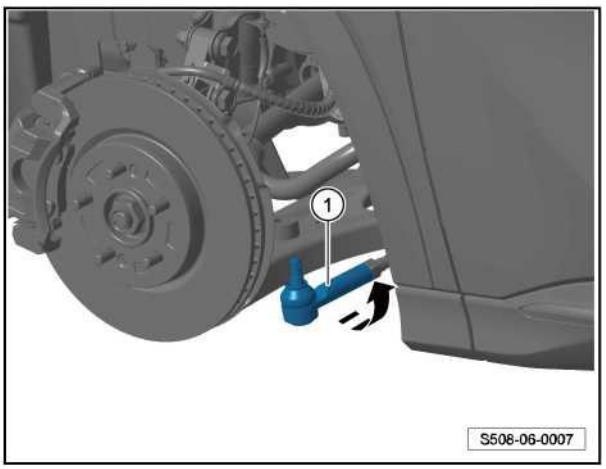
a. Loosen the lock nut (see arrow A).

b. Unscrew the fixing nut (see arrow B) between the outer tie rod ball joint and the front steering knuckle, and press the outer tie rod ball joint out of the front steering knuckle assembly with the special tool for ball joint removal. Refer to 3.13.7.1 List of special tools.

- Tightening torque of nut (see arrow A): 80±5N·m
- Tightening torque of nut (see arrow B): 60±6 N·m

Notes

The nut connecting the outer tie rod ball joint with the front steering knuckle assembly is for a single use. Replace a new fastening nut after removal.



c. Unscrew the outer tie rod ball joint ① along the direction of arrow, and then remove it.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

- Calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

3.13.8.2 Removal and installation of inner tie rod ball joint

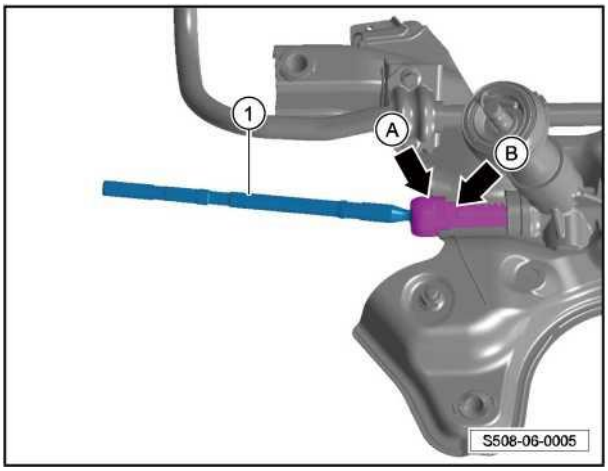
Disassembly procedures

Tip:

The removal and installation procedures are only for the left inner tie rod ball joint, which can be basically referred to for the right one.

1 Remove the outer tie rod ball joint. Refer to 3.13.8.1 Removal and installation of outer tie rod ball joint

2 Remove the steering input shaft dirt proof trunk. Refer to 3.13.8.4 Removal and installation of steering input shaft dirt proof trunk



3 Remove the inner tie rod ball joint.

a. Fix the steering box rack (see arrow A), and remove the inner tie rod ball joint ① at the position shown by the arrow B with the removal tool for inner tie rod ball joint.

Notes

When fixing the steering box rack with a wrench, be sure to fix it at a specific position at the end of the rack to avoid damaging the rack.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

- Calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

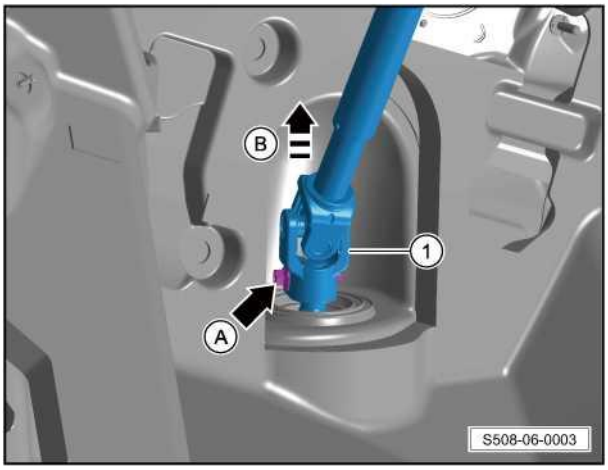
3.13.8.3 Removal and installation of steering gear with tie rod assembly

Disassembly procedures

1 Remove the front left/right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel

assembly

2 Remove the power suspension assembly (rear), refer to 2.11.4.4 Removal and installation of power suspension assembly (rear)

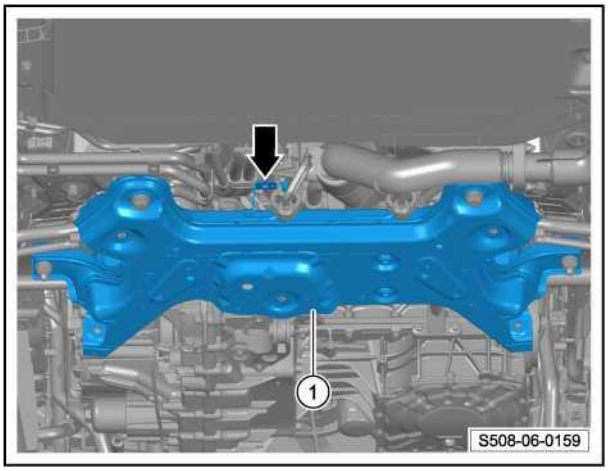


3 Remove the steering gear with tie rod assembly

a. Rotate the steering wheel so that it faces straight ahead. Turn off the start switch, and lock the steering wheel.

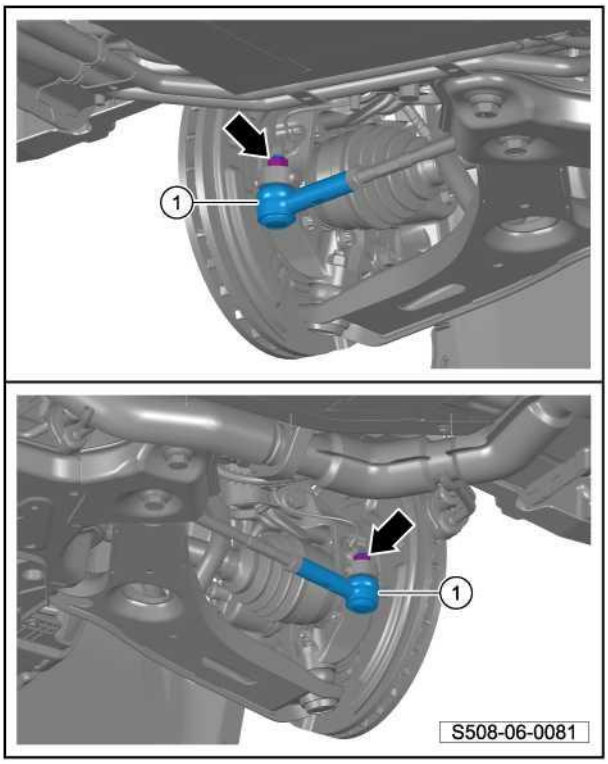
b. Unscrew the fixing bolt (see arrow A) between the lower steering shaft and the steering box assembly, and disengage the lower steering shaft ① from the steering box assembly along the direction of arrow B.

- Tightening torque of bolt: 32±2N·m



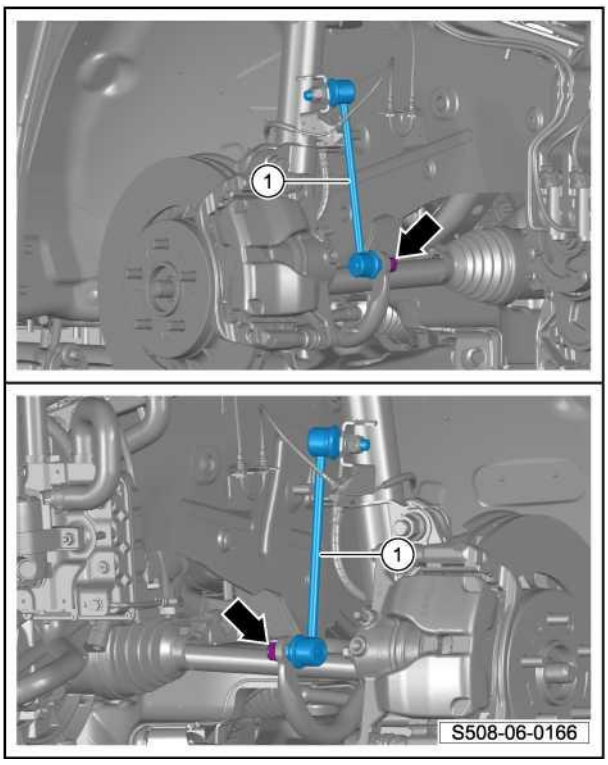
c. Unscrew the fixing bolt (see arrows), and disengage the Battery pack HV wiring harness from the subframe welding assembly ①.

- Tightening torque of bolt: **10±1 N·m**



d. Unscrew fixing nuts (see arrows) between left and the right outer tie rod ball joints and the front steering knuckle assembly. Press left and the right outer tie rod ball joints ① out of the front steering knuckle assembly with the special tool for ball joint removal (refer to 3.13.7.1 List of special tools), and disengage them from the front steering knuckle assembly.

- Tightening torque of nut: **60±6 N·m**

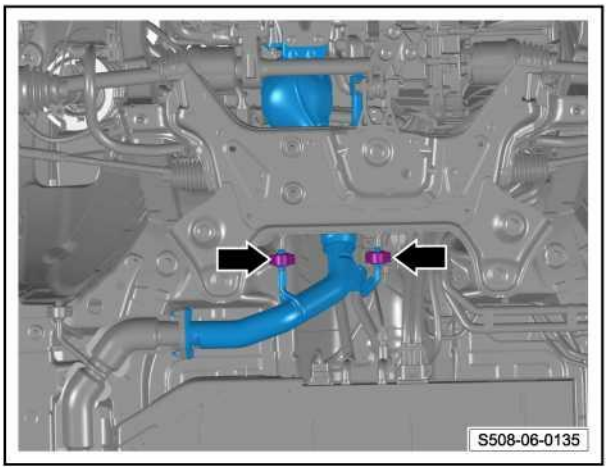


e. Unscrew fixing nuts between left and right front stabilizer bar joint assemblies ① and the front stabilizer bar.

- Tightening torque of nut: **100±5 N·m**

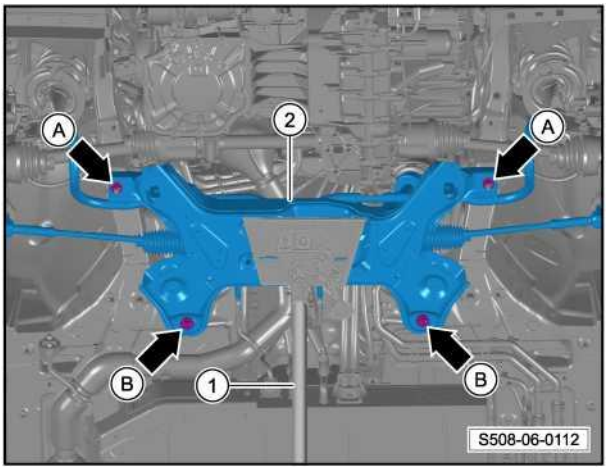
Tip:

When removing the fixing nut of the front stabilizer bar joint, the back of the ball pin shall be fixed with an open-end wrench to avoid rotation of ball pin and nut at the same time.



f. Remove the left/right front swing arm assembly. Refer to 3.2.6.6 Removal and installation of front swing arm assembly

g. Disengage connectors (see arrows) between the silencer connector and the front subframe welding assembly.

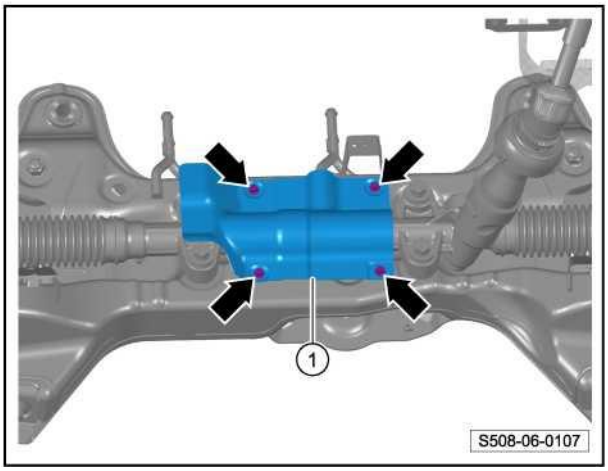


h. Support the front subframe welding assembly ② with the transmission lifting device ①.

i. Unscrew the nuts (see arrow A) and bolts (see arrow B) connecting the front subframe welding assembly and the body.

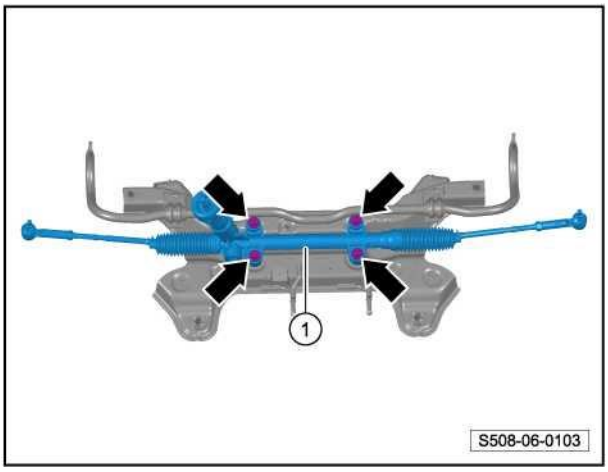
j. Slowly lower the transmission lifting device ①, and remove the front subframe welding assembly ②.

- Tightening torque of nut (see arrow **A**): **200±10N·m**
- Tightening torque of bolt (see arrow **B**): **200±10Nm**



k. Unscrew the fixing bolts (see arrows) of the steering box heat shield and front subframe welding assembly, and remove the steering box heat shield ①.

- Tightening torque of bolt: **10±1 N·m**



l. Unscrew fixing bolts (see arrows) between the steering box c/w tie rod assembly and the front subframe welding assembly, and remove the steering box c/w tie rod assembly ①.

- Tightening torque of bolt: 110±6 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– When installing the steering universal joint, be sure to align its bolt hole with the plane part of the steering shaft.

–When installing, turn the steering wheel to make it face straight ahead, and lock the steering wheel.

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

- Calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

3.13.8.4 Removal and installation of steering input shaft dirt proof trunk

Disassembly procedures

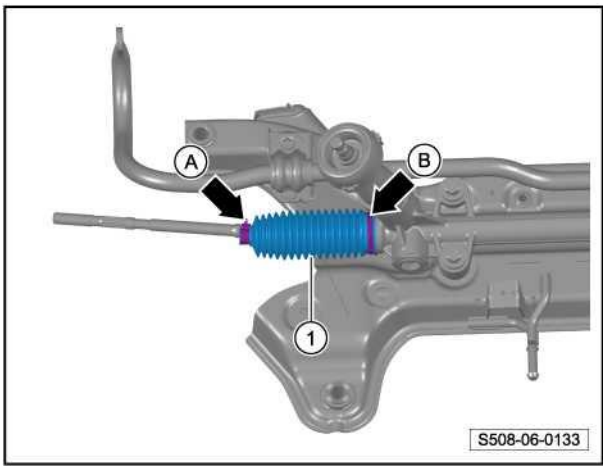
Tip:

The removal and installation procedures are only for the left steering input shaft dust cap, which can be basically referred to for the right one.

1 Remove the left outer tie rod ball joint. Refer to 3.13.8.1 Removal and installation of outer tie rod ball joint

2 Remove the steering box c/w tie rod assembly. Refer to 3.13.8.3 Removal and installation of steering box c/w tie rod assembly

3 Unscrew the locking nut of the left outer tie rod ball joint.

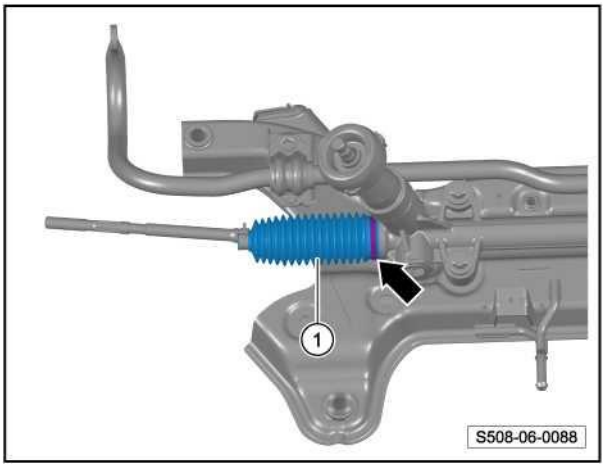


4 Remove the steering input shaft dirt proof trunk

a. Loosen the fixing clamp (see arrow A) and the elastic hoop (see arrow B), and remove the steering input shaft dirt proof trunk ① from the inner tie rod ball joint.

Tip:

Both the elastic hoop and clamp are for a single use. Replace new elastic hoop and clamp during each removal.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Clean the mating surface of steering input shaft dirt proof trunk on the steering box housing, and apply the semi-dry sealer on it.

– Replace the fixing clamp (see arrow) of the steering input shaft dirt proof trunk, and clamp it with an appropriate tool.

– The steering input shaft dirt proof trunk ① cannot twist, fold or deform in other forms.

–Perform four-wheel alignment after installation. Refer to 3.5.1.5 Operating steps for four-wheel alignment

- Calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

3.13.8.5 Removal and installation of steering column assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the steering wheel assembly. Refer to 3.13.8.6 Removal and installation of steering wheel assembly

4 Remove the combination switch upper cover assembly. Refer to 9.8.3.7 Removal and installation of combination switch upper cover assembly

5 Remove the combination switch lower cover. Refer

to 9.8.3.8 Removal and installation of combination switch lower cover

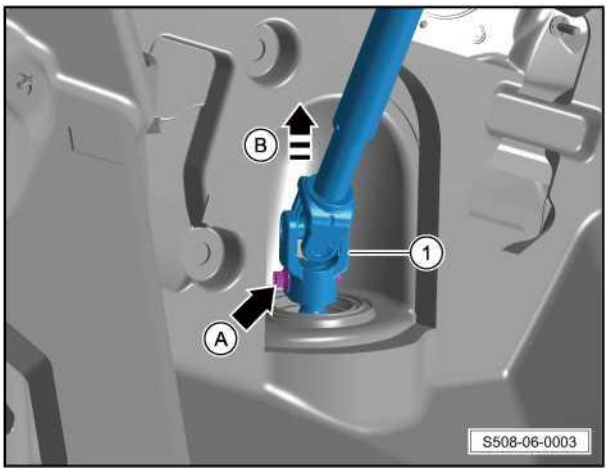
6 Remove the instrument panel left lower cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel left lower cover assembly

7 Remove the combination switch assembly. Refer to 8.3.5.17 Removal and installation of combination switch assembly

8 Remove the clock spring. Refer to 8.3.5.20 Removal and installation of clock spring

9 Remove the front left air-to-footwell pipe assembly. Refer to 6.5.4.7 Removal and installation of front left air-to-footwell pipe assembly.

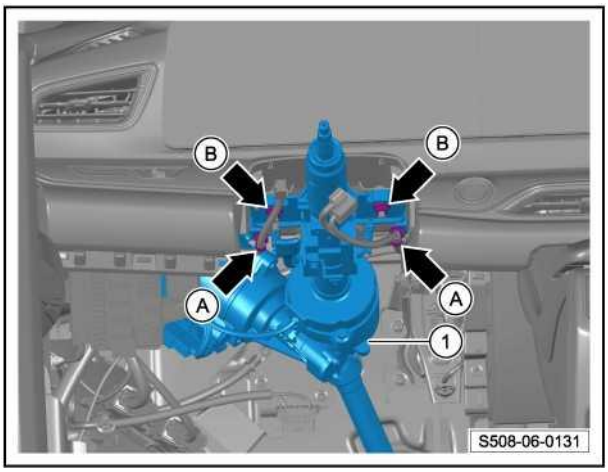
10 Remove the pedal bracket assembly. Refer to 3.9.5.2 Removal and installation of pedal bracket assembly



11 Disassemble the steering column assembly

a. Unscrew the fixing bolt (see arrow A) between the lower steering shaft and steering box assembly, and disengage the lower steering shaft ① from the steering box assembly along the direction of arrow B.

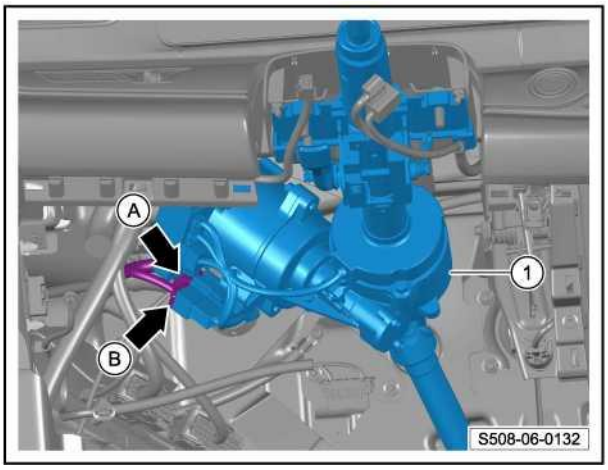
• Tightening torque of bolt (see arrow **A**): **32±2N·m**



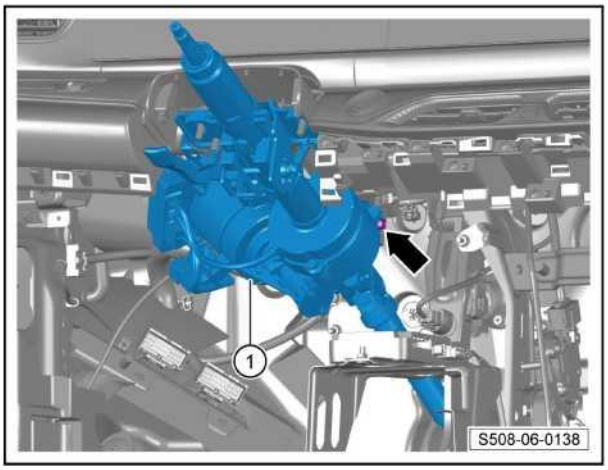
b. Disengage the harness fixing clip (see arrow A).

c. Unscrew fixing nuts (see arrows B) between the steering column assembly ① and the steering support structure assembly.

• Tightening torque of nut (see arrow **B**): **25±2 N·m**



d. Disconnect connectors (see arrows A and B) of the steering column assembly ①.



e. Unscrew the fixing bolt (see arrow) between the steering column assembly ① and the steering support structure assembly, and remove the steering column assembly ①.

- Tightening torque of bolt: 25±2 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, perform the after-sales matching for the electric power steering system. Refer to 1.4.2.6 After-sales matching after module replacement

- Calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle.

3.13.8.6 Removal and installation of steering wheel assembly

Disassembly procedures

Tip:

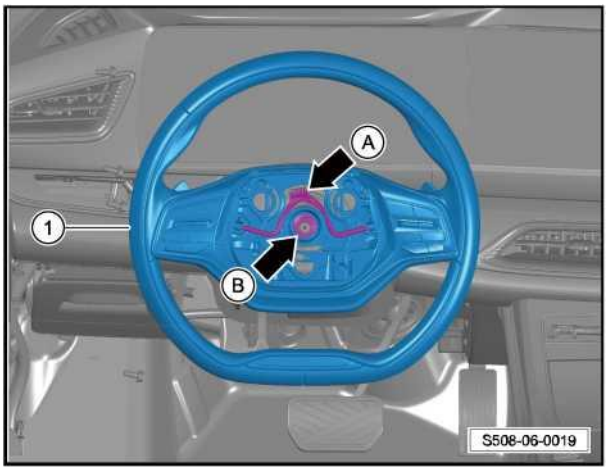
This car is equipped with a driver airbag module. Please remove the steering wheel in accordance with the specification.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to

8.29.3.5 Disconnecting battery negative terminal

3 Remove the driver seat airbag module. Refer to 7.1.7.2 Removal and installation of driver seat airbag module



4 Remove the steering wheel assembly

a. Rotate the steering wheel to the middle position (so that the wheels in straight running position).

b. Disconnect the connector (see arrow A) of steering wheel assembly.

c. Unscrew the fixing bolt (see arrow B), and remove the steering wheel assembly ①.

• Tightening torque of bolt (see arrow B): 35±3 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Before installation, check whether the clock spring coil is in the middle. If not, adjust it to the middle position. Refer to 8.3.5.22 Adjustment of clock spring coil

– When installing the steering wheel, make sure that the middle positioning marks of the steering wheel and the steering column are aligned.

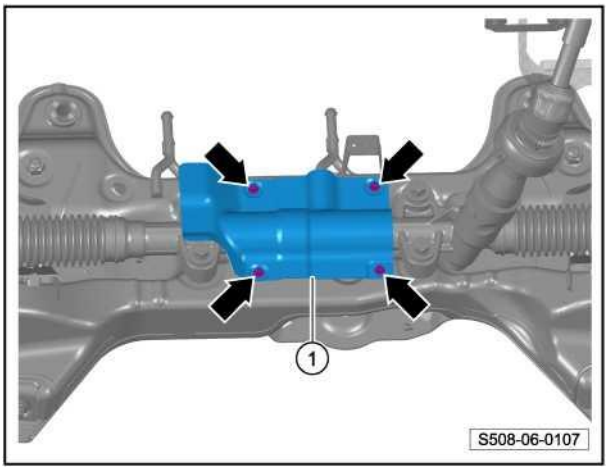
– After installation, calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle

3.13.8.7 Removal and installation of steering gear heat shield

Disassembly procedures

1 Lift the vehicle.

2 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



3 Remove the steering box heat shield.

a. Unscrew the fixing bolts (see arrows) of steering gear heat shield.

b. Remove the steering box heat shield ①.

- Tightening torque of bolt: **10±1 N·m**

Tip:

In order to facilitate the description of removal and installation, the drawings are all in the state without the complete vehicle, and the actual removal and installation can be directly carried out on the complete vehicle.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

Hybrid Transmission System

4.1 Warnings and notes 2
4.1.1 Warnings and notes 2
4.1.1.1 Warnings and notes 2
4.1.1.2 Warnings for operations related to hv electric control system 2
4.1.1.3 Preparations for operations related to hv electric control system 3
4.2 Hybrid transmission 4
4.2.1 Specification 4
4.2.1.1 Fastener specifications 4
4.2.1.2 Basic parameters 4
4.2.1.3 Motor identification 5
4.2.2 System description.....6
4.2.2.1 System description 6
4.2.3 Component position.....7
4.2.3.1 Component position 7
4.2.4 Exploded view.....8
4.2.4.1 Exploded view 8
4.2.5 Electrical schematic diagram.....9
4.2.5.1 Electrical schematic diagram 9
4.2.6 Diagnosis information and steps (GCU) .10
4.2.6.1 Diagnostic instructions.....10
4.2.6.2 Visual inspection.....10
4.2.6.3 ECU terminal 10
4.2.6.4 Data list 12
4.2.6.5 DTC list.....13
4.2.6.6 DTC: P3C8101, P3C8404 ... .22
4.2.6.7 DTC: P3C8102, P3C8414 ... .23
4.2.6.8 DTC: U011187.....24
4.2.6.9 DTC: P3C8103 & P3C8104.....27
4.2.6.10 DTC: P3C8201 & P3C8202.....29
4.2.6.11 DTC: P3C8201 & P3C8202.....33
4.2.6.12 DTC: P3C8301 & P3C8403.....36
4.2.6.13 DTC: P3C8302, P3C8303 ... .40
4.2.6.14 DTC: P3C8305, P3C8306 ... .41
4.2.6.15 DTC: P3C8307, P3C8415 ... .42
4.2.6.16 DTC: P3C8501.....46
4.2.6.17 DTC: U029387.....47
4.2.6.18 DTC: P3C8405 & P3C8406.....50
4.2.6.19 DTC: P3C8171, P3C8177 ... .51
4.2.6.20 DTC: P3C8172, P3C8178 ... .55
4.2.6.21 DTC: P3C8173.....58
4.2.6.22 DTC: P3C8174.....62
4.2.6.23 DTC: P3C8175.....64
4.2.6.24 DTC: P3C8176.....69
4.2.6.25 DTC: P3C8180 & P3C8182.....73
4.2.7 Diagnosis information and steps (MCU).75
4.2.7.1 Diagnostic instructions.....75
4.2.7.2 Visual inspection.....75
4.2.7.3 ECU terminal 75
4.2.7.4 Data list 77
4.2.7.5 DTC list.....78
4.2.7.6 DTC: P3B0101, P3B0404 ... .85
4.2.7.7 DTC: P3B0102, P3B0204 ... .88
4.2.7.8 DTC: P3B0103.....89
4.2.7.9 DTC: U011187.....90
4.2.7.10 DTC: P3B0104 & P3B0105 93
4.2.7.11 DTC: P3B0201 & P3B0202 96
4.2.7.12 DTC: P3B0203, P3B0304 ... .100
4.2.7.13 DTC: P3B0301 & P3B0403 103
4.2.7.14 DTC: P3B0305, P3B0306 ... .107
4.2.7.15 DTC: P3B0307, P3B0415 ... .109
4.2.7.17 DTC: U029387.....114
4.2.7.18 DTC: P3B0405 & P3B0406 116
4.2.8 Removal and installation 118
4.2.8.1 Check the fluid level of hybrid transmission 118
4.2.8.2 Replacing hybrid transmission fluid.....119
4.2.8.3 Removal and installation of oil cooler assembly 121
4.2.8.4 Removal and installation of oil cooling pipe assembly.....122
4.2.8.5 Removal and installation of transmission left oil seal 124
4.2.8.6 Removal and installation of transmission right oil seal 124
4.2.8.7 Removal and installation of hybrid transmission 125
4.2.8.8 Replacement of filter components of hybrid transmission.....125
4.2.8.9 Removal and installation of MCU/GCU (integrated dual motor controller).....127
4.3 Electronic Gearshift Mechanism Assembly.....132
4.3.1 Specification 132
4.3.1.1 Fastener specifications.....132
4.3.2 Component position..... 133
4.3.2.1 Component position 133
4.3.3 Electrical schematic diagram..... 134
4.3.3.1 Electrical schematic diagram.....134
4.3.4 Diagnosis information and steps..... 135
4.3.4.1 Diagnostic instructions 135
4.3.4.2 Visual inspection 135
4.3.4.3 ECU terminal.....135
4.3.4.4 Active test.....136
4.3.4.5 Data list 136
4.3.4.6 DTC list.....137
4.3.4.7 DTC: B111716, B111717.....138
4.3.4.8 DTC: U007488.....141
4.3.4.9 DTC: U029387.....145
4.3.4.10 DTC: U014087.....148
4.3.4.11 DTC: U012287.....150
4.3.4.12 DTC: U010087.....154
4.3.4.13 DTC: P1C1C01 & P1C1C02.....159
4.3.4.14 DTC: P1C1C03 161
4.3.5 Removal and installation 163
4.3.5.1 Removal and installation of gearshift control mechanism assembly 163

4.1 Warnings and notes

4.1.1 Warnings and notes

4.1.1.1 Warnings and notes

Warnings for road test

Warning!

Carry out road test on the premise of ensuring safety and observe all traffic regulations. Do not try any operation that may endanger vehicle control. Violation of the above safety instructions will cause serious personal injury and damage to the vehicle.

Precautions for lifting

Warning!

When the engine is lifted or supported for any reason, do not place the jack underneath the oil pan or crankshaft belt pulley. Improper lifting of the engine or the transmission will cause damage to the components.

Caution about Fasteners

Warning!

Please use proper fasteners in proper positions, and ensure that the part No. of the fastener for replacement is correct. Unless otherwise stated, do not apply paint, lubricating oil or corrosion inhibitor to the fastener or the joint surface of fastener as such application may affect the torque and clamping force of the fastener and damage the fastener. During fastener installation, please employ correct tightening sequence and tightening torque to avoid damage to the parts.

Warnings about Moving Components and Hot Surface

Warning!

When working around the engine in service, avoid contacting moving components and hot surface to avoid personal injury.

4.1.1.2 Warnings for operations related to HV electric control system

Warning!

The vehicle is a hybrid power system and is equipped with 393.1V HV power battery.

Be sure to operate the system correctly according to the instructions in this Manual. Otherwise, serious injury or electrocution may be caused.

Do not touch any HV cable and HV component. If necessary, follow the instructions below:

- Do wear HV protective articles such as: HV insulated gloves, insulated shoes and special insulated tools for HV operation.
- During the use of the vehicle, the HV system may be in a state of high voltage and high temperature. Please follow the warning sign instructions to avoid high voltage and high temperature injury.
- Insulate the removed cable with insulating tapes.

When the HV system is repaired, the following precautions must be noted to prevent possible personal injuries:

Turn off all the electrical appliances and turn off the Start switch.

Disconnect the 12V battery negative terminal.

During operation of the HV system, HV protective articles such as HV insulated gloves, insulated shoes and special tools for HV insulation must be worn.

HV electricians shall ensure that the power supply is cut off and wait for 10min before operation.

Relevant HV electricians shall be consulted in case of any doubt. Before performing any operation of the HV system and repairing the vehicle body, HV electricians must cut off the power supply of the system.

If the power supply of the HV system cannot be cut off, only professional electricians can carry out the maintenance.

Notes for inspection and repair of HV circuit:

Technicians must be professionally trained before they can repair and inspect HV systems.

The "Warning: High Voltage! Do Not Touch" sign shall be used to inform other technicians of that the HV system is being inspected or repaired.

All HV harnesses and connectors shall be orange. Power battery and other HV parts are provided with "High Voltage" warning labels. Please do not touch these harnesses or parts without permission.

Do not lean your body or put the tools against any HV circuit and its components. Never use any cutting-formed and sharp tools near HV components and circuits.

Do not use any power supply, such as those for fusion welding, brazing, thermal bonding and operations with hot air, near HV components and circuits.

Do not seriously twist or bend the HV circuits. In case of any abnormality or doubt, consult the HV electrician or professional electrician.

No attempt shall be made to repair any harness or connector if such harness or connector of the HV circuit is faulty. Please directly replace the damaged or faulty HV cable or connector.

The one wearing an artificial cardiopulmonary aid is not allowed to work on vehicles equipped with HV systems. Artificial cardiopulmonary aids include built-in analgesic pump, implantable defibrillator, cardiac pacemaker, insulin pump, hearing-aid, etc.

4.1.1.3 Preparations for operations related to HV electric control system

Personal preparations:

- •Before operation of the HV system, do wear HV protective articles such as HV insulated gloves, insulated shoes, etc.
- Do not carry metal articles during operation.
- Confirm breakage before using 1000V durable insulated gloves.

Site inspections:

- Put a triangular warning sign "warning: high voltage, do not touch" in a visible position (such as vehicle roof) to warn other personnel.
- Before parking the vehicle to be repaired in the repair work area, make sure that there is no water on the ground, and do not operate in humid environment.
- Make sure that the work area is equipped with carbon dioxide fire extinguishers.

Preparation of maintenance tools:

- Use special insulated tools for HV operation or the tools with insulation treatment.

Cutting off power supply of HV system:

- Turn off all the electrical appliances and turn off the Start switch.
- Disconnect the 12V battery negative terminal.

4.2 Hybrid transmission

4.2.1 Specification

4.2.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Hybrid transmission and oil cooling pipe	Hexagon head flange bolt M6×25×1.0	8±1
Hybrid transmission filler bolt	Bolt	37±2
Hybrid transmission filler cover	Supplier's bolts	22±3
Hybrid transmission observation port plug	Hexagon socket plug and gasket	50±3
Hybrid transmission oil drain plug	Hexagon socket plug and gasket	50±3
Connecting bolt of hybrid transmission and engine	Hexagon head flange bolt M12×1.25	100±5
Connecting the oil cooler with the radiator	Hexagon head flange bolt M6×16	6±1
Motor electronic control connection window	Inner hexagon bolt	2±0.1
Motor electronic control three-phase copper bar	Hexagon head flange bolt	11±2
Connection between MCU/GCU (integrated dual motor controller) and transmission	Hexagon flange bolt	50±3
Filter lock bolt	Inner hexagon bolt	6±1

4.2.1.2 Basic parameters

Transmission parameters

Transmission	Each gear ratio	Engine drive	3.17
		Driven by drive motor	11.7
	Speed ratio of final drive	3.86	

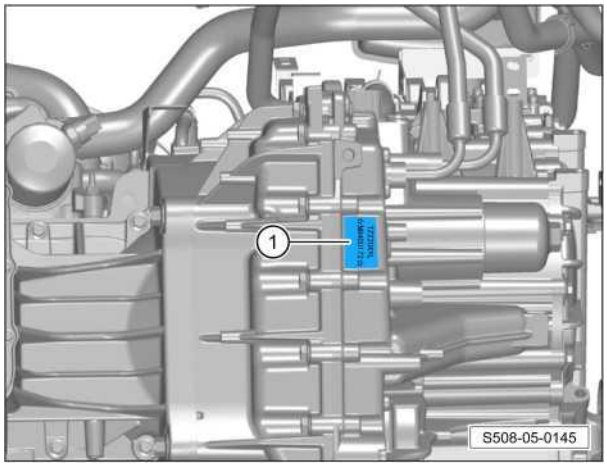
Transmission fluid

Model	EHSF-1	
Filling quantity (L)	First filling	3.6±0.1L
	After-sales injection	3.0±0.1L

Motor parameters

Item			Specification
Permanent magnet synchronous motor	Rated voltage	V	350
	Maximum speed	r/min	16000
	Rated power	kw	55
	Peak power	kw	130
	Peak torque	N·m	300
	Rated torque	N·m	105

4.2.1.3 Motor identification



– At the bottom of hybrid transmission: motor identification ①.

4.2.2 System description

4.2.2.1 System description

Hybrid transmission

The hybrid transmission mainly consists of the alternator, motor, intermediate shaft gear, reduction gear, differential gear mechanism, oil pump, electro-hydraulic module and clutch.

The total length of the hybrid transmission is shortened in case of the parallel shaft arrangement of the drivetrain of the alternator and the motor. The noise is reduced when the gear tooth surface is machined with high precision, and the oil stirring loss is reduced when the splash lubrication and active lubrication are combined, thereby improving the fuel economy of the complete vehicle.

The drive motor and alternator of the hybrid transmission transmit power through the parallel shaft gear device, to enable the complete vehicle to output smoothly.

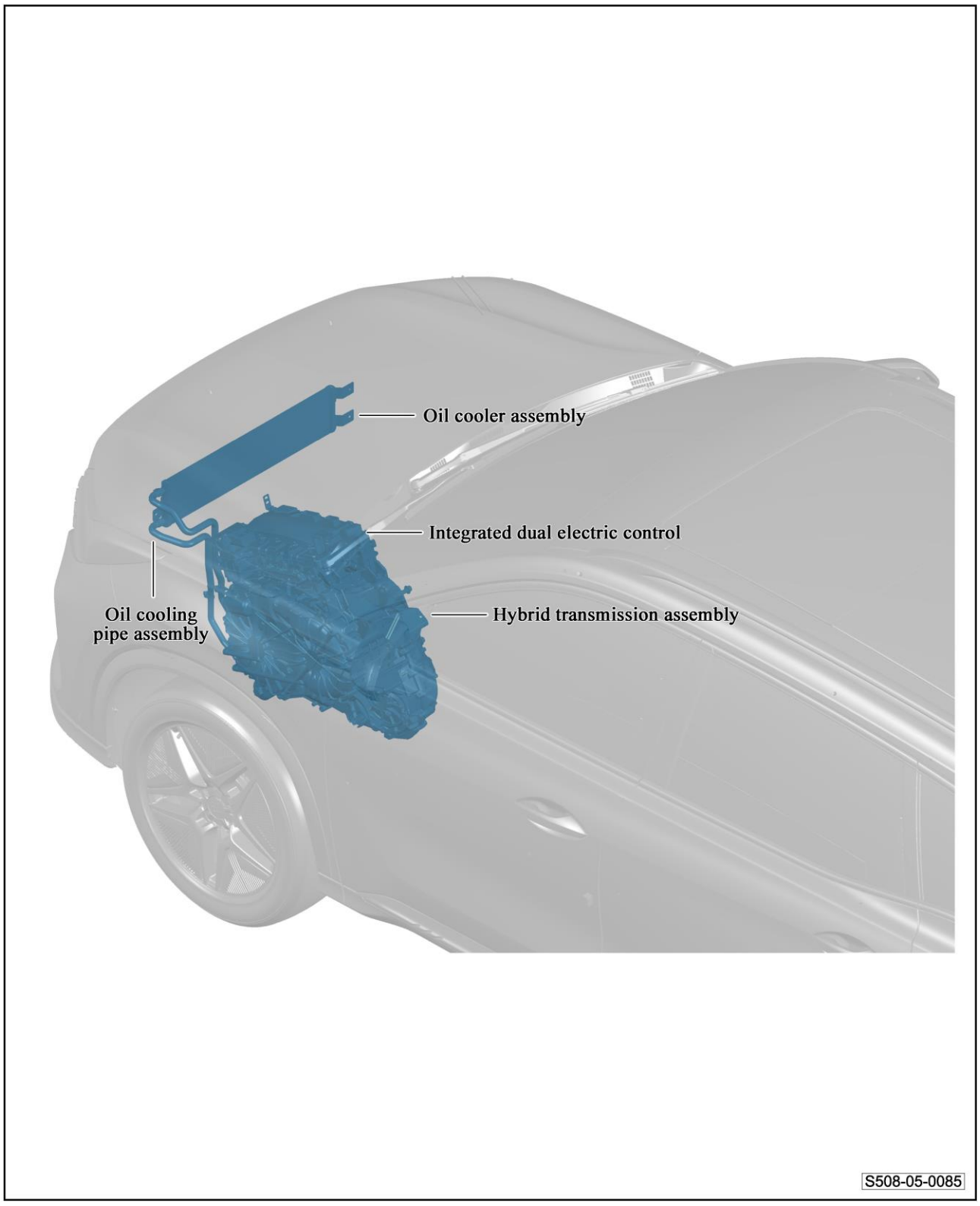
Cooling system

Cooling System Description

The cooling system of hybrid transmission consists of two motors, transmission, oil cooling pipe, temperature sensor, oil cooler, electronic fan, etc.

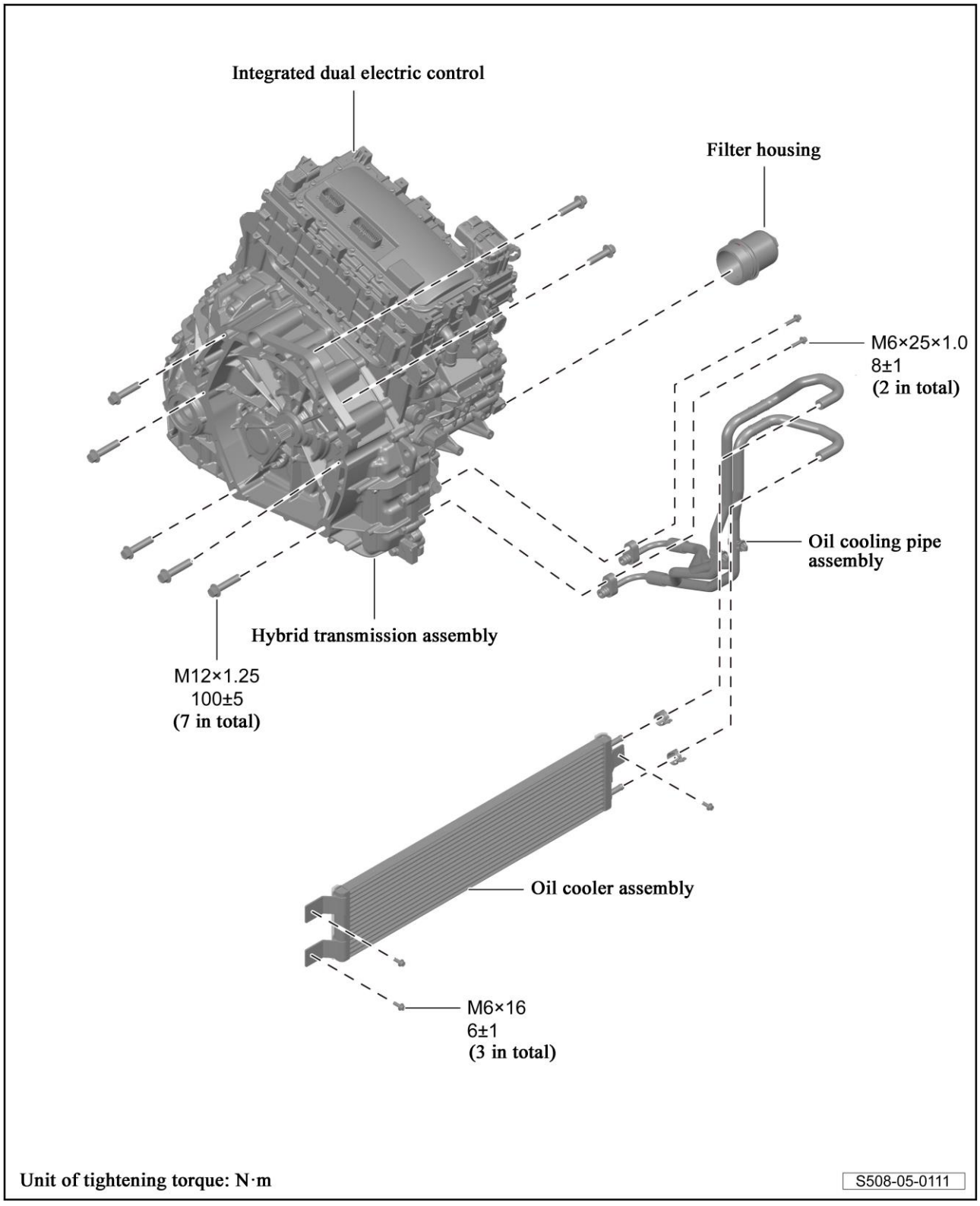
4.2.3 Component position

4.2.3.1 Component position



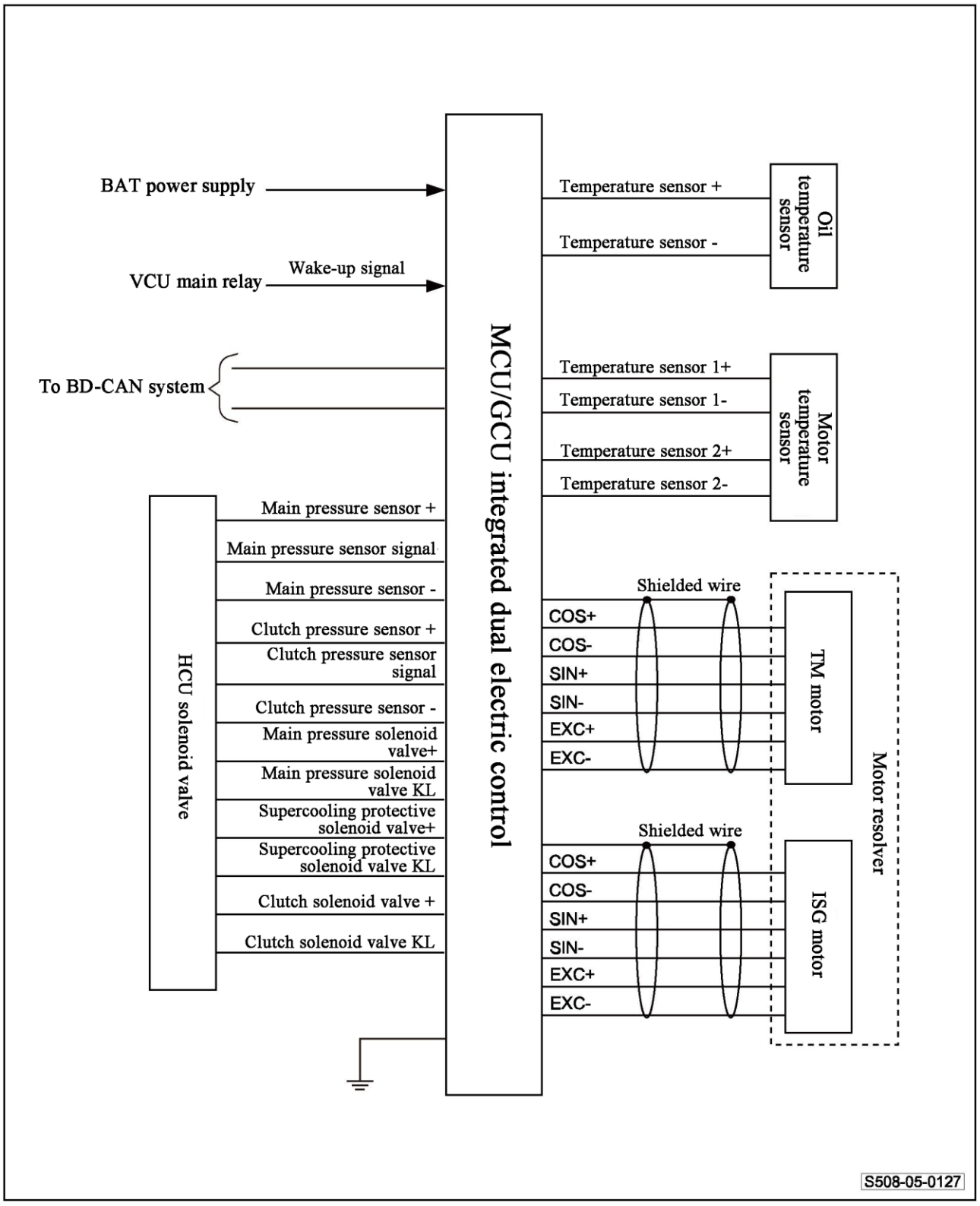
4.2.4 Exploded view

4.2.4.1 Exploded view



4.2.5 Electrical schematic diagram

4.2.5.1 Electrical schematic diagram



4.2.6 Diagnosis information and steps (GCU)

4.2.6.1 Diagnostic instructions

With a diagnostic scanner, DTC can be read via the OBD diagnosis interface of the vehicle. Based on the GCU data sheet, the switch and sensor values can be obtained by reading the data sheet displayed on the diagnostic scanner without removing any parts. Reading the data list is the first step in troubleshooting, and one of the methods to reduce the diagnosis time.

4.2.6.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

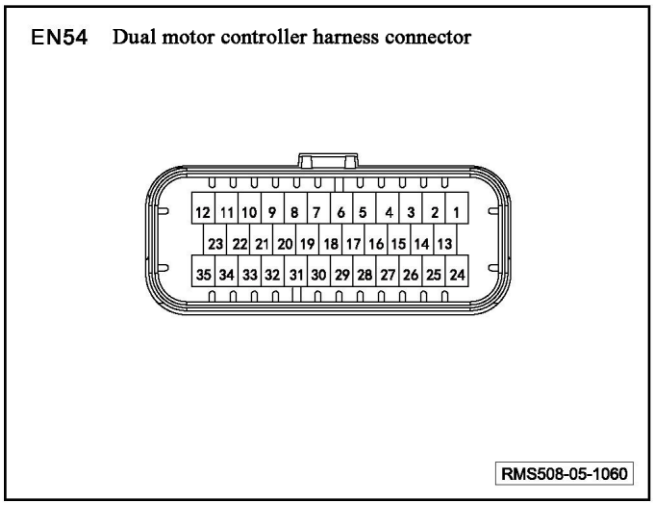
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

4.2.6.3 ECU terminal

Dual-motor controller harness connector (EN54)

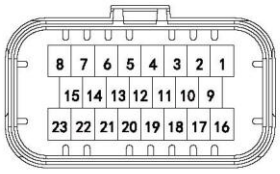


Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
1	0.5/white	Generation ISG excitation -	–	–
2	0.5/red	Generation ISG excitation +	–	–
3	0.5/green	Generation ISG sine +	–	–
4	0.5/yellow	Generation ISG sine -	–	–
5	0.5/blue	Generation ISG cosine -	–	–

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
6	0.5/brown	Generation ISG cosine +	–	–
8	0.5/white	Clutch pressure sensor -	–	–
9	0.5/yellow-black	Main pressure sensor -	–	–
10	0.5/pink-white	Main pressure solenoid valve+	–	–
11	0.5/light black	Supercooling protective solenoid valve+	–	–
13	0.5/white-red	ISG winding temperature +	–	–
14	0.5/white-green	Main drive motor winding temperature +	–	–
15	0.5/blue-white	Main drive cosine +	–	–
16	0.5/blue-orange	Main drive sine -	–	–
17	0.5/yellow-green	Main drive excitation +	–	–
18	0.5/black	Main drive resolver shielding ground	–	–
19	0.5/yellow-green	Clutch pressure sensor +	–	–
20	0.5/yellow-white	Main pressure sensor +	–	–
21	0.5/yellow-white	Oil temperature sensor ground	–	–
22	0.5/yellow-gray	Clutch pressure solenoid valve +	–	–
23	0.5/white-brown	Clutch pressure solenoid valve control	–	–
24	0.5/blue-brown	ISG winding temperature -	–	–
25	0.5/black	ISG resolver shielding ground	–	–
26	0.5/black-brown	Drive motor winding temperature -	–	–
27	0.5/yellow-blue	Main drive cosine -	–	–
28	0.5/yellow-orange	Main drive sine +	–	–
29	0.5/gray	Main drive excitation -	–	–
30	0.5/green-yellow	Clutch pressure sensor signal	–	–
31	0.5/yellow	Main pressure sensor signal	–	–
32	0.5/orange-blue	Oil temperature sensor	–	–
34	0.5/white-pink	Main pressure solenoid valve control	–	–
35	0.5/gray-yellow	Supercooling protection solenoid valve control	–	–

Dual-motor controller harness connector (EN55)

EN55 Dual motor controller harness connector



RMS508-05-1061

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
1	0.5/red	MCU constant power	The start switch is put to any position	Battery voltage
9	0.5/red	MCU constant power	The start switch is turned to any position	Battery voltage
			location	
10	0.5/black	Ground	–	0V
12	0.5/blue	Wake-up	–	–
16	0.5/red	MCU constant power	The start switch is put to any position	Battery voltage
17	0.5/black	Ground	–	0V
18	0.5/black	Ground	–	0V
22	0.5/brown	BD CAN-H	–	–
23	0.5/brown-white	BD CAN-L	–	–

4.2.6.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading	-	0	65535	-

	succeeded				
0B00	MCU fault grade	MCU fault level	0	3	-
0B01	Actual speed of motor	Motor speed	-17000	17000	RPM
0B02	Actual motor torque	Motor torque	-500	500	NM
0B03	HV	HV	0	1024	V
0B04	Motor temperature	Motor temperature	-48	206	°C
0B05	Frequency converter temperature	Frequency converter temperature	-48	206	°C
0B06	Target motor torque	Motor torque	-500	500	NM
0B07	Motor on/off status	MCUF PWM open	0	1	-
0B08	Controller start permitted	MCUF permitted PwmOpen	0	1	-
0B09	Controller radiator temperature	Radiator temperature	-48	206	°C
0B0A	Effective value of U-phase AC current	Effective value of U-phase AC current	0	512	A
0B0B	Effective value of V-phase AC current	Effective value of V-phase AC current	0	512	A
0B0C	Effective value of W-phase AC current	Effective value of W-phase AC current	0	512	A
0B0D	Active discharging status	Discharging status	0	3	-
0B0E	12V working voltage	12V voltage value	3	28.5	V
0B0F	Target current of clutch valve	Clutch current RxPhaVRms	0	512	A
0B10	Feedback current of clutch valve	Clutch current RxPhaVRms	0	512	A
0B11	Current at DC end of GCU	GCU bus current	-1000	1000	A

4.2.6.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
P3C8101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
P3C8102	EEPROM fault	Alarm	EE chip fault	Check whether the EE chip does not work normally.
U011187	Lost communication with BMS	Alarm	Troubleshoot the CAN communication module	1. Check the CAN connection of the complete vehicle and

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
				whether the CAN communication module works normally. 2. Check whether the node messages are sent normally.
P3C8103	12V overvoltage	Alarm	1. The battery power supply works abnormally. 2. Abnormal battery detection circuit	1. Check the voltage of LV battery 2. Check whether the low-voltage battery cable does not work normally.
P3C8104	12V undervoltage	Alarm	1. The battery power supply works abnormally. 2. Abnormal battery detection circuit	1. Check the voltage of LV battery 2. Check whether the low-voltage battery cable does not work normally.
P3C8201	The temperature signal of alternator is open-circuited.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The motor temperature sensor fails. 2. The harness related to the sensor is damaged or the connector is withdrawn. 3. The sampling circuit of the controller fails.	1. Check whether the temperature sensor is short-circuited. 2. Check whether the sensor itself does not work normally. 3. Check whether the sampling function of the controller works normally.
P3C8202	The temperature signal of alternator is short-circuited to ground.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The motor temperature sensor fails. 2. The harness related to the sensor is damaged or the connector is short-circuited. 3. The sampling circuit of the controller fails.	1. Check whether the temperature sensor is short-circuited. 2. Check whether the sensor itself does not work normally. 3. Check whether the sampling function of the controller works normally.
P3C8203	The temperature signal of radiator is short-circuited.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The sensor itself does not work normally. 2. The signal line has the contact problem.	1. Check whether the sensor works normally. 2. Check whether the signal wire is normal
P3C8204	The temperature signal of IGBT is open-circuited.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The sensor itself does not work normally. 2. The signal line has the contact problem.	1. Check whether the sensor works normally. 2. Check whether the signal wire is normal
P3C8301	Torque reduction in	Torque limit,	1. Abnormal coolant	1. Check whether the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
	case of motor over-temperature	linear, 125°C-100%; 140°C-0%	pipeline 2. Abnormal water pump 3. Overload operation 4. Abnormal temperature detection	VCU torque demand command is normal. 2. Check whether the cooling system works normally. 3. Check whether the motor temperature sensor resistance is normal 4. Check whether the temperature detection function of MCU works normally.
P3C8302	Torque reduction in case of IGBT over-temperature	Torque limit, linear, 80°C-100%; 90°C-0%	1. The cooling system of controller does not work normally. 2. The temperature detection function of the controller does not work normally.	1. Check the value of demand torque of VCU 2. Check whether the cooling system works normally 3. Check whether the temperature detection function of MCU works normally.
P3C8303	Torque reduction in case of IGBT junction temperature	Torque limit, linear, 125°C-100%; 135°C-0%	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Abnormal temperature detection	1. Check whether the cooling system works normally 2. Check whether the temperature detection function works normally.
P3C8304	Torque reduction in case of radiator over-temperature	Torque limit, linear, 70°C-100%; 80°C-0%	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Abnormal temperature detection	1. Check whether the cooling system works normally 2. Check whether the temperature detection function works normally.
P3C8305	DC bus overvoltage drop torque	Torque limit, linear, 495V-100%; 510V-0% (TBD)	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3C8306	DC bus undervoltage drop torque	Torque limit, linear, 240V-100%; 220V-0%	1. The power battery voltage is too low 2. Bus voltage oscillation 3. Abnormal voltage	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
			detection	
P3C8307	Power reduction in case of motor overspeed	Torque limit, linear, 15,000rpm-100%; 15,500rpm-0%	1. The motor body fails abnormally. 2. There is an abnormal control as MCU does not work normally.	1. Check whether the motor resolver works normally. 2. Check whether the resolver sampling circuit and chip of the controller work normally.
P3C8401	Radiator Over-temperature fault	Torque clearing	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Abnormal temperature detection	1. Check whether the cooling system works normally 2. Check whether the temperature detection function works normally.
P3C8402	IGBT overtemperature fault	Torque clearing	1. The cooling system of controller does not work normally. 2. The temperature detection function of the controller does not work normally.	1. Check the value of demand torque of VCU 2. Check whether the cooling system works normally 3. Check whether the temperature detection function of MCU works normally.
P3C8403	Motor overtemperature fault	Torque clearing	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Overload operation 4. Abnormal temperature detection	1. Check whether the VCU torque demand command is normal. 2. Check whether the cooling system works normally. 3. Check whether the motor temperature sensor resistance is normal 4. Check whether the temperature detection function of MCU works normally.
P3C8404	Torque command error	Torque clearing	1. The VCU torque command is abnormal. 2. There is an abnormality in handling the torque of MCU.	1. Check the VCU torque command and switching wave command 2. Check the application of MCU torque
U029387	Lost communication with VCU	Torque clearing	Troubleshoot the CAN communication module	1. Check the CAN connection of the complete vehicle and whether the CAN communication module works normally. 2. Check whether the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
				node messages are sent normally.
P3C8405	BUS OFF fault	Torque clearing	Troubleshoot the CAN communication module	1. Check whether CAN-H is short-circuited to CAN-L. 2. Check whether CAN-H is short-circuited to ground. 3. Check whether CAN-L is short-circuited to power.
P3C8406	Communication fault	Torque clearing	Troubleshoot the CAN communication module	1. Check the CAN connection of VCU and whether the CAN communication module works normally. 2. Check whether the CAN module of MCU works normally.
P3C8407	DC bus overvoltage	Shutdown	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3C8408	DC bus undervoltage	Shutdown	1. The power battery voltage is too low 2. Bus voltage oscillation 3. Abnormal voltage detection	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.
P3C8409	Software overcurrent fault	Shutdown	1. Overload operation 2. Abnormal current detection	1. Check the running condition of the complete vehicle 2. Check the implementation of VCU command
P3C8410	Hardware overcurrent fault	Shutdown	1. Overload operation 2. Abnormal current detection	1. Check the running condition of the complete vehicle 2. Check the implementation of VCU command

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
P3C8411	Hardware overvoltage fault	Shutdown	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3C8412	IGBT upper bridge arm fault	Shutdown	1. The chip of upper axle does not work normally. 2. Abnormal upper bridge drive power supply 3. The level of the error reporting pin is seriously interfered.	1. Check whether the drive chip is powered on normally. 2. Check whether the drive chip functions normally.
P3C8413	IGBT lower bridge arm fault	Shutdown	1. The chip of lower axle does not work normally. 2. Abnormal lower bridge drive power supply 3. The level of the error reporting pin is seriously interfered.	1. Check whether the drive chip is powered on normally. 2. Check whether the drive chip functions normally.
P3C8414	Hall current sensor null drift fault	Shutdown	1. Hall anomaly 2. Abnormal current sampling circuit 3. The Hall harness is damaged or does not work normally.	Check whether the low-voltage harness of the controller is loose or damaged.
P3C8415	Resolver fault	Shutdown	1. The resolver sensor does not work normally. 2. There is a problem with wiring. 3. There is a problem with control board.	1. Check the resolver signal 2. Check the wiring 3. Check the control board
P3C8416	Serious overspeed fault	Shutdown	1. The motor body fails abnormally. 2. There is an abnormal control as MCU does not work normally.	1. Check whether the motor resolver works normally. 2. Check whether the resolver sampling circuit and chip of the controller work normally.

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
P3C8501	Phase loss fault	Shutdown	1. The controller or three-phase circuit of motor does not work normally. 2. Abnormal current detection	1. Check whether the motor is damaged 2. Check whether the three-phase cable is damaged or poorly contacted. 3. Check whether the Hall function of the controller works normally.
P3C8502	Serious overvoltage	Shutdown	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3C8503	Serious overcurrent	Shutdown	1. Overload operation 2. Abnormal current detection	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.
P3C8601	Serious fault of upper axle arm	Shutdown	1. The chip of upper axle does not work normally. 2. Abnormal upper bridge drive power supply 3. The level of the error reporting pin is seriously interfered.	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.
P3C8602	Serious fault of lower axle arm	Shutdown	1. The chip of lower axle does not work normally. 2. Abnormal lower bridge drive power supply 3. The level of the error reporting pin is seriously interfered.	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.
P3C8603	Estop fault	Shutdown	There is an Estop fault.	1. Check whether the Estop signal is normal. 2. Check whether the CAN signal is normal
P3C8171	Clutch valve circuit	Level 1 fault,	Check the valve control	1. Check whether the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
	fault	parallel connection prohibited	circuit	clutch valve is short-circuited to power supply and ground. 2. Check whether the clutch valve is short-circuited to power. 3. Check whether the clutch valve is short-circuited to ground. 4. Check whether the clutch valve is open-circuited.
P3C8172	Fault of circuit of main pressure valve	Level 1 fault, parallel connection prohibited	Check the valve control circuit	1. Check whether the main pressure valve is short-circuited to power supply and ground. 2. Check whether the main pressure valve is short-circuited to power. 3. Check whether the main pressure valve is short-circuited to ground. 4. Check whether the main pressure valve is open-circuited.
P3C8173	Fault of circuit of supercooling protection solenoid valve	Record the DTC, level 1 fault, parallel connection allowed	Check the valve control circuit	1. Check whether the supercooling protection valve is short-circuited to power supply and ground. 2. Check whether the supercooling protection valve is short-circuited to power. 3. Check whether the supercooling protection valve is short-circuited to ground. 4. Check whether the supercooling protection valve is open-circuited.
P3C8174	Clutch pressure sensor fault	Level 1 fault, clutch pressure sensor fault, parallel connection prohibited	Check the status of sensor and circuit	1. Check whether the sensor is short-circuited to power. 2. Check whether the sensor is short- or open-circuited to power or ground. 3. Check whether the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
				sensor is damaged
P3C8175	Fault of main circuit pressure sensor	The main pressure sensor becomes faulty, and records the DTC only.	Check the status of sensor and circuit	1. Check whether the sensor is short-circuited to power. 2. Check whether the sensor is short- or open-circuited to power or ground. 3. Check whether the sensor is damaged
P3C8176	Oil temperature sensor fault	Record the DTC, (≠0) level 1 fault, parallel connection allowed	Check the status of sensor and circuit	1. Check whether the sensor is short-circuited to power. 2. Check whether the sensor is short- or open-circuited to power or ground. 3. Check whether the sensor is damaged
P3C8177	Fault of clutch valve function - opening failure	Value of 1-When it cannot be opened, it is a level 1 fault and parallel connection is prohibited.	Fault of clutch valve hardware	Repair or replace the clutch valve body
P3C8181	Fault of clutch valve function - closure failure	Value of 2-When it cannot be closed, it is a level 3 fault and HEV is prohibited.	Fault of clutch valve hardware	Repair or replace the clutch valve body
P3C8178	Fault of main pressure valve function - opening failure	Value of 1-When it cannot be opened, it is a level 1 fault and parallel connection is prohibited.	1. The hardware of main pressure valve becomes faulty. 2. Hydraulic circuit leakage 3. Abnormal oil pump	1. Replace the main pressure valve 2. Check the hydraulic system 3. Check the oil pump body
P3C8179	Fault of main pressure valve function - closure failure	Value of 2-When it cannot be closed, it is a level 1 fault and record the DTC.	1. The hardware of main pressure valve becomes faulty. 2. Hydraulic circuit leakage 3. Abnormal oil pump	1. Replace the main pressure valve 2. Check the hydraulic system 3. Check the oil pump body
P3C8180	Fault status of clutch system - engagement failure	Value of 1-When it cannot be engaged, it is a level 1 fault and	Check whether one of the fault confirmation conditions is met.	-

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
		parallel connection is prohibited.		
P3C8182	Fault status of clutch system - separation failure	When it cannot be separated, it is a level 3 fault and HEV is prohibited.	Check whether one of the fault confirmation conditions is met.	-

4.2.6.6 DTC: P3C8101, P3C8404 ...

DTC	DTC definition
P3C8101	Active discharge fault
P3C8404	Torque command error
P3C8603	Estop fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the VCU.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the "ON" position, and read and record the DTC of VCU.

C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults of VCU.

No

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.6.7 DTC: P3C8102, P3C8414 ...

DTC	DTC definition
P3C8102	EEPROM fault
P3C8414	Hall current sensor null drift fault
P3C8204	The temperature signal of IGBT is open-circuited.
P3C8412	IGBT upper bridge arm fault
P3C8413	IGBT lower bridge arm fault
P3C8601	Serious fault of upper axle arm
P3C8602	Serious fault of lower axle arm

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

4.2.6.8 DTC: U011187

DTC	DTC definition
U011187	Lost communication with BMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

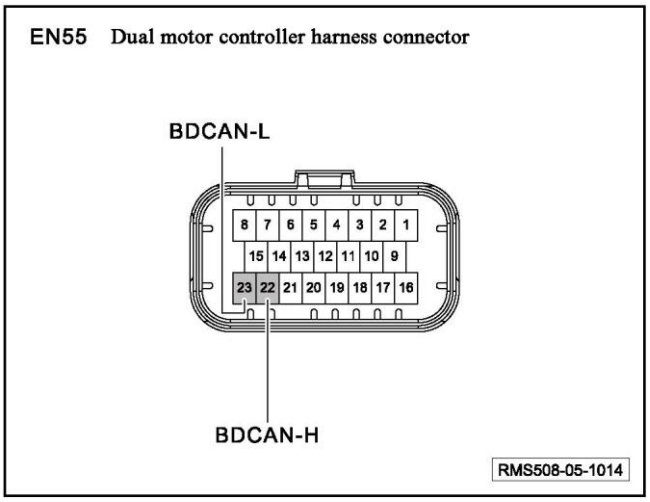
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the dual-motor controller and the battery pack assembly harness connector.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

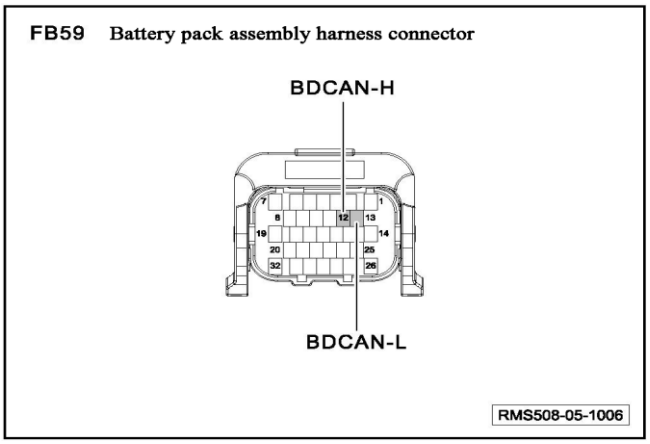
C Disconnect the battery pack assembly harness connector FB59.

D Measure the resistance between terminal 22 of the dual-motor controller harness connector EN55 and terminal 12 of the battery pack assembly harness connector FB59.

E Measure the resistance between terminal 23 of the dual-motor controller harness connector EN55 and terminal 13 of the battery pack assembly harness connector FB59.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 3	Check the power supply ground circuit of the battery pack assembly.

A Check whether the power supply ground circuit of the battery pack assembly works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.6.9 DTC: P3C8103 & P3C8104

DTC	DTC definition
P3C8103	12V overvoltage
P3C8104	12V undervoltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the fuse LF11 of the dual-motor controller.

A Turn the start switch to "OFF" position.

B Check whether the fuse LF11 is blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuit of the fuse IF11.

A Turn the start switch to "OFF" position.

B Check whether the circuit of fuse LF11 is short-circuited.

C Repair the circuit and make sure there is no short circuit.

D Replace blown fuses with fuses of rated current.

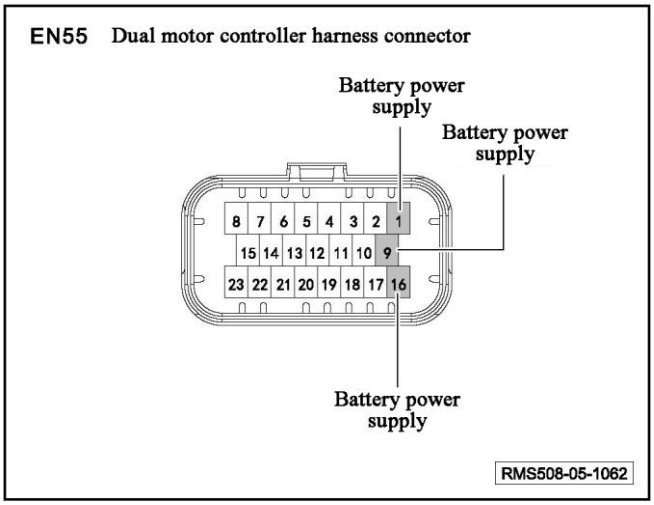
Rated value of fuse: **LF11 10A**

E Confirm whether the dual-motor controller works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of dual motor controller.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

C Put the Start switch to “ON” position.

D Measure the voltage of circuit between terminals 1, 9 and 16 of dual motor controller harness connector EN55 and body ground.

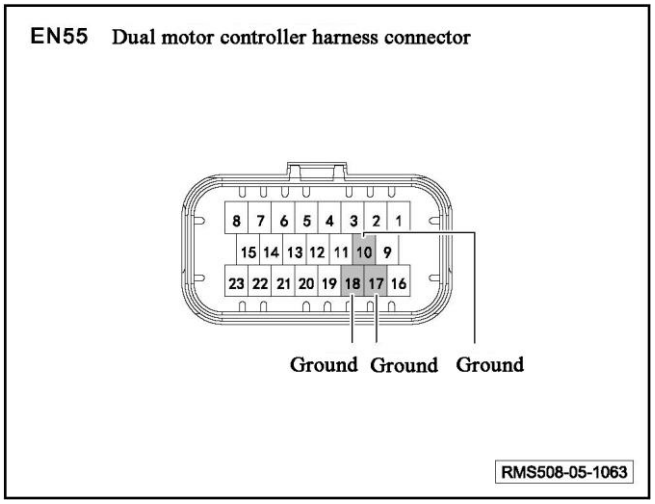
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the dual motor controller.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

C Measure the resistance of circuit between terminals 10, 17 and 18 of dual motor controller harness connector EN55 and body ground.

Standard resistance value: <1Ω

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 7	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

4.2.6.10 DTC: P3C8201 & P3C8202

DTC	DTC definition
P3C8201	The temperature signal of alternator is open-circuited.
P3C8202	The temperature signal of alternator is short-circuited to ground.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

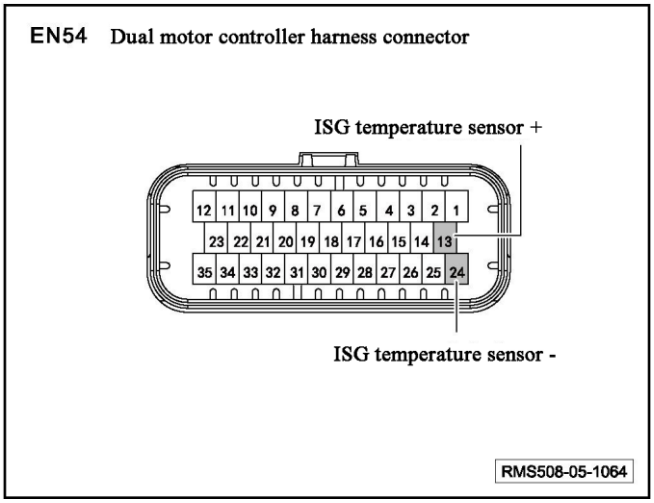
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of alternator temperature sensor is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

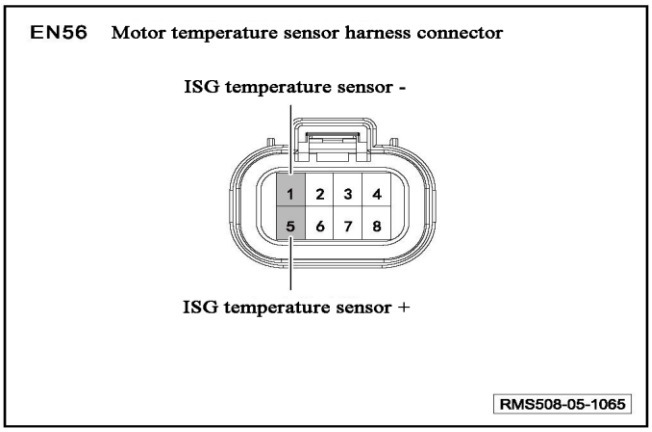
C Disconnect the motor temperature sensor harness connector EN56.

D Measure the resistance between terminal 13 of the dual-motor controller harness connector EN54 and terminal 5 of the motor temperature sensor harness connector EN56.

E Measure the resistance between terminal 24 of the dual-motor controller harness connector EN54 and terminal 1 of the motor temperature sensor harness connector EN56.

Standard resistance value: <1**Ω**

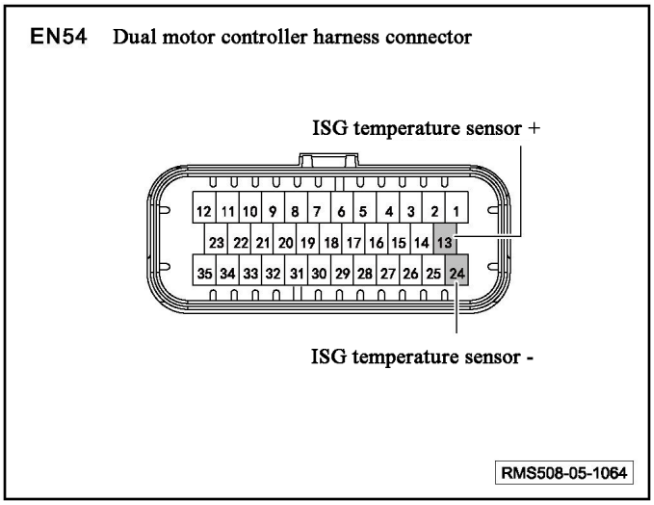
F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 3	Check whether the circuit of alternator temperature sensor is short-circuited to power.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor temperature sensor harness connector EN56.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 13 and 24 of the dual-motor controller harness connector EN54 and the body ground.

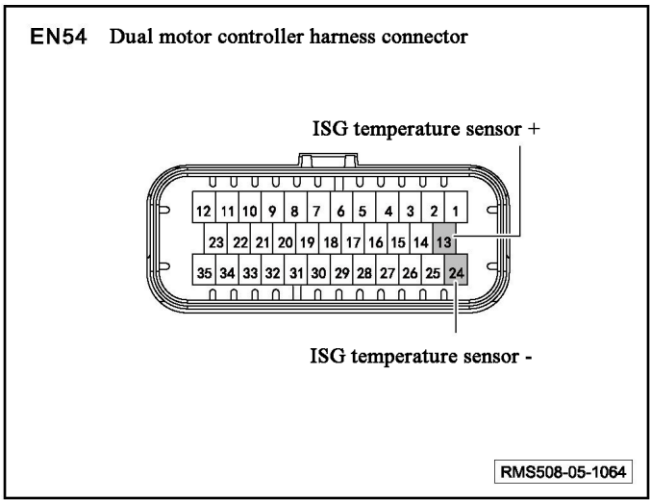
Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit of alternator temperature sensor is short-circuited to grounding.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor temperature sensor harness connector EN56.

D Measure the resistance between terminals 13 and 24 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Check the circuit between connectors of the alternator temperature sensor and the hybrid transmission housing.

A Check whether the circuit between connectors of the alternator motor temperature sensor and the hybrid transmission housing is short- or open-circuited.

Yes → Repair or replace the harness.

No

Step 6	Replace the alternator temperature sensor.

A Replace the alternator temperature sensor.

B Is the fault eliminated after replacing the alternator temperature sensor?

Yes → The system works normally.

No

Step 7	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the

integrated dual motor controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

4.2.6.11 DTC: P3C8201 & P3C8202

DTC	DTC definition
P3C8203	The temperature signal of radiator is short-circuited.
P3C8304	Torque reduction in case of radiator over-temperature
P3C8401	Radiator Over-temperature fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the coolant level of electric drive system.

A Check whether the coolant level of electric drive system is too low.

Yes → Check the pipe leakage and add or replace coolant.

No

Step 3	Check the water pump of motor.

A Check whether the motor water pump works normally.

No → Repair or replace the motor water pump.

Yes

Step 4	Check the transmission fluid.

A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

Step 5	Check the oil cooler.

A Check whether the oil cooler is dirty or blocked.

Yes → Wash or replace the oil cooler.

No

Step 6	Check the alternator temperature sensor.

A Check whether the alternator temperature sensor works normally.

No → Repair or replace the alternator temperature sensor.

Yes

Step 7	Check the oil temperature sensor.

A Check whether the oil temperature sensor works normally.

No → Repair or replace the oil temperature sensor.

Yes

Step 8	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 9	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

4.2.6.12 DTC: P3C8301 & P3C8403

DTC	DTC definition
P3C8301	Torque reduction in case of motor over-temperature
P3C8403	Motor overtemperature fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the transmission fluid.

A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

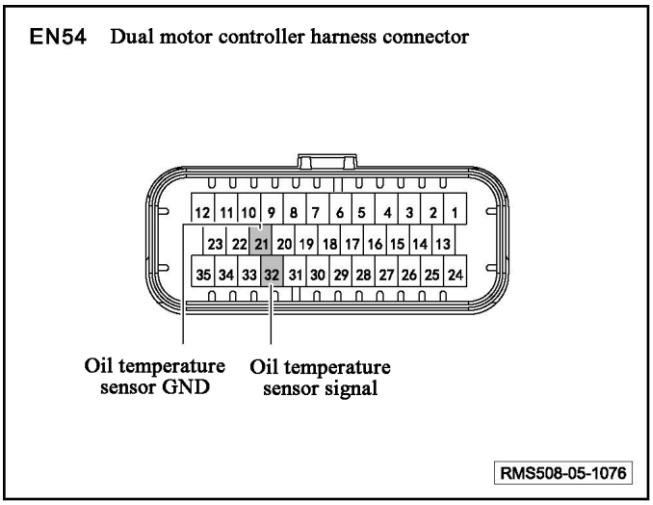
Step 3	Check the oil cooler.

A Check whether the oil cooler is dirty or blocked.

Yes → Wash or replace the oil cooler.

No

Step 4	Check whether the oil temperature sensor circuit is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

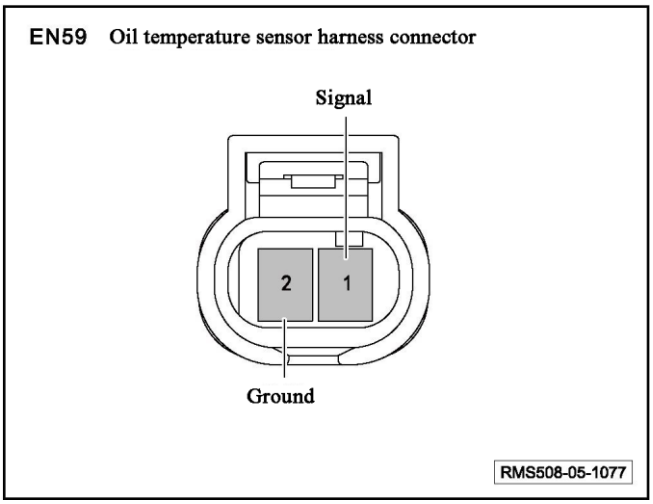
C Disconnect the oil temperature sensor harness connector EN59.

D Measure the resistance between terminal 21 of the dual-motor controller harness connector EN54 and terminal 2 of the oil temperature sensor harness connector EN59.

E Measure the resistance between terminal 32 of the dual-motor controller harness connector EN54 and terminal 1 of the oil temperature sensor harness connector EN59.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 5	Check whether the oil temperature sensor circuit is short-circuited to power supply.

A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the oil temperature sensor harness connector EN59.

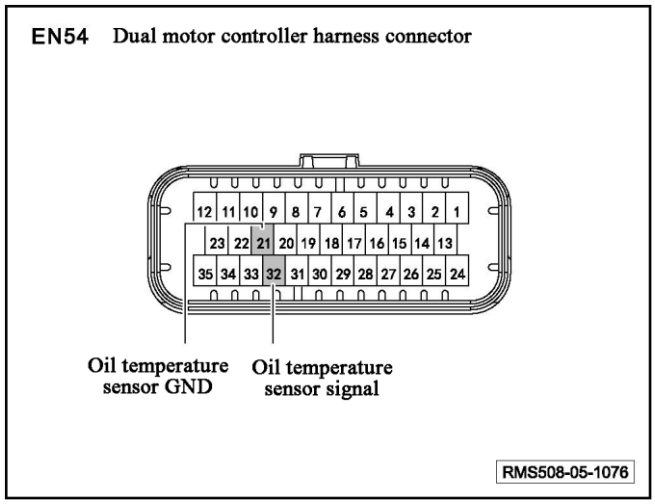
D Put the Start switch to “ON” position.

E Measure the voltage between terminals 21 and 32 of the dual-motor controller harness connector EN54 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the

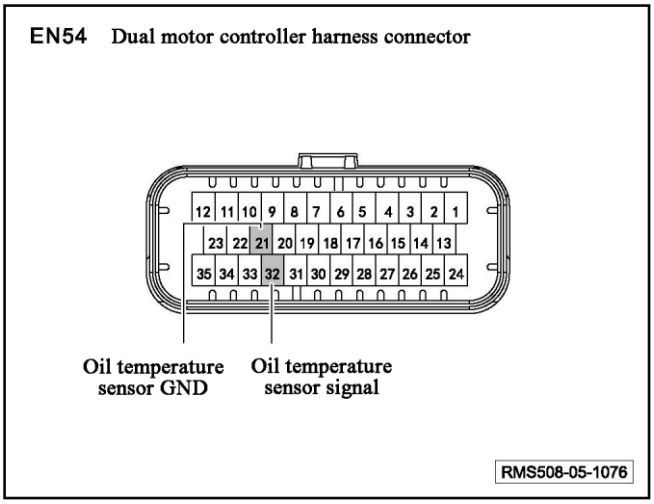
standard value.



No → Repair or replace the harness.

Yes

Step 6	Check whether the circuit of alternator temperature sensor is short-circuited to power.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the oil temperature sensor harness connector EN59.

D Measure the resistance between terminals 21 and 32 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the oil temperature sensor.

A Replace the oil temperature sensor.

B Is the fault eliminated after replacing the oil temperature sensor?

Yes → The system works normally.

No

Step 8	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 9	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

4.2.6.13 DTC: P3C8302, P3C8303 ...

DTC	DTC definition
P3C8302	Torque reduction in case of IGBT over-temperature
P3C8303	Torque reduction in case of IGBT junction temperature
P3C8402	IGBT overtemperature fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the coolant level of electric drive system.

A Check whether the coolant level of electric drive system is too low.

Yes → Check the pipe leakage and add or replace coolant.

No

Step 3	Check the water pump of motor.

A Check whether the motor water pump works normally.

No → Repair or replace the motor water pump.

Yes

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.6.14 DTC: P3C8305, P3C8306 ...

DTC	DTC definition
P3C8305	DC bus overvoltage drop torque
P3C8306	DC bus undervoltage drop torque
P3C8407	DC bus overvoltage
P3C8408	DC bus undervoltage
P3C8410	Hardware overcurrent fault
P3C8411	Hardware overvoltage fault
P3C8409	Software overcurrent fault
P3C8502	Serious overvoltage
P3C8503	Serious overcurrent

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery management system.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the "ON" position, and read and record the DTC of the battery management system.

C Check whether the same DTC is displayed.

Yes → Maintain faults related to the battery management system preferentially.

No

Step 3	Check the battery pack HV harness assembly.

A Check whether the battery pack HV harness assembly is short- or open-circuited.

B Check whether the connector of battery pack HV harness assembly is plugged abnormally.

Yes → Repair or replace the high voltage harness.

No

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.6.15 DTC: P3C8307, P3C8415 ...

DTC	DTC definition
P3C8307	Power reduction in case of motor overspeed
P3C8415	Resolver fault
P3C8416	Serious overspeed fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

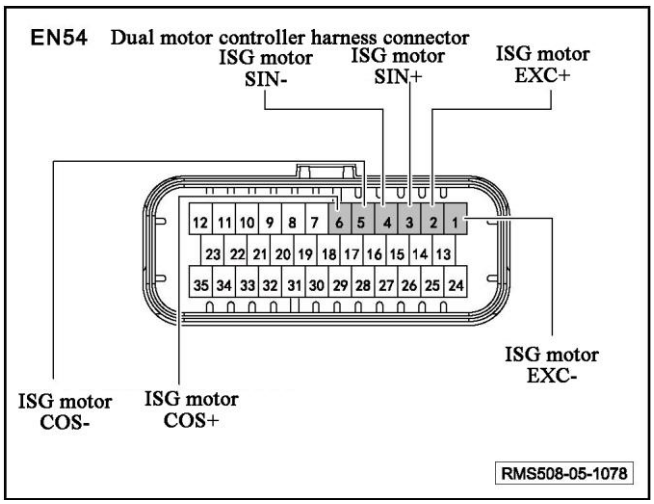
D Read the DTC again.

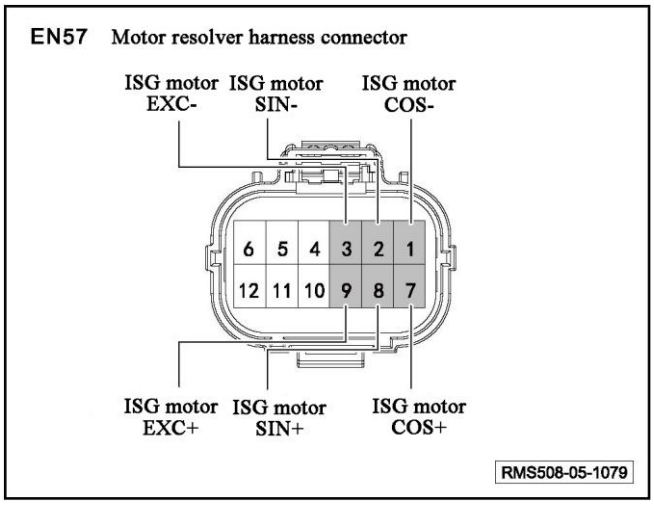
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of the motor resolver signal is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor resolver harness connector EN57.

D Measure the resistance between terminal 1 of the dual-motor controller harness connector EN54 and terminal 3 of the motor resolver harness connector EN57.

E Measure the resistance between terminal 2 of the dual-motor controller harness connector EN54 and terminal 9 of the motor resolver harness connector EN57.

F Measure the resistance between terminal 3 of the dual-motor controller harness connector EN54 and terminal 8 of the motor resolver harness connector EN57.

G Measure the resistance between terminal 4 of the dual-motor controller harness connector EN54 and terminal 2 of the motor resolver harness connector EN57.

H Measure the resistance between terminal 5 of the dual-motor controller harness connector EN54 and terminal 1 of the motor resolver harness connector EN57.

I Measure the resistance between terminal 6 of the dual-motor controller harness connector EN54 and terminal 7 of the motor resolver harness connector EN57.

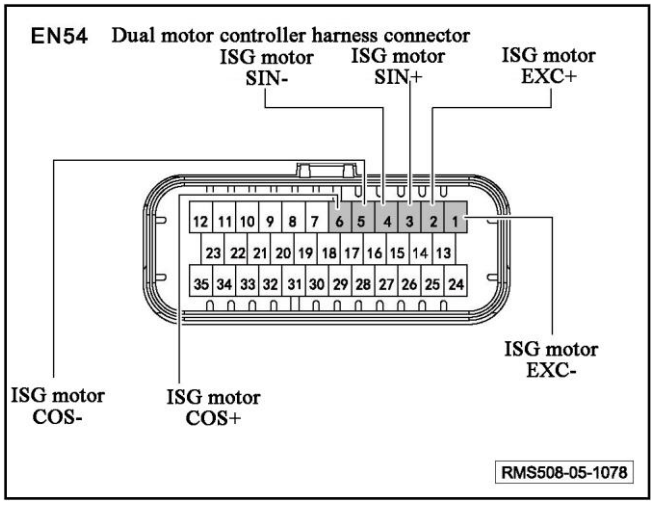
Standard resistance value: <1Ω

J Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Check whether the circuit of the motor resolver signal is short circuited to power.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor resolver harness connector EN57.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 1, 2, 3, 4, 5 and 6 of the dual-motor controller harness connector EN54 and the body ground.

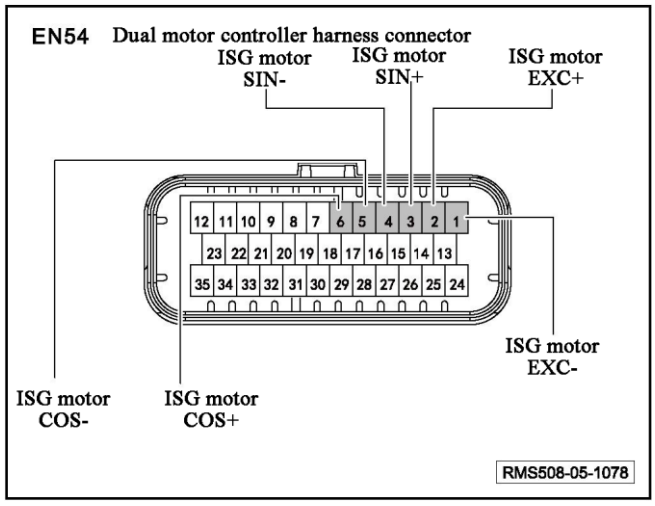
Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit of the motor resolver signal is short circuited to grounding.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor resolver harness connector EN57.

D Measure the resistance between terminals 1, 2, 3, 4, 5 and 6 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 6	Replace the hybrid transmission assembly.

A Replace the hybrid transmission assembly.

B Is the fault eliminated after replacing the hybrid transmission assembly?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

4.2.6.16 DTC: P3C8501

DTC	DTC definition
P3C8501	Phase loss fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the three-phase HV circuit of motor.

A Check the three-phase HV line of motor is normal.

No → Repair or replace the harness.

Yes

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.6.17 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

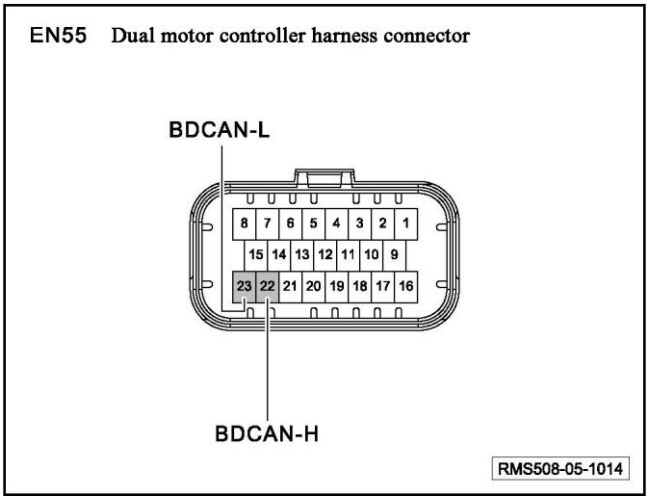
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the dual-motor controller and the VCU harness connector.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

C Disconnect the VCU harness connector FB49.

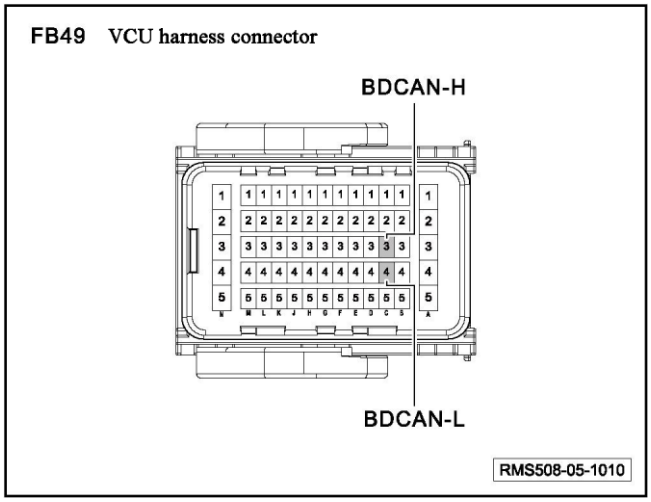
D Measure the resistance between terminal 22 of the dual-motor controller harness connector EN55 and terminal C3 of the VCU harness connector FB49.

E Measure the resistance between terminal 23 of the dual-motor controller harness connector EN55 and terminal C4 of the VCU harness connector FB49.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	→	Repair or replace the harness.



Yes

Step 3	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.6.18 DTC: P3C8405 & P3C8406

DTC	DTC definition
P3C8405	BUS OFF fault
P3C8406	Communication fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

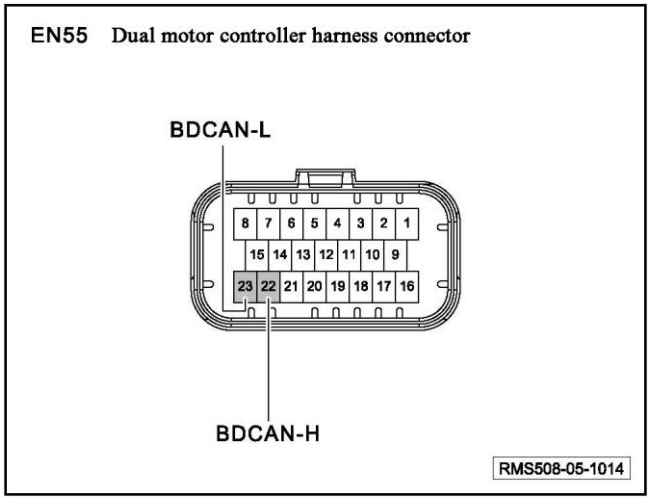
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire of the dual-motor controller.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

C Measure the resistance of circuit between terminals 22 and 23 of dual motor controller harness connector EN55.

Standard resistance value: about 120Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

4.2.6.19 DTC: P3C8171, P3C8177 ...

DTC	DTC definition
P3C8171	Clutch valve circuit fault
P3C8177	Fault of clutch valve function - opening failure
P3C8181	Fault of clutch valve function - closure failure

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the transmission fluid.

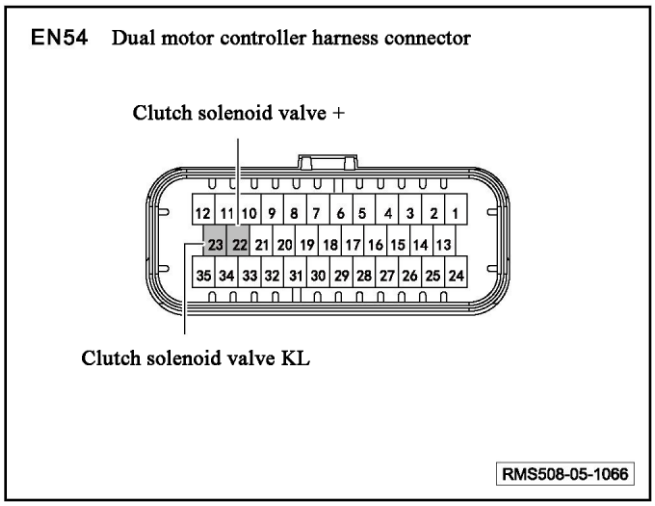
A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

Step 3	Check whether the circuit of clutch solenoid valve is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

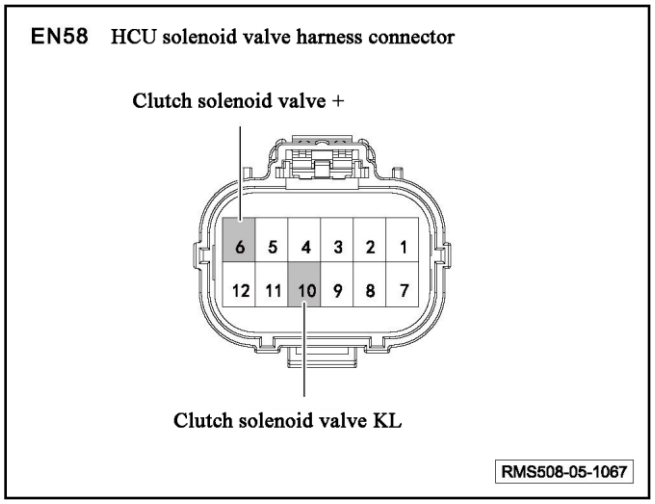
C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminal 22 of the dual-motor controller harness connector EN54 and terminal 6 of the HCU solenoid valve harness connector EN58.

E Measure the resistance between terminal 23 of the dual-motor controller harness connector EN54 and terminal 10 of the HCU solenoid valve harness connector EN58.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit of clutch solenoid valve is short-circuited to power.

A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

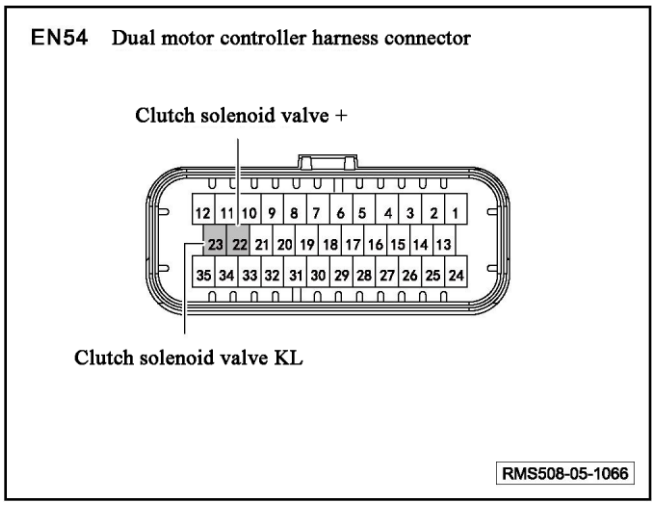
C Disconnect HCU solenoid valve harness connector EN58.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 22 and 23 of the dual-motor controller harness connector EN54 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the

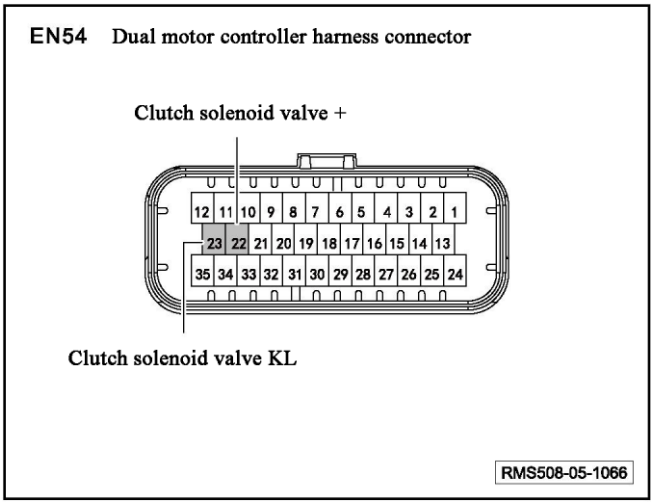


standard value.

No → Repair or replace the harness.

Yes

Step 5	Check whether the circuit of clutch solenoid valve is short-circuited to grounding.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminals 22 and 23 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 6	Replace the HCU solenoid valve.

A Replace the HCU solenoid valve.

B Is the fault eliminated after replacing the HCU solenoid valve?

Yes	The system works normally.

No

Step 7	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

4.2.6.20 DTC: P3C8172, P3C8178 ...

DTC	DTC definition
P3C8172	Fault of circuit of main pressure valve
P3C8178	Fault of main pressure valve function - opening failure
P3C8179	Fault of main pressure valve function - closure failure

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the transmission fluid.

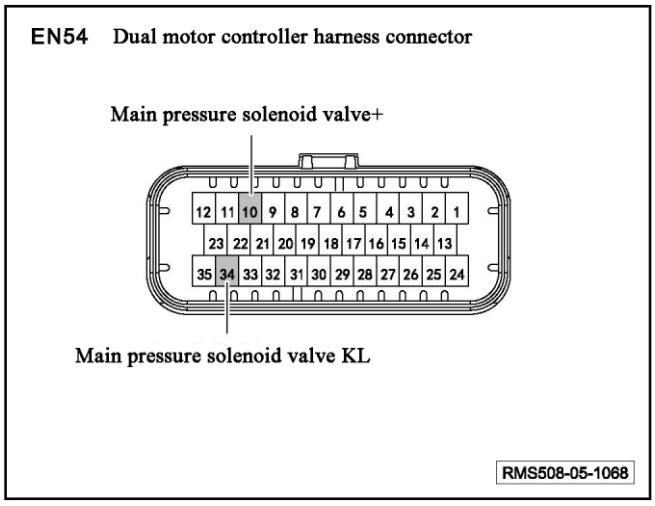
A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

Step 3	Check whether the circuit of main pressure solenoid valve is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

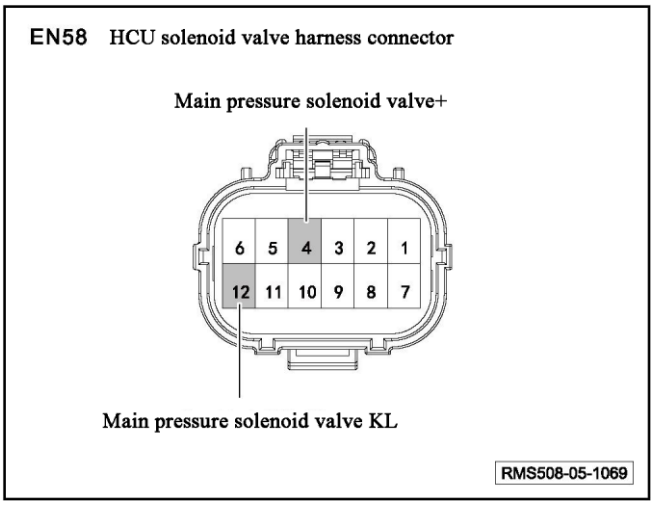
D Measure the resistance between terminal 10 of the dual-motor controller harness connector EN54 and terminal 4 of the HCU solenoid valve harness connector EN58.

E Measure the resistance between terminal 34 of the dual-motor controller harness connector EN54 and terminal 12 of the HCU solenoid valve harness connector EN58.

Standard resistance value: <1Ω

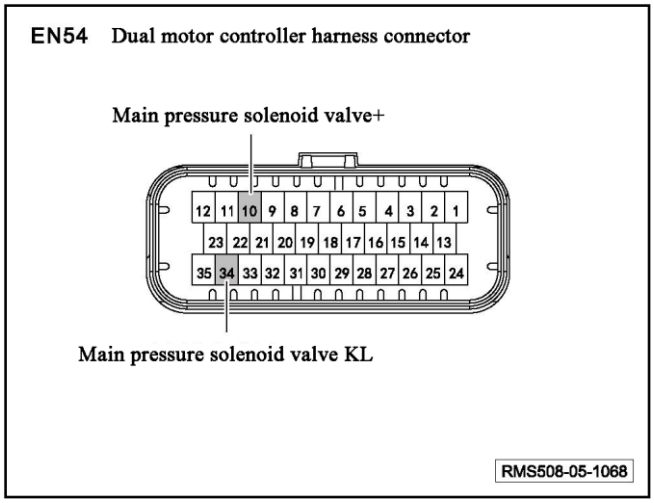
F Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.



Yes

Step 4	Check whether the circuit of main pressure solenoid valve is short-circuited to power.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 10 and 34 of the dual-motor controller harness connector EN54 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

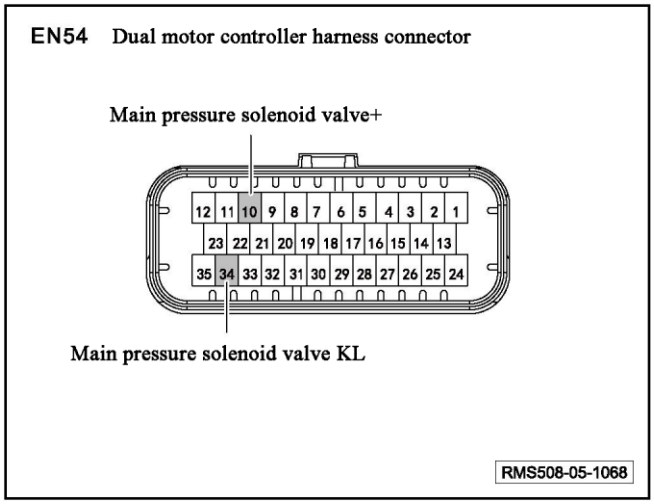
Yes

Step 5	Check whether the circuit of main pressure solenoid valve is short-circuited to grounding.

A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness



connector EN58.

D Measure the resistance between terminals 10 and 34 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 6	Replace the HCU solenoid valve.

A Replace the HCU solenoid valve.

B Is the fault eliminated after replacing the HCU solenoid valve?

Yes → The system works normally.

No

Step 7	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

4.2.6.21 DTC: P3C8173

DTC	DTC definition
P3C8173	Fault of circuit of supercooling protection solenoid valve

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the transmission fluid.

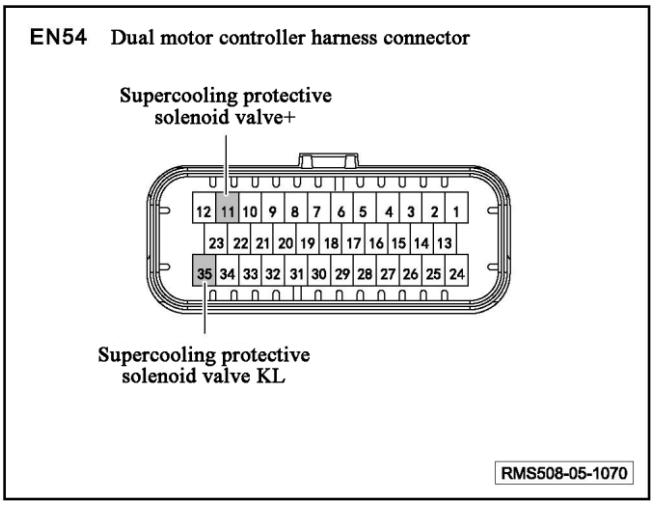
A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

Step 3	Check whether the circuit of supercooling protection solenoid valve is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

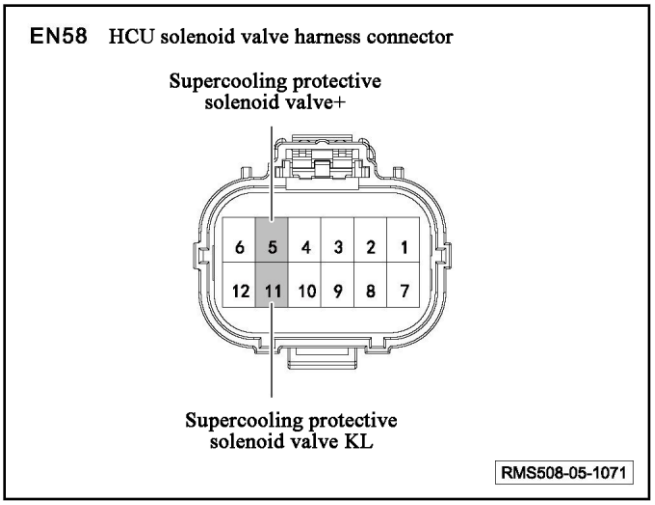
C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminal 11 of the dual-motor controller harness connector EN54 and terminal 5 of the HCU solenoid valve harness connector EN58.

E Measure the resistance between terminal 35 of the dual-motor controller harness connector EN54 and terminal 11 of the HCU solenoid valve harness connector EN58.

Standard resistance value: <1Ω

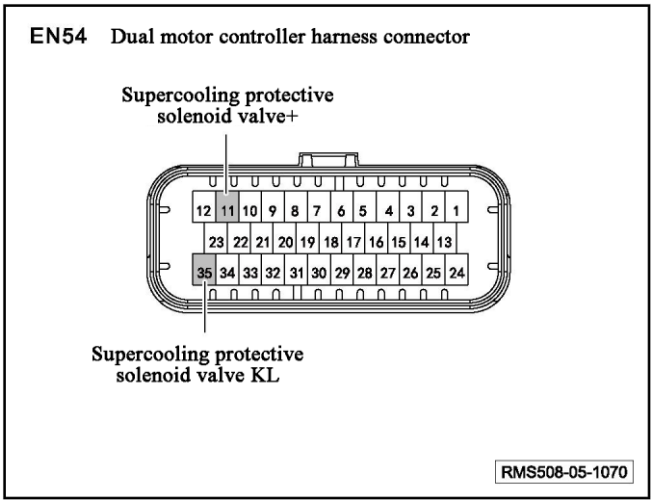
F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit of supercooling protection solenoid valve is short-circuited to power.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 11 and 35 of the dual-motor controller harness connector EN54 and the body ground.

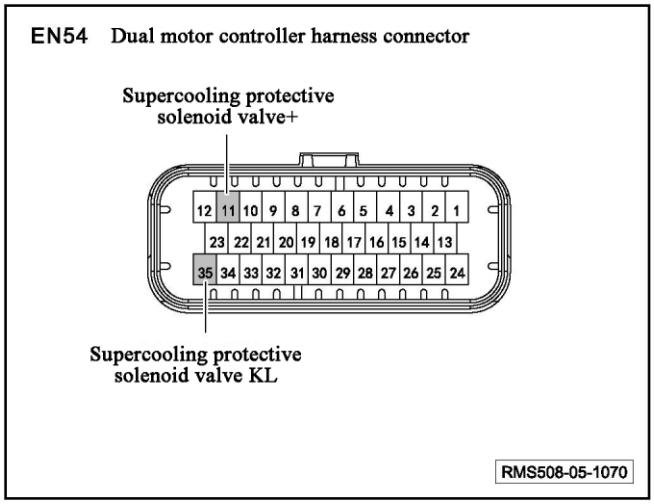
Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check whether the circuit of supercooling protection solenoid valve is short-circuited to grounding.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminals 11 and 35 of the dual motor controller harness connector EN54 and body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the HCU solenoid valve.

A Replace the HCU solenoid valve.

B Is the fault eliminated after replacing the HCU solenoid valve?

Yes → The system works normally.

No

Step 7	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

4.2.6.22 DTC: P3C8174

DTC	DTC definition
P3C8174	Clutch pressure sensor fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

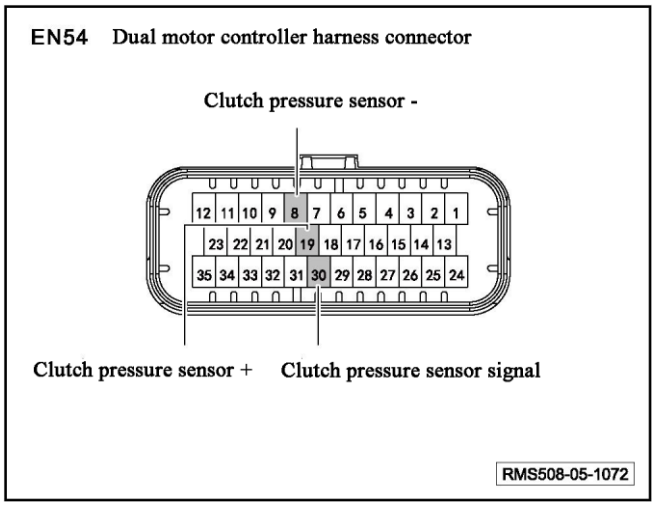
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of clutch pressure sensor is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminal 8 of the dual-motor controller harness connector EN54 and terminal 3 of the HCU solenoid valve harness connector EN58.

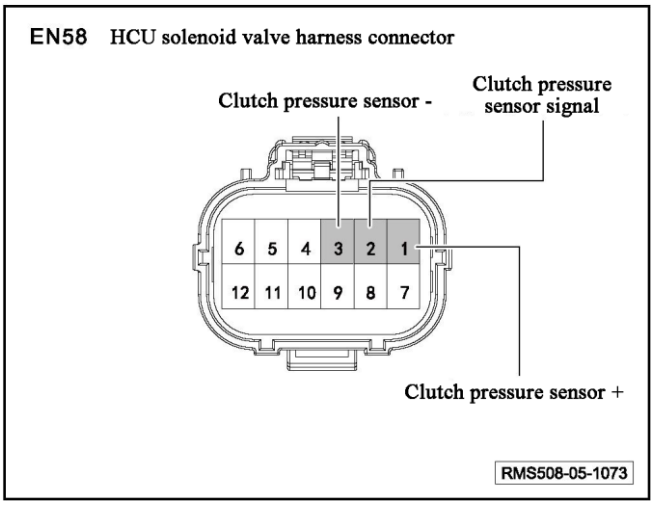
E Measure the resistance between terminal 19 of the dual-motor controller harness connector EN54 and terminal 1 of the HCU solenoid valve harness connector EN58.

F Measure the resistance between terminal 30 of the dual-motor controller harness connector EN54 and terminal 2 of the HCU solenoid valve harness connector EN58.

Standard resistance value: <1Ω

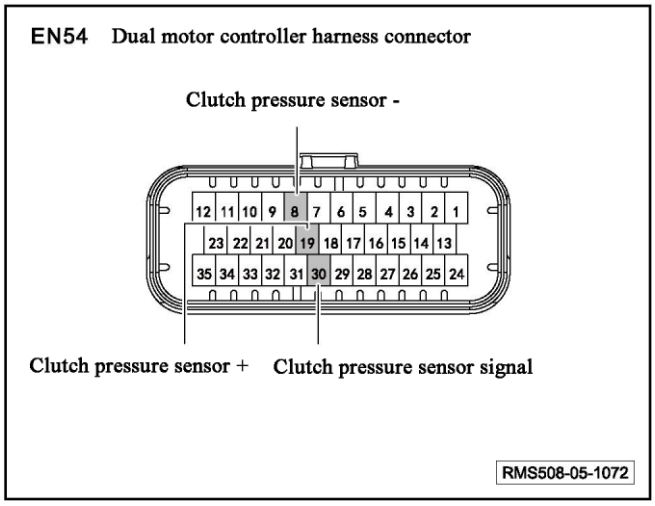
G Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.



Yes

Step 3	Check whether the clutch pressure sensor circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 8, 19 and 30 of the dual-motor controller harness connector EN54 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No — Repair or replace the harness.

Yes

Step 4	Check whether the circuit of clutch pressure sensor is short-circuited to grounding.

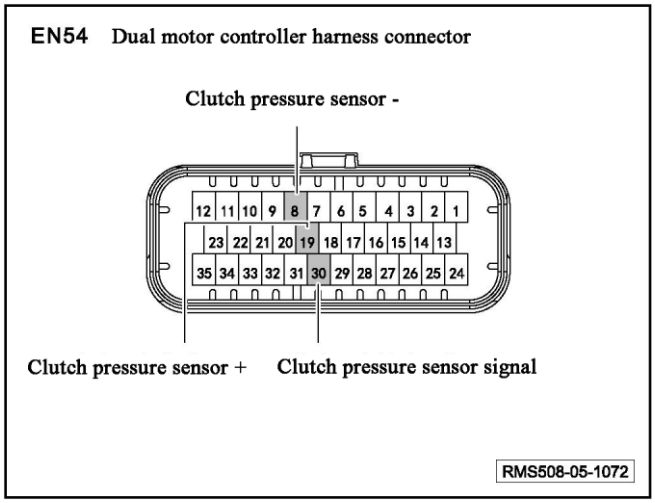
A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminals 8, 19 and 30 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher



E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the HCU solenoid valve.

A Replace the HCU solenoid valve.

B Is the fault eliminated after replacing the HCU solenoid valve?

Yes → The system works normally.

No

Step 6	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

4.2.6.23 DTC: P3C8175

DTC	DTC definition
P3C8175	Fault of main circuit pressure sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

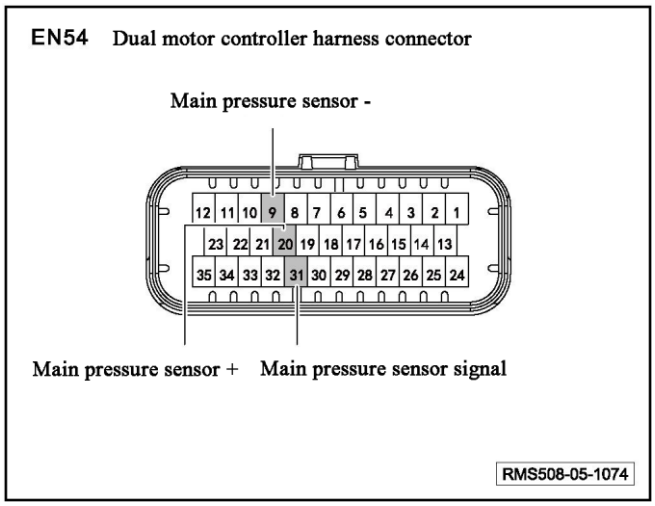
E Check whether the same DTC is displayed.

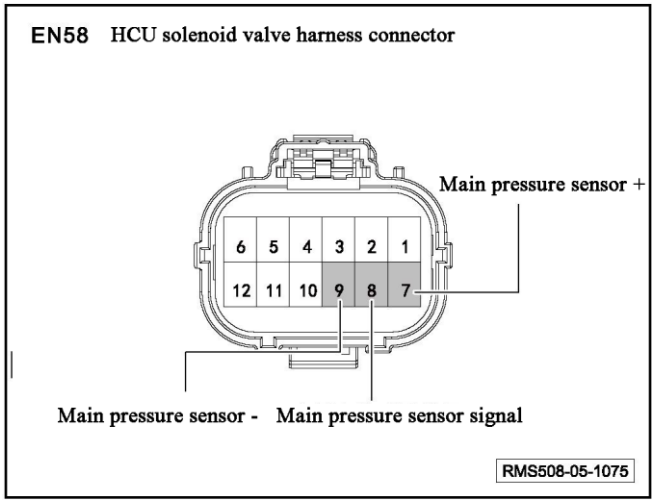
No

As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of main pressure sensor is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminal 9 of the dual-motor controller harness connector EN54 and terminal 9 of the HCU solenoid valve harness connector EN58.

E Measure the resistance between terminal 20 of the dual-motor controller harness connector EN54 and terminal 7 of the HCU solenoid valve harness connector EN58.

F Measure the resistance between terminal 31 of the dual-motor controller harness connector EN54 and terminal 8 of the HCU solenoid valve harness connector EN58.

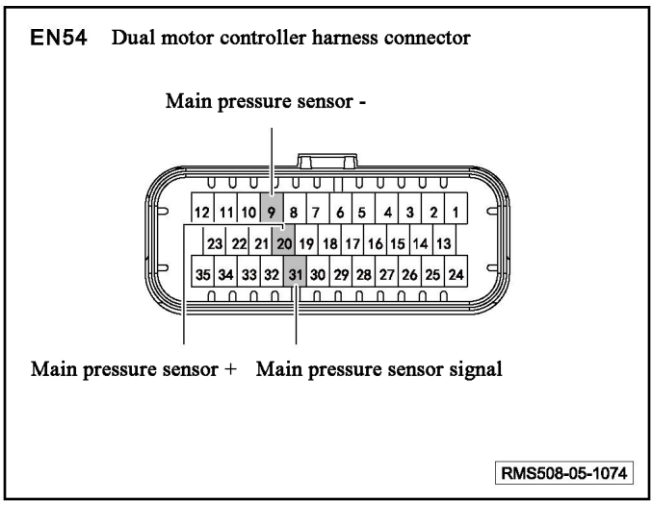
Standard resistance value: <1Ω

G Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Check whether the main pressure sensor circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 9, 20 and 31 of the dual-motor controller harness connector EN54 and the body ground.

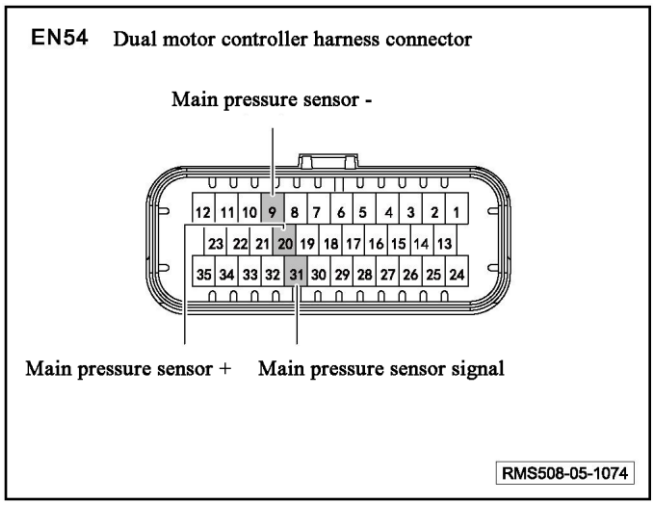
Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit of main pressure sensor is short-circuited to grounding.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect HCU solenoid valve harness connector EN58.

D Measure the resistance between terminals 9, 20 and 31 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 5	Replace the HCU solenoid valve.

A Replace the HCU solenoid valve.

B Is the fault eliminated after replacing the HCU solenoid valve?

Yes	The system works normally.

No

Step 6	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

4.2.6.24 DTC: P3C8176

DTC	DTC definition
P3C8176	Oil temperature sensor fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

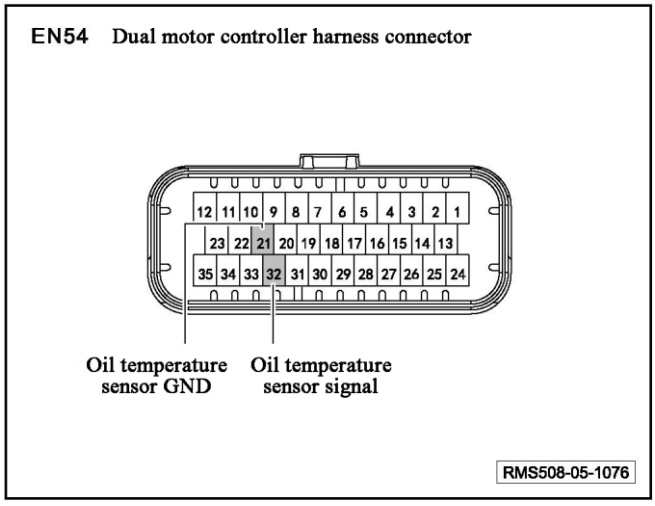
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the oil temperature sensor circuit is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the oil temperature sensor harness connector EN59.

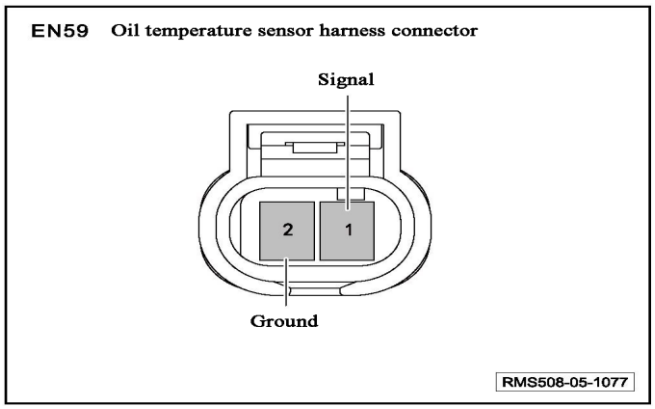
D Measure the resistance between terminal 21 of the dual-motor controller harness connector EN54 and terminal 2 of the oil temperature sensor harness connector EN59.

E Measure the resistance between terminal 32 of the dual-motor controller harness connector EN54 and terminal 1 of the oil temperature sensor harness connector EN59.

Standard resistance value: <1Ω

F Confirm whether the resistance reaches the standard value

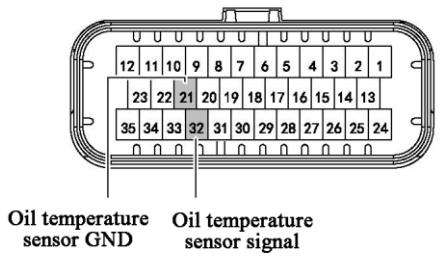
No → Repair or replace the harness.


EN59 Oil temperature sensor harness connector
Signal
2
1
Ground
RMS508-05-1077

Yes

Step 3	Check whether the oil temperature sensor circuit is short-circuited to power supply.

EN54 Dual motor controller harness connector



RMS508-05-1076

A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the oil temperature sensor harness connector EN59.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 21 and 32 of the dual-motor controller harness connector EN54 and the body ground.

Standard voltage value: **0V**

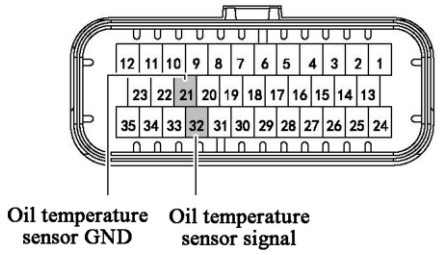
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 4	Check whether the oil temperature sensor circuit is short-circuited to ground.

EN54 Dual motor controller harness connector



RMS508-05-1076

A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the oil temperature sensor harness connector EN59.

D Measure the resistance between terminals 21 and 32 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the oil temperature sensor.

A Replace the oil temperature sensor.

B Is the fault eliminated after replacing the oil temperature sensor?

Yes → The system works normally.

No

Step 6	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

4.2.6.25 DTC: P3C8180 & P3C8182

DTC	DTC definition
P3C8180	Fault status of clutch system - engagement failure
P3C8182	Fault status of clutch system - separation failure

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the transmission fluid.

A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

Step 3	Check the main pressure solenoid valve.

A Check whether the main pressure solenoid valve is stuck and works abnormally.

Yes → Replace the HCU solenoid valve.

No

Step 4	Check the clutch solenoid valve.

A Check whether the clutch solenoid valve is stuck and works abnormally.

Yes → Replace the HCU solenoid valve.

No

Step 5	Check the clutch pressure sensor.

A Check whether the clutch pressure sensor works abnormally.

Yes → Replace the HCU solenoid valve.

No

Step 6	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

4.2.7 Diagnosis information and steps (MCU)

4.2.7.1 Diagnostic instructions

With a diagnosis scanner, the DTCs can be read via the OBD diagnosis interface of the vehicle. Based on the MCU data sheet, the switch and sensor values can be obtained by reading the data sheet displayed on the diagnostic scanner, without removing any parts. Reading the data list is the first step in troubleshooting, and one of the methods to reduce the diagnosis time.

4.2.7.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

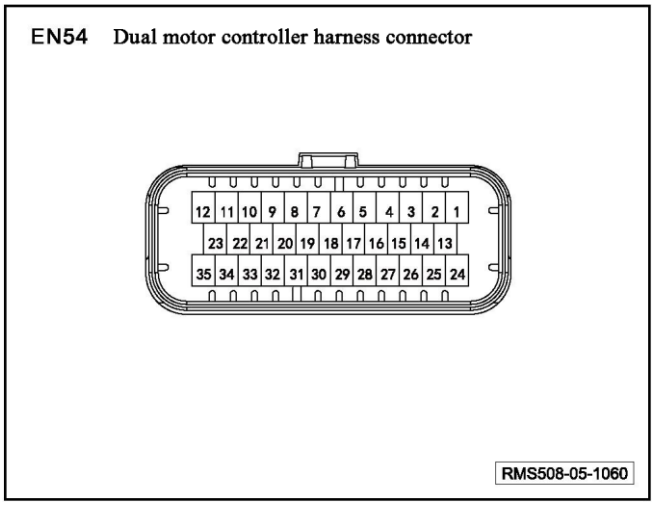
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

4.2.7.3 ECU terminal

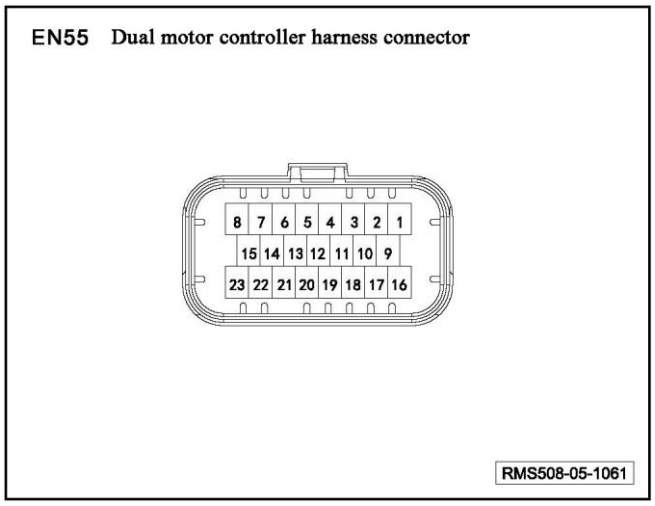
Dual-motor controller harness connector (EN54)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
1	0.5/white	Generation ISG excitation -	–	–
2	0.5/red	Generation ISG excitation +	–	–
3	0.5/green	Generation ISG sine +	–	–
4	0.5/yellow	Generation ISG sine -	–	–
5	0.5/blue	Generation ISG cosine -	–	–

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
6	0.5/brown	Generation ISG cosine +	–	–
8	0.5/white	Clutch pressure sensor -	–	–
9	0.5/yellow-black	Main pressure sensor -	–	–
10	0.5/pink-white	Main pressure solenoid valve+	–	–
11	0.5/light black	Supercooling protective solenoid valve+	–	–
13	0.5/white-red	ISG winding temperature +	–	–
14	0.5/white-green	Main drive motor winding temperature +	–	–
15	0.5/blue-white	Main drive cosine +	–	–
16	0.5/blue-orange	Main drive sine -	–	–
17	0.5/yellow-green	Main drive excitation +	–	–
18	0.5/black	Main drive resolver shielding ground	–	–
19	0.5/yellow-green	Clutch pressure sensor +	–	–
20	0.5/yellow-white	Main pressure sensor +	–	–
21	0.5/yellow-white	Oil temperature sensor ground	–	–
22	0.5/yellow-gray	Clutch pressure solenoid valve +	–	–
23	0.5/white-brown	Clutch pressure solenoid valve control	–	–
24	0.5/blue-brown	ISG winding temperature -	–	–
25	0.5/black	ISG resolver shielding ground	–	–
26	0.5/black-brown	Drive motor winding temperature -	–	–
27	0.5/yellow-blue	Main drive cosine -	–	–
28	0.5/yellow-orange	Main drive sine +	–	–
29	0.5/gray	Main drive excitation -	–	–
30	0.5/green-yellow	Clutch pressure sensor signal	–	–
31	0.5/yellow	Main pressure sensor signal	–	–
32	0.5/orange-blue	Oil temperature sensor	–	–
34	0.5/white-pink	Main pressure solenoid valve control	–	–
35	0.5/gray-yellow	Supercooling protection solenoid valve control	–	–

Dual-motor controller harness connector (EN55)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
1	0.5/red	MCU constant power	The start switch is put to any position	Battery voltage
9	0.5/red	MCU constant power	The start switch is put to any position	Battery voltage
10	0.5/black	Ground	–	0V
12	0.5/blue	Wake-up	–	–
16	0.5/red	MCU constant power	The start switch is put to any position	Battery voltage
17	0.5/black	Ground	–	0V
18	0.5/black	Ground	–	0V
22	0.5/brown	BD CAN-H	–	–
23	0.5/brown-white	BD CAN-L	–	–

4.2.7.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	“1”	“X”	-
		Month	“1”	“C”	-
		Day	“1”	“Z”	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
0C80	MCU fault grade	MCU fault level	0	3	-

0C81	Actual speed of motor	Motor speed	-17000	17000	RPM
0C82	Actual motor torque	Engine torque	-500	500	NM
0C83	HV	HV	0	1024	V
0C84	Motor temperature	Motor temperature	-48	206	℃
0C85	Frequency converter temperature	Frequency converter temperature	-48	206	℃
0C86	Target motor torque	Target motor torque	-500	500	NM
0C87	Motor on/off status	Motor on/off status	0	1	-
0C88	Controller start permitted	Controller start permitted	0	1	-
0C89	Controller radiator temperature	Controller radiator temperature	-48	206	℃
0C8A	Effective value of U-phase AC current	Effective value of U-phase AC current	0	512	A
0C8B	Effective value of V-phase AC current	Effective value of V-phase AC current	0	512	A
0C8C	Effective value of W-phase AC current	Effective value of W-phase AC current	0	512	A
0C8D	Active discharging status	Active discharging status	0	3	-
0C8E	12V working voltage	12V working voltage	3	28.5	V
0C8F	Current at DC end of MCU	Current at DC end of MCU	-1000	1000	A

4.2.7.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
P3B0101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
P3B0102	EEPROM fault	Alarm	EE chip fault	Check whether the EE chip does not work normally.
P3B0103	HV interlocking fault	Alarm	Check whether the HV interlock circuit is open-circuited.	Check the HV interlocking circuit
U011187	Lost communication with BMS	Alarm	Troubleshoot the CAN communication module	1. Check the CAN connection of the complete vehicle and whether the CAN communication module works normally. 2. Check whether the node messages are sent

				normally.
P3B0104	12V overvoltage	Alarm	1. The battery power supply works abnormally. 2. Abnormal battery detection circuit	1. Check the voltage of LV battery 2. Check whether the low-voltage battery cable does not work normally.
P3B0105	12V undervoltage	Alarm	1. The battery power supply works abnormally. 2. Abnormal battery detection circuit	1. Check the voltage of LV battery 2. Check whether the low-voltage battery cable does not work normally.
P3B0201	The temperature signal of drive motor is open-circuited.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The motor temperature sensor fails. 2. The harness related to the sensor is damaged or the connector is withdrawn. 3. The sampling circuit of the controller fails.	1. Check whether the temperature sensor is short-circuited. 2. Check whether the sensor itself does not work normally. 3. Check whether the sampling function of the controller works normally.
P3B0202	The temperature signal of drive motor is short-circuited to ground.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The motor temperature sensor fails. 2. The harness related to the sensor is damaged or the connector is short-circuited. 3. The sampling circuit of the controller fails.	1. Check whether the temperature sensor is short-circuited. 2. Check whether the sensor itself does not work normally. 3. Check whether the sampling function of the controller works normally.
P3B0203	The temperature signal of radiator is short-circuited.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The sensor itself does not work normally. 2. The signal line has the contact problem.	1. Check whether the sensor works normally. 2. Check whether the signal wire is normal
P3B0204	The temperature signal of IGBT is open-circuited.	Torque limiting. The available torque is 70% of the maximum torque of the current speed.	1. The sensor itself does not work normally. 2. The signal line has the contact problem.	1. Check whether the sensor works normally. 2. Check whether the signal wire is normal
P3B0301	Torque reduction in case of motor over-temperature	Torque limit, linear, 125°C-100%; 140°C-0%	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Overload operation 4. Abnormal temperature detection	1. Check whether the VCU torque demand command is normal. 2. Check whether the cooling system works normally. 3. Check whether the motor temperature sensor resistance is normal 4. Check whether the

				temperature detection function of MCU works normally.

P3B0101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
P3B0302	Torque reduction in case of IGBT over-temperature	Torque limit, linear, 88°C-100%; 100°C-0%	1. The cooling system of controller does not work normally. 2. The temperature detection function of the controller does not work normally.	1. Check the value of demand torque of VCU 2. Check whether the cooling system works normally 3. Check whether the temperature detection function of MCU works normally.
P3B0303	Torque reduction in case of IGBT junction temperature	Torque limit, linear, 125°C-100%; 135°C-0%	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Abnormal temperature detection	1. Check whether the cooling system works normally 2. Check whether the temperature detection function works normally.
P3B0304	Torque reduction in case of radiator over-temperature	Torque limit, linear, 70°C-100%; 80°C-0%	1. The coolant pipe does not work normally; 2. The water pump does not work normally; and 3. The temperature detection does not function normally.	1. Check whether the cooling system works normally 2. Check whether the temperature detection function works normally.
P3B0305	DC bus overvoltage drop torque	Torque limit, linear, 495V-100%; 510V-0% (TBD)	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3B0306	DC bus undervoltage drop torque	Torque limit, linear, 240V-100%; 220V-0%	1. The power battery voltage is too low 2. Bus voltage oscillation 3. Abnormal voltage detection	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.

P3B0101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
P3B0307	Motor overspeed torque reduction	Torque limit, linear, 16,000rpm-100%; 16,500rp-m-0%	1. The motor body fails abnormally. 2. There is an abnormal control as MCU does not work normally.	1. Check whether the motor resolver works normally. 2. Check whether the resolver sampling circuit and chip of the controller work normally.
P3B0401	Radiator Over-temperature fault	Torque clearing	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Abnormal temperature detection	1. Check whether the cooling system works normally 2. Check whether the temperature detection function works normally.
P3B0402	IGBT overtemperature fault	Torque clearing	1. The cooling system of controller does not work normally. 2. The temperature detection function of the controller does not work normally.	1. Check the value of demand torque of VCU 2. Check whether the cooling system works normally 3. Check whether the temperature detection function of MCU works normally.
P3B0403	Motor overtemperature fault	Torque clearing	1. Abnormal coolant pipeline 2. Abnormal water pump 3. Overload operation 4. Abnormal temperature detection	1. Check whether the VCU torque demand command is normal. 2. Check whether the cooling system works normally. 3. Check whether the motor temperature sensor resistance is normal 4. Check whether the temperature detection function of MCU works normally.
P3B0404	Torque command error	Torque clearing	1. The VCU torque command is abnormal. 2. There is an abnormality in handling the torque of MCU.	1. Check the VCU torque command and switching wave command 2. Check the handling of MCU torque.
U029387	Lost communication	Torque clearing	Troubleshoot the CAN communication module	1. Check the CAN connection of the complete

P3B0101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
	with VCU			vehicle and whether the CAN communication module works normally. 2. Check whether the node messages are sent normally.
P3B0405	Bus OFF fault	Torque clearing	Troubleshoot the CAN communication module	1. Check whether CAN-H is short-circuited to CAN-L. 2. Check whether CAN-H is short-circuited to ground. 3. Check whether CAN-L is short-circuited to power.
P3B0406	Communication fault	Torque clearing	Troubleshoot the CAN communication module	1. Check the CAN connection of VCU and whether the CAN communication module works normally. 2. Check whether the CAN module of MCU works normally.
P3B0407	DC bus overvoltage	Shutdown	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3B0408	DC bus undervoltage	Shutdown	1. The power battery voltage is too low 2. Bus voltage oscillation 3. Abnormal voltage detection	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.
P3B0409	Software overcurrent fault	Shutdown	1. Overload operation 2. Abnormal current detection	1. Check the running condition of the complete vehicle 2. Check the

P3B0101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
				implementation of VCU command
P3B0410	Hardware overcurrent fault	Shutdown	1. Overload operation 2. Abnormal current detection	1. Check the running condition of the complete vehicle 2. Check the implementation of VCU command
P3B0411	Hardware overvoltage fault	Shutdown	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3B0412	IGBT upper bridge arm fault	Shutdown	1. The chip of upper axle does not work normally. 2. Abnormal upper bridge drive power supply 3. The level of the error reporting pin is seriously interfered.	1. Check whether the drive chip is powered on normally. 2. Check whether the drive chip functions normally.
P3B0413	IGBT lower bridge arm fault	Shutdown	1. The chip of lower axle does not work normally. 2. Abnormal lower bridge drive power supply 3. The level of the error reporting pin is seriously interfered.	1. Check whether the drive chip is powered on normally. 2. Check whether the drive chip functions normally.
P3B0414	Hall current sensor null drift fault	Shutdown	1. Hall anomaly 2. Abnormal current sampling circuit 3. The Hall harness is damaged or does not work normally.	Check whether the low-voltage harness of the controller is loose or damaged.
P3B0415	Resolver fault	Shutdown	1. The resolver sensor does not work normally.	1. Check the resolver signal

P3B0101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
			2. There is a problem with wiring. 3. There is a problem with control board.	2. Check the wiring 3. Check the control board
P3B0416	Serious overspeed fault	Shutdown	1. The motor body fails abnormally. 2. There is an abnormal control as MCU does not work normally.	1. Check whether the motor resolver works normally. 2. Check whether the resolver sampling circuit and chip of the controller work normally.
P3B0501	Phase loss fault	Shutdown	1. The controller or three-phase circuit of motor does not work normally. 2. Abnormal current detection	1. Check whether the motor is damaged 2. Check whether the three-phase cable is damaged or poorly contacted. 3. Check whether the Hall function of the controller works normally.
P3B0502	Serious overvoltage	Shutdown	1. The DC bus voltage of the power battery is too high 2. The feedback energy is too large 3. The bus voltage sampling is disturbed and oscillated. 4. The main contactor is disconnected during feedback.	1. Check the voltage value of power battery pack 2. Check whether the main contactor has been accidentally bounced off.
P3B0503	Serious overcurrent	Shutdown	1. Overload operation 2. Abnormal current detection	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.
P3B0601	Serious fault of upper axle arm	Shutdown	1. The chip of upper axle does not work normally. 2. Abnormal upper bridge drive power supply 3. The level of the error reporting pin is seriously	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.

P3B0101	Active discharge fault	Alarm	1. The VCU has an abnormal discharge command. 2. The main circuit contactor is stuck. 3. Discharge timeout 4. The motor speed exceeds 100Rpm when discharging.	1. Check whether the VCU discharge command is normal. 2. Check whether the main circuit contactor is stuck. 3. Check whether the vehicle is still sliding when performing active discharge.
			interfered.	
P3B0602	Serious fault of lower axle arm	Shutdown	1. The chip of lower axle does not work normally. 2. Abnormal lower bridge drive power supply 3. The level of the error reporting pin is seriously interfered.	1. Check the voltage value of battery pack 2. Check whether the DC power cable is loose or damaged.
P3B0603	Estop fault	Shutdown	There is an Estop fault.	1. Check whether the Estop signal is normal. 2. Check whether the CAN signal is normal

4.2.7.6 DTC: P3B0101, P3B0404 ...

DTC	DTC definition
P3B0101	Active discharge fault
P3B0404	Torque command error
P3B0603	Estop fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the VCU.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the “ON” position, and read and record the DTC of VCU.

C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults of VCU.

No

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.7.7 DTC: P3B0102, P3B0204 ...

DTC	DTC definition
P3B0102	EEPROM fault
P3B0204	The temperature signal of IGBT is open-circuited.
P3B0412	IGBT upper bridge arm fault
P3B0413	IGBT lower bridge arm fault
P3B0601	Serious fault of upper axle arm
P3B0602	Serious fault of lower axle arm
P3B0414	Hall current sensor null drift fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes	The system works normally.

Next

Step 5	The diagnosis is over.

4.2.7.8 DTC: P3B0103

DTC	DTC definition
P3B0103	HV interlocking fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes	The system works normally.

No

Step 3	Check the HV wiring harness.

A Check the connector of battery pack HV harness for looseness or poor contact.

B Check the connector of GCU HV harness assembly for looseness or poor contact.

Yes	Repair or replace the harness.

No

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.7.9 DTC: U011187

DTC	DTC definition
U011187	Lost communication with BMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

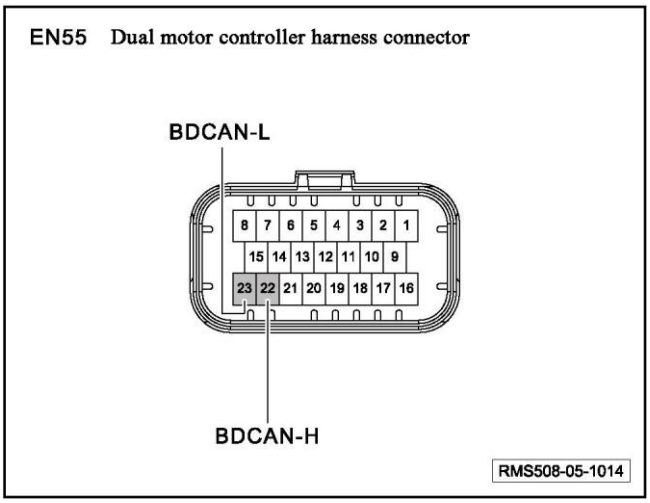
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the dual-motor controller and the battery pack assembly harness connector.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

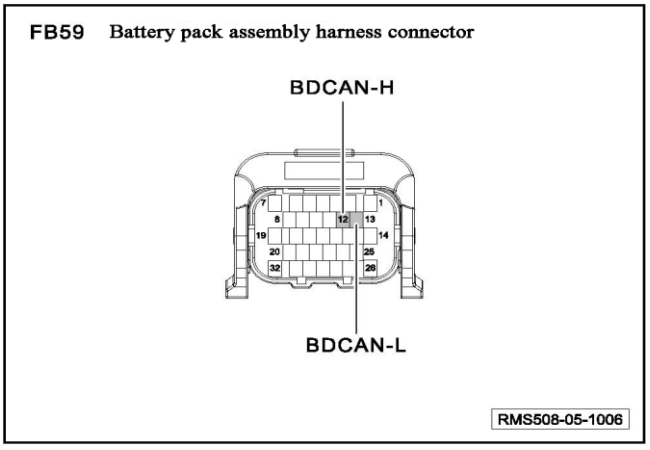
C Disconnect the battery pack assembly harness connector FB59.

D Measure the resistance between terminal 22 of the dual-motor controller harness connector EN55 and terminal 12 of the battery pack assembly harness connector FB59.

E Measure the resistance between terminal 23 of the dual-motor controller harness connector EN55 and terminal 13 of the battery pack assembly harness connector FB59.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 3	Check the power supply ground circuit of the battery pack assembly.

A Check whether the power supply ground circuit of the battery pack assembly works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.7.10 DTC: P3B0104 & P3B0105

DTC	DTC definition
P3B0104	12V overvoltage
P3B0105	12V undervoltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the fuse LF11 of the dual-motor controller.

A Turn the start switch to "OFF" position.

B Check whether the fuse LF11 is blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuit of the fuse IF11.

A Turn the start switch to "OFF" position.

B Check whether the circuit of fuse LF11 is short-circuited.

C Repair the circuit and make sure there is no short circuit.

D Replace blown fuses with fuses of rated current.

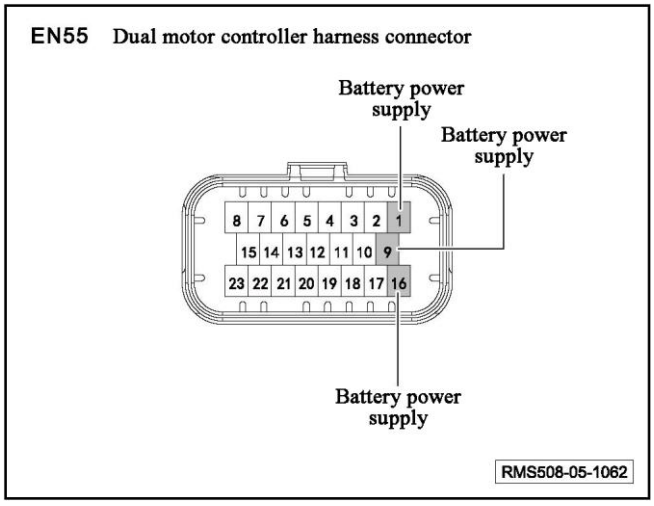
Rated value of fuse: **LF11 10A**

E Confirm whether the dual-motor controller works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of dual motor controller.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

C Put the Start switch to “ON” position.

D Measure the voltage of circuit between terminals 1, 9 and 16 of dual motor controller harness connector EN55 and body ground.

Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the dual motor controller.

A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

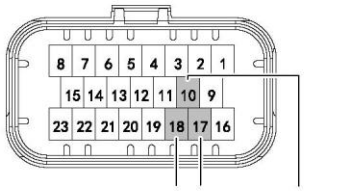
C Measure the resistance of circuit between terminals 10, 17 and 18 of dual motor controller harness connector EN55 and body ground.

Standard resistance value: <1Ω

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

EN55 Dual motor controller harness connector



Ground Ground Ground

RMS508-05-1063

Yes

Step 7	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

4.2.7.11 DTC: P3B0201 & P3B0202

DTC	DTC definition
P3B0201	The temperature signal of drive motor is open-circuited.
P3B0202	The temperature signal of drive motor is short-circuited to ground.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

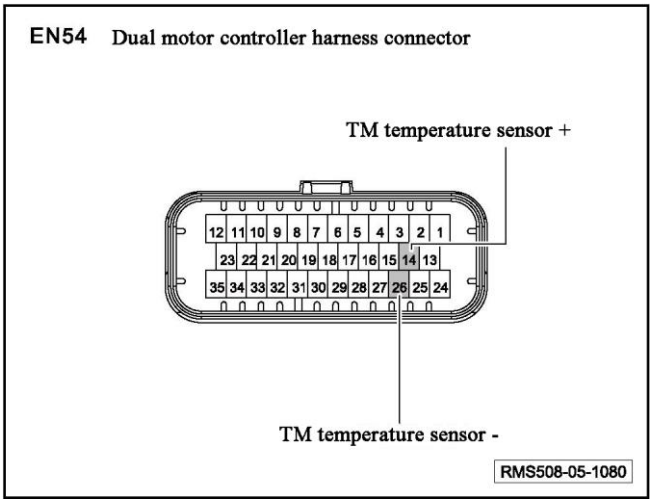
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of drive motor temperature sensor is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

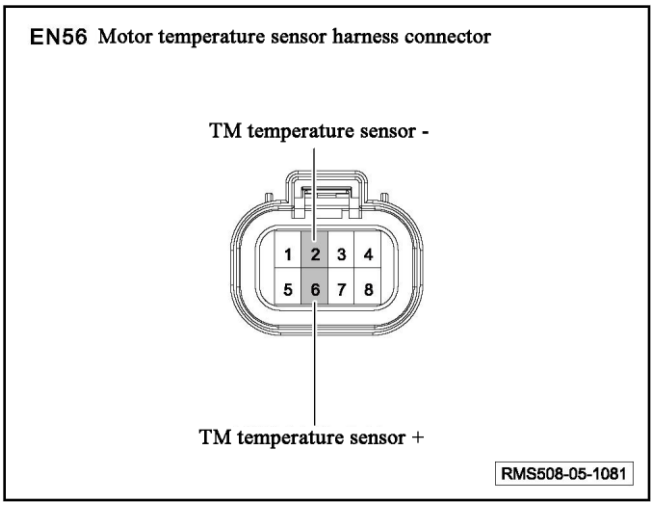
C Disconnect the motor temperature sensor harness connector EN56.

D Measure the resistance between terminal 14 of the dual-motor controller harness connector EN54 and terminal 6 of the motor temperature sensor harness connector EN56.

E Measure the resistance between terminal 26 of the dual-motor controller harness connector EN54 and terminal 2 of the motor temperature sensor harness connector EN56.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 3	Check whether the circuit of drive motor temperature sensor is short-circuited to power.

A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

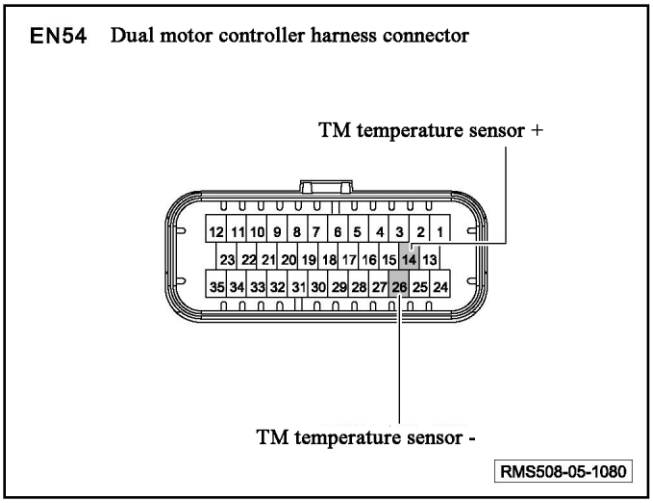
C Disconnect the motor temperature sensor harness connector EN56.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 14 and 26 of the dual-motor controller harness connector EN54 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the

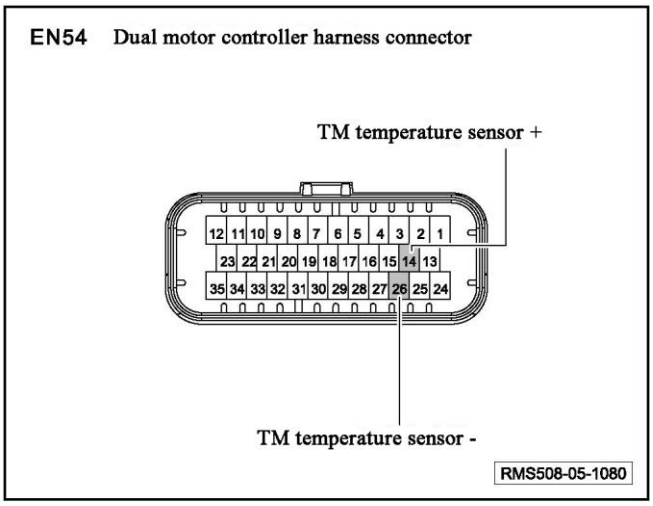


standard value.

No → Repair or replace the harness.

Yes

Step 4	Check whether the circuit of drive motor temperature sensor is short-circuited to grounding.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor temperature sensor harness connector EN56.

D Measure the resistance between terminals 14 and 26 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Check the circuit between connectors of the drive motor temperature sensor and the hybrid transmission housing.

A Check whether the circuit between connectors of the drive motor temperature sensor and the hybrid transmission housing is short- or open-circuited.

Yes → Repair or replace the harness.

No

Step 6	Replace the drive motor temperature sensor.

A Replace the drive motor temperature sensor.

B Is the fault has been eliminated after replacing the drive motor temperature sensor?

Yes → The system works normally.

No

Step 7	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

4.2.7.12 DTC: P3B0203, P3B0304 ...

DTC	DTC definition
P3B0203	The temperature signal of radiator is short-circuited.
P3B0304	Torque reduction in case of radiator over-temperature
P3B0401	Radiator Over-temperature fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the coolant level of electric drive system.

A Check whether the coolant level of electric drive system is too low.

Yes → Check the pipe leakage and add or replace coolant.

No

Step 3	Check the water pump of motor.

A Check whether the motor water pump works normally.

No → Repair or replace the motor water pump.

Yes

Step 4	Check the transmission fluid.

A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

Step 5	Check the oil cooler.

A Check whether the oil cooler is dirty or blocked.

Yes → Wash or replace the oil cooler.

No

Step 6	Check the drive motor temperature sensor.

A Check whether the drive motor temperature sensor works normally.

No → Repair or replace the drive motor temperature sensor.

Yes

Step 7	Check the oil temperature sensor.

A Check whether the oil temperature sensor works normally.

No → Repair or replace the oil temperature sensor.

Yes

Step 8	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 9	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

4.2.7.13 DTC: P3B0301 & P3B0403

DTC	DTC definition
P3B0301	Torque reduction in case of motor over-temperature
P3B0403	Motor overtemperature fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the transmission fluid.

A Check whether the transmission fluid level is too low.

B Check the transmission fluid for turbidity and impurities.

Yes → Add or change the transmission fluid.

No

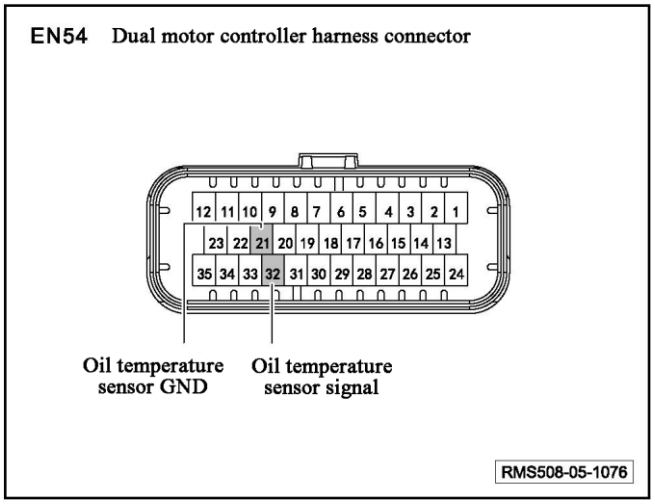
Step 3	Check the oil cooler.

A Check whether the oil cooler is dirty or blocked.

Yes → Wash or replace the oil cooler.

No

Step 4	Check whether the oil temperature sensor circuit is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

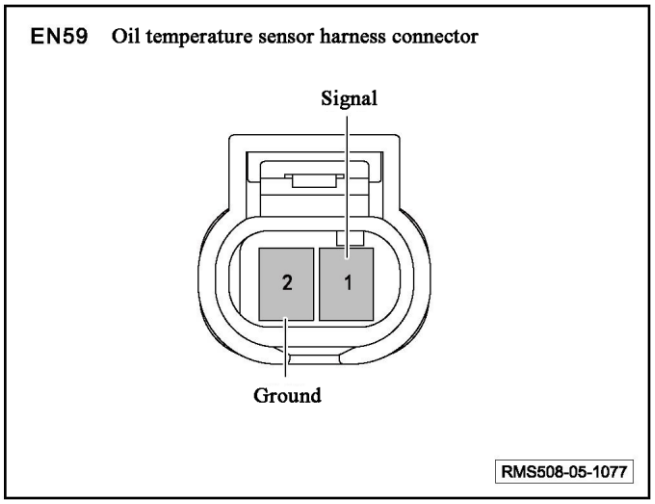
C Disconnect the oil temperature sensor harness connector EN59.

D Measure the resistance between terminal 21 of the dual-motor controller harness connector EN54 and terminal 2 of the oil temperature sensor harness connector EN59.

E Measure the resistance between terminal 32 of the dual-motor controller harness connector EN54 and terminal 1 of the oil temperature sensor harness connector EN59.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 5	Check whether the oil temperature sensor circuit is short-circuited to power supply.

A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the oil temperature sensor harness connector EN59.

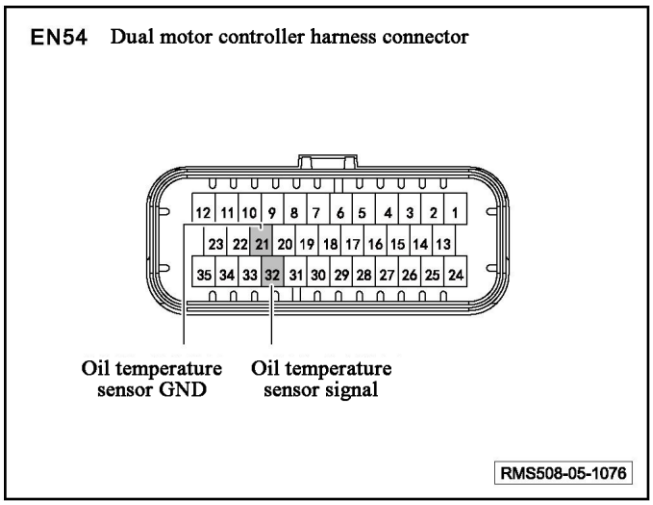
D Put the Start switch to “ON” position.

E Measure the voltage between terminals 21 and 32 of the dual-motor controller harness connector EN54 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the

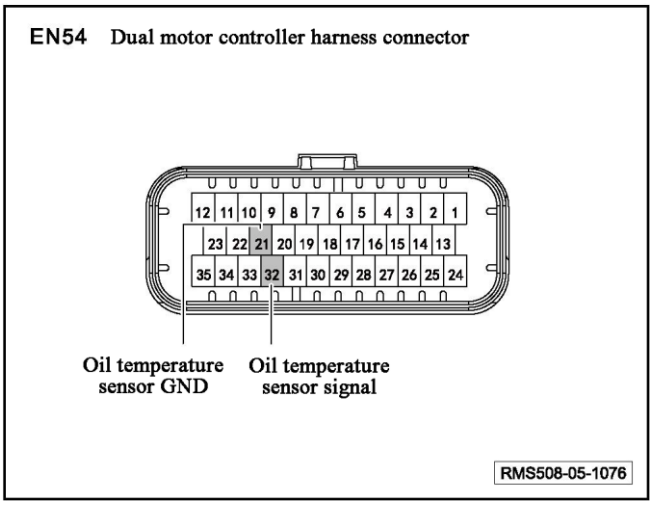
standard value.



No → Repair or replace the harness.

Yes

Step 6	Check whether the oil temperature sensor circuit is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the oil temperature sensor harness connector EN59.

D Measure the resistance between terminals 21 and 32 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 7	Replace the oil temperature sensor.

A Replace the oil temperature sensor.

B Is the fault eliminated after replacing the oil temperature sensor?

Yes	The system works normally.

No

Step 8	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No	Repair or replace the harness.

Yes

Step 9	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes	The system works normally.

Next

Step 10	The diagnosis is over.

4.2.7.14 DTC: P3B0305, P3B0306 ...

DTC	DTC definition
P3B0305	DC bus overvoltage drop torque
P3B0306	DC bus undervoltage drop torque
P3B0407	DC bus overvoltage
P3B0408	DC bus undervoltage
P3B0409	Software overcurrent fault
P3B0410	Hardware overcurrent fault
P3B0411	Hardware overvoltage fault
P3B0502	Serious overvoltage
P3B0503	Serious overcurrent

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery management system.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the "ON" position, and read and record the DTC of the battery management system.

C Check whether the same DTC is displayed.

Yes → Maintain faults related to the battery management system preferentially.

No

Step 3	Check the battery pack HV harness assembly.

A Check whether the battery pack HV harness assembly is short- or open-circuited.

B Check whether the connector of battery pack HV harness assembly is plugged abnormally.

Yes → Repair or replace the high voltage harness.

No

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No	Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes	The system works normally.

Next

Step 6	The diagnosis is over.

4.2.7.15 DTC: P3B0307, P3B0415 ...

DTC	DTC definition
P3B0307	Motor overspeed torque reduction
P3B0415	Resolver fault
P3B0416	Serious overspeed fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

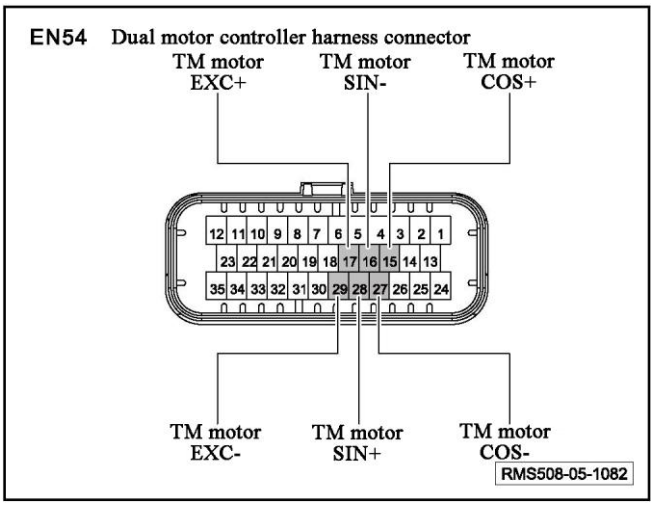
D Read the DTC again.

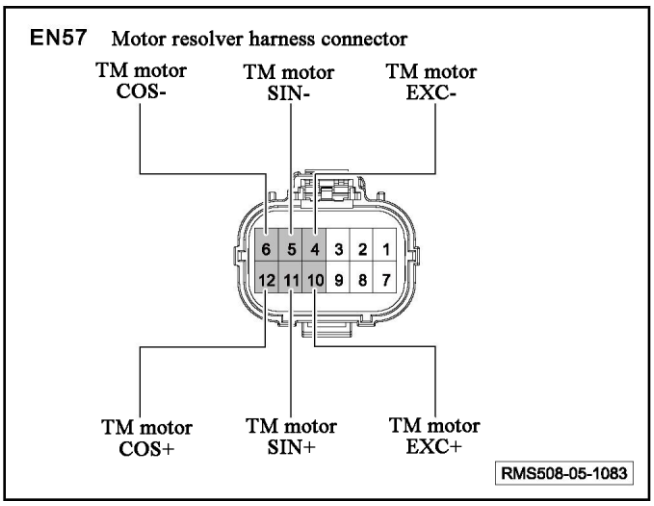
E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of the motor resolver signal is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor resolver harness connector EN57.

D Measure the resistance between terminal 15 of the dual-motor controller harness connector EN54 and terminal 12 of the motor resolver harness connector EN57.

E Measure the resistance between terminal 16 of the dual-motor controller harness connector EN54 and terminal 5 of the motor resolver harness connector EN57.

F Measure the resistance between terminal 17 of the dual-motor controller harness connector EN54 and terminal 10 of the motor resolver harness connector EN57.

G Measure the resistance between terminal 27 of the dual-motor controller harness connector EN54 and terminal 6 of the motor resolver harness connector EN57.

H Measure the resistance between terminal 28 of the dual-motor controller harness connector EN54 and terminal 11 of the motor resolver harness connector EN57.

I Measure the resistance between terminal 29 of the dual-motor controller harness connector EN54 and terminal 4 of the motor resolver harness connector EN57.

Standard resistance value: <1Ω

J Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 3	Check whether the circuit of the motor resolver signal is short circuited to power.

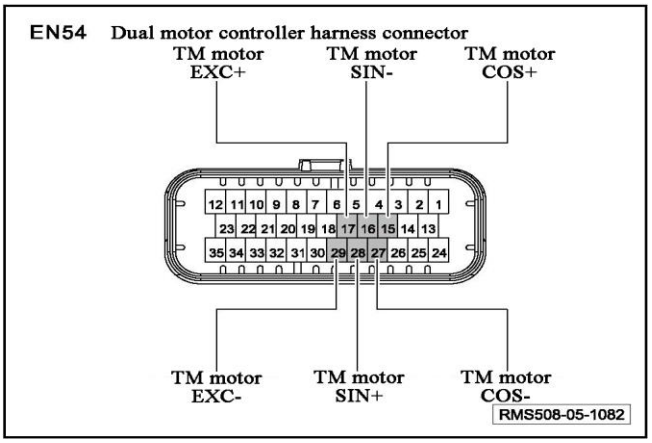
A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor resolver harness connector EN57.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 15, 16, 17, 27, 28 and 29 of the dual-motor controller harness



connector EN54 and the body ground.

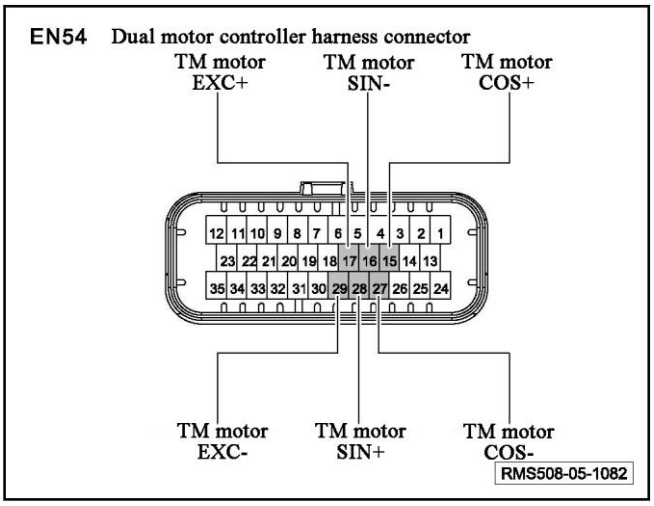
Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

No — Repair or replace the harness.

Yes

Step 4	Check whether the circuit of the motor resolver signal is short circuited to grounding.



A Turn the start switch to "OFF" position.

B Disconnect the dual motor controller harness connector EN54.

C Disconnect the motor resolver harness connector EN57.

D Measure the resistance between terminals 15, 16, 17, 27, 28 and 29 of the dual-motor controller harness connector EN54 and the body ground.

Standard resistance value: **10kΩ** or higher

E Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes	The system works normally.

No

Step 6	Replace the hybrid transmission assembly.

A Replace the hybrid transmission assembly.

B Is the fault eliminated after replacing the hybrid transmission assembly?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

4.2.7.16 DTC: P3B0501

DTC	DTC definition
P3B0501	Phase loss fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the three-phase HV circuit of motor.

A Check the three-phase HV line of motor is normal.

No → Repair or replace the harness.

Yes

Step 4	Check the power ground circuit of the dual-motor controller.

A Check whether the power ground circuit of the dual-motor controller works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.7.17 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

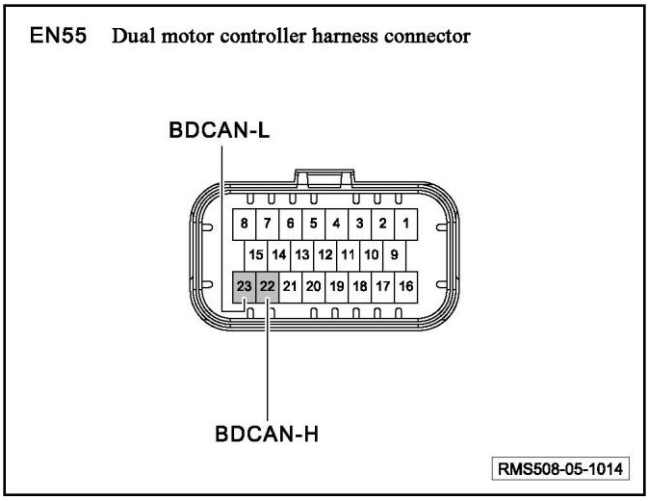
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the dual-motor controller and the VCU harness connector.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

C Disconnect the VCU harness connector FB49.

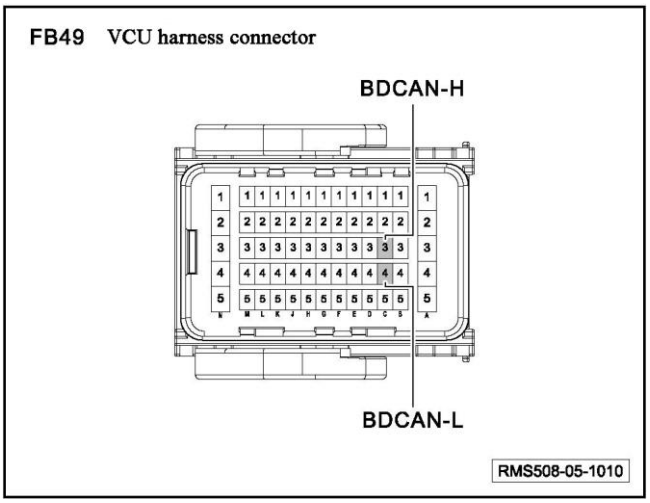
D Measure the resistance between terminal 22 of the dual-motor controller harness connector EN55 and terminal C3 of the VCU harness connector FB49.

E Measure the resistance between terminal 23 of the dual-motor controller harness connector EN55 and terminal C4 of the VCU harness connector FB49.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



No

Step 3	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.2.7.18 DTC: P3B0405 & P3B0406

DTC	DTC definition
P3B0405	Bus OFF fault
P3B0406	Communication fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

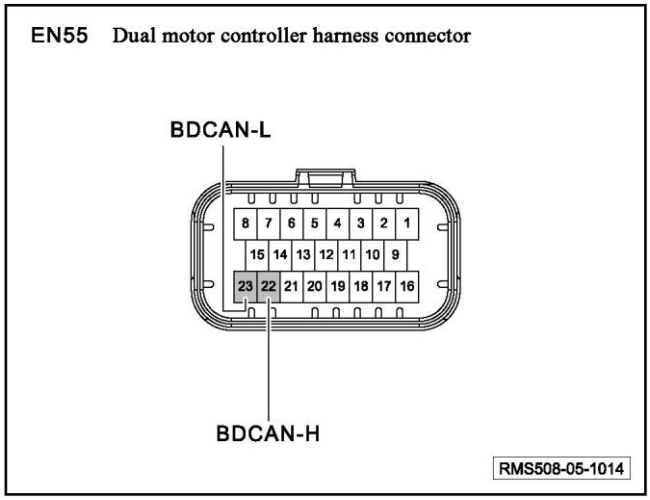
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire of the dual-motor controller.



A Turn the start switch to "OFF" position.

B Disconnect dual-motor harness connector EN55.

C Measure the resistance of circuit between terminals 22 and 23 of dual motor controller harness connector EN55.

Standard resistance value: about **120Ω**

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

4.2.8 Removal and installation

4.2.8.1 Check the fluid level of hybrid transmission

Testing Procedures

Notes

Use the hybrid transmission fluid of the designated grade of EHSF-1 and the filling amount of 3.6±0.1L (for the first time) and 3.0±0.1L (after sales).

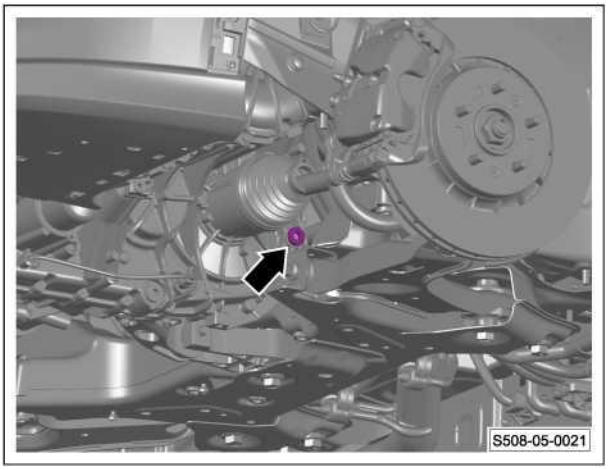
Do not mix hybrid transmission fluid of different specifications, as that may cause abnormal noise or vibration, or damage the vehicle transmission.

1 Wait for the engine to run idle for 30s so that all components are filled with oil. Keep the transmission in a hot state during inspection, and turn off the start switch.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



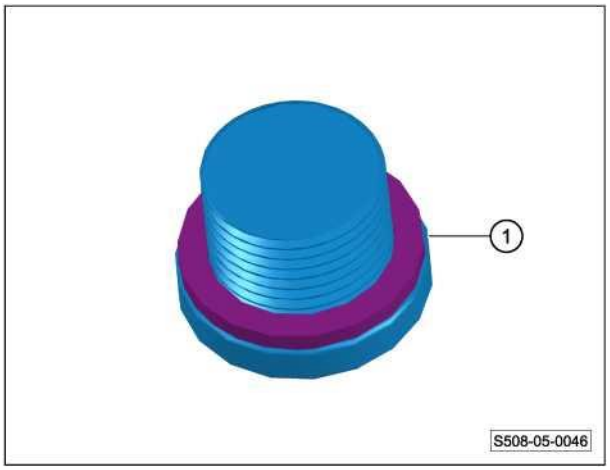
5 Check the fluid level of hybrid transmission

a. Lift the vehicle and keep it horizontal.

b. Clean the dust and impurities on the surface of filler plug (see arrow).

c. Unscrew the filler plug and sealing ring component (see arrow). If there is slow dripping of oil, it indicates that the oil level is normal. Otherwise, it indicates insufficient oil. Replenish oil and repeat the above steps until oil slowly drips from the oil level check plug port. If the fluid flows out quickly, it indicates excessively fluid filling. Wait until the fluid drips slowly from the level check port).

• Tightening torque of filler screw plug: 50±3N·m



d. Replenish the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change

Notes

If the hybrid transmission fluid level is low, check for fluid leakage. If there is no leakage, replenish the fluid to the normal level.

Tip:

Replace the oil filler plug gasket ① with a new one upon every removal.

4.2.8.2 Replacing hybrid transmission fluid

Discharging procedures

Notes

Do not mix hybrid transmission fluid of different specifications, as that may cause abnormal noise or vibration, or damage the vehicle transmission.

Tip:

When changing the hybrid transmission fluid, replace filter components of the hybrid transmission.

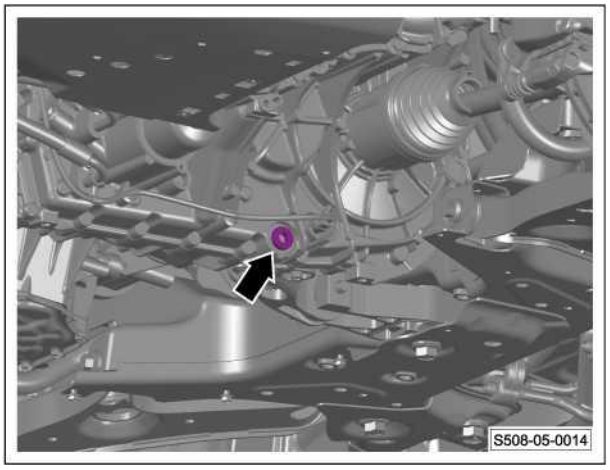
The sealing ring components of plug cannot be reused after removal.

The container with scales is helpful in estimating the filling amount.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Discharge the hybrid transmission fluid

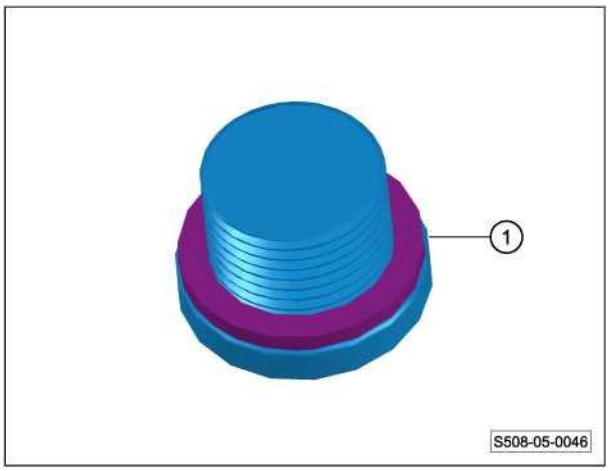
a. Lift the vehicle.

b. Remove the dust and foreign matters on the surface of the oil drain plug (see the arrow).

c. Unscrew the drain plug and sealing ring components (see the arrow). Collect the hybrid transmission fluid with a container with scales.

d. Discharge the hybrid transmission fluid.

- Tightening torque of oil drain plug: 50±3N·m

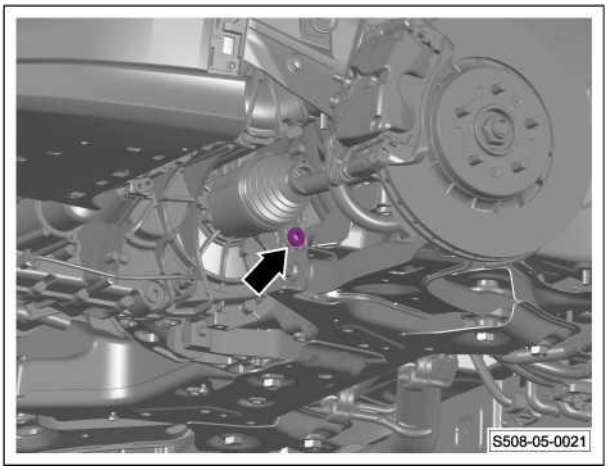


e. After the discharge, install the drain screw plug and sealing ring component.

Notes

Always replace with a new drain screw plug sealing gasket ① for every replacement of hybrid transmission fluid.

Filling procedure



6 Fill the hybrid transmission fluid

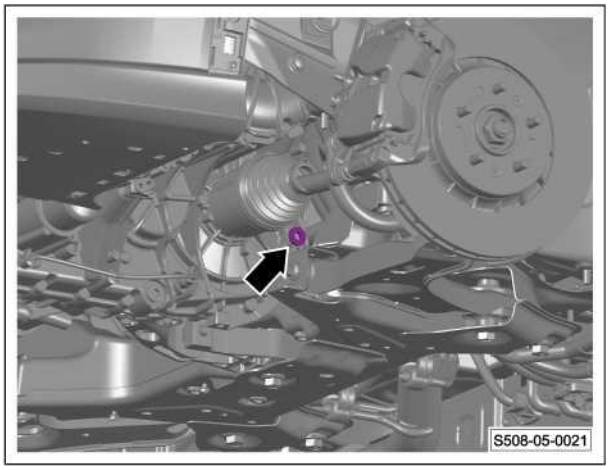
a. Remove the dust and foreign matters on the surface of the filling plug (see the arrow).

b. Unscrew filler screw plug and sealing ring component (see the arrow), and fill hybrid transmission fluid according to the amount of the scale container.

- Tightening torque of filler screw plug: 50±3N·m
- Grade of hybrid transmission fluid: **(EHSF-1)**
- Filling amount of fluid: **3.6±0.1L** (for the first time) and **3.0±0.1L** (after sales)

Tip:

Too much or too little hybrid transmission fluid will influence the performance of transmission.

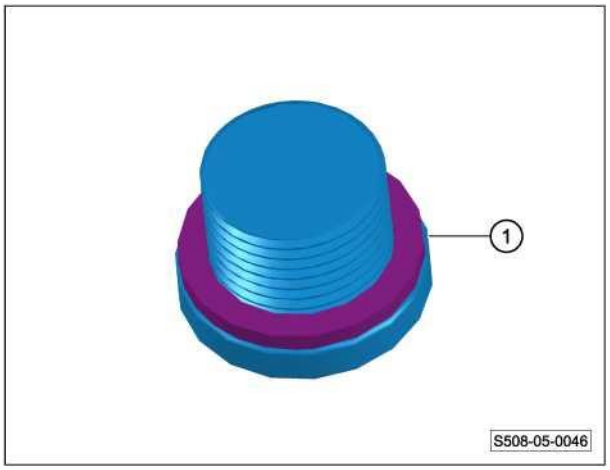


c. Wait for the engine to run idle for 30s so that all components are filled with oil. Keep the transmission in a hot state during inspection, and turn off the start switch.

d. Unscrew the oil filler plug and sealing ring component (see the arrow). If there is fluid dripping slowly, it indicates that the fluid level is normal. Otherwise, the fluid level is insufficient. In this case, replenish the fluid and repeat the above steps until the fluid slowly drips from the fluid level check plug port. If the fluid flows out quickly, it indicates excessively fluid filling. Wait until the fluid drips slowly from the level check port).

e. Tighten the filler screw plug and sealing ring component (see the arrow).

• Tightening torque of filler screw plug: 50±3N·m



Notes

Always replace with a new overflow screw plug sealing gasket ① for every replacement of hybrid transmission fluid.

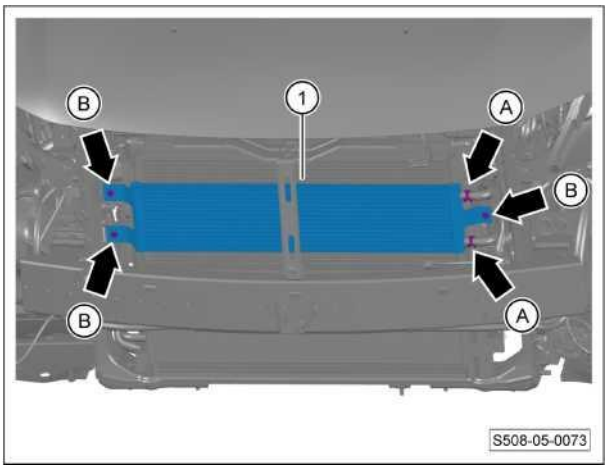
4.2.8.3 Removal and installation of oil cooler assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the oil cooler assembly

a. Loosen the fixing clamp (see arrow A) and disengage the oil cooling pipe assembly ① from the oil cooler assembly.

b. Unscrew the fixing bolt (see arrow B) and remove the oil cooler assembly ①.

• Tightening torque of bolt (see arrow **B**): **6±1Nm**

Tip:

Collect the residual ATF with a container during removal.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, check whether the fixing clamp of oil cooler assembly pipeline is installed in place.

– Check the level of hybrid transmission fluid. Refer to 4.2.8.1 Inspection of hybrid transmission fluid level

4.2.8.4 Removal and installation of oil cooling pipe assembly

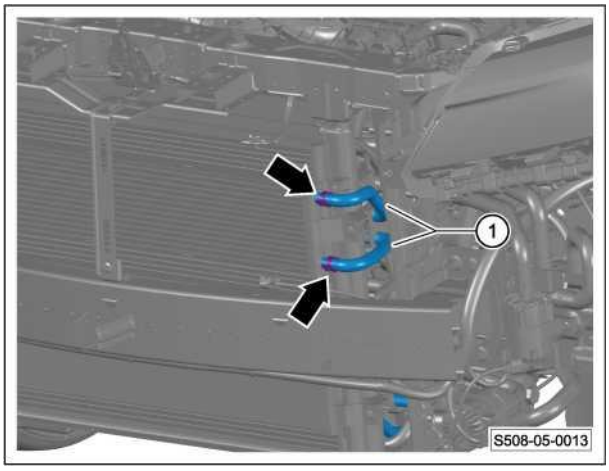
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

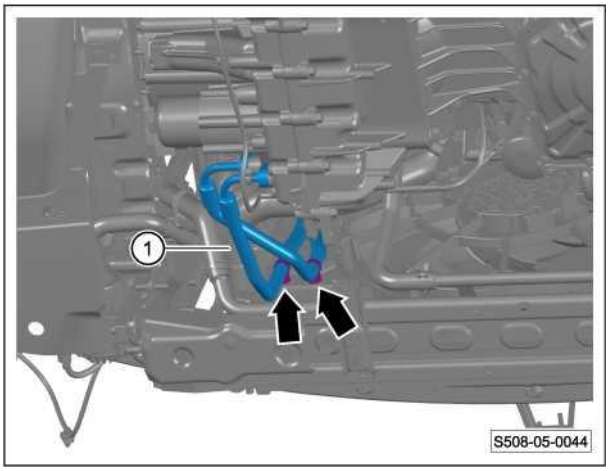
3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

4 Remove the front bumper with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

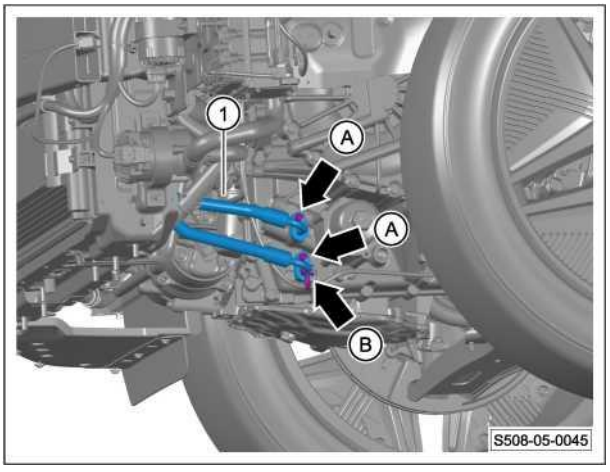


5 Remove the oil cooling pipe assembly

a. Loosen the fixing clamp (see arrow) and disengage the oil cooler pipe assembly ① from the oil cooler assembly.



b. Disengage fixing clips (see arrows) between the oil cooling pipe assembly ① and the radiator fan motor assembly.



c. Unscrew the fixing bolt (see arrow A), and disengage the oil cooling pipe assembly ① from the hybrid transmission.

d. Disengage the fixing clip (see arrow B) of the harness, and remove the oil cooling pipe assembly ①.

- Tightening torque of bolt: 8±1 N·m

Notes

Collect the residual ATF with a container during removal.

Replace with a new sealing ring in each removal of oil cooling pipe assembly to hybrid transmission.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, check whether the fixing clamp is installed in place.

– Check and add the hybrid transmission fluid. Refer to 4.2.8.1 Inspection of hybrid transmission

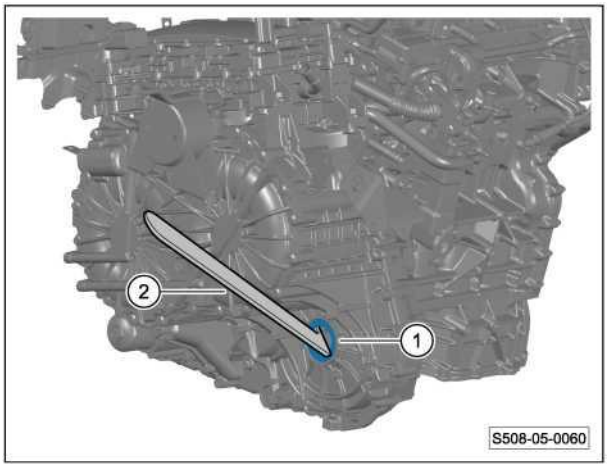
fluid level

4.2.8.5 Removal and installation of transmission left oil seal

Disassembly procedures

1 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change.

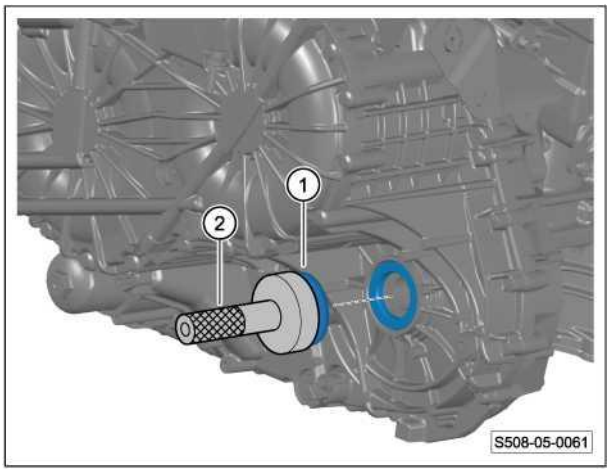
2 Remove the left drive shaft assembly. Refer to 3.6.4.2 Removal and installation of left drive shaft assembly



3 Remove the left transmission oil seal

a. Remove the left transmission oil seal ① with the oil seal removal tool ②.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Before installing oil seal, clean the oil seal base.

– Apply a proper amount of grease to the inner and outer lips of the oil seal.

– Use the transmission oil seal installation tool ② to press the left transmission oil seal ① to the specified position.

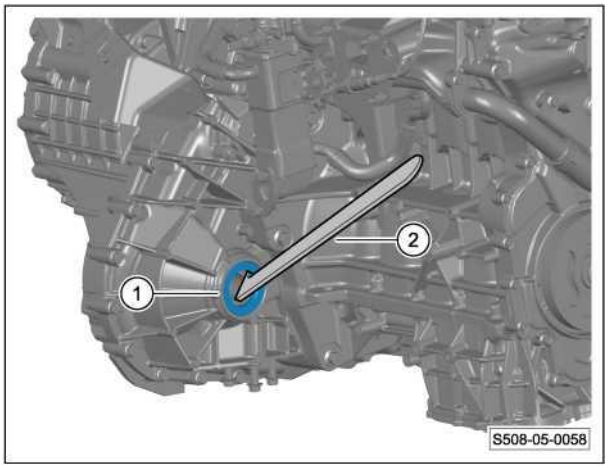
– Add the hybrid transmission fluid. Refer to 4.2.8.1 Inspection of hybrid transmission fluid level

4.2.8.6 Removal and installation of transmission right oil seal

Disassembly procedures

1 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change.

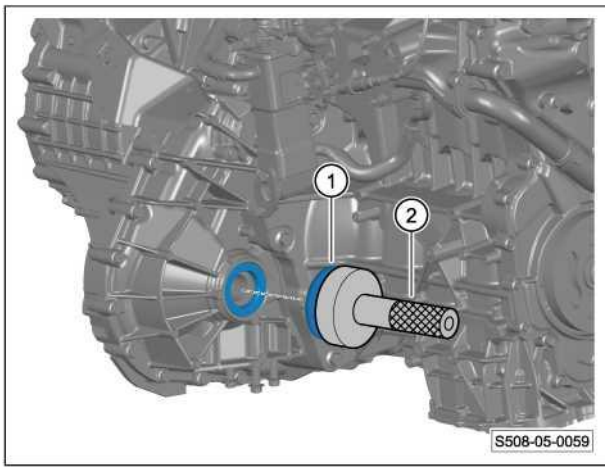
2 Remove the right drive shaft assembly. Refer to 3.6.4.3 Removal and installation of right drive shaft assembly



3 Remove the right transmission oil seal

a. Remove the right transmission oil seal ① with the oil seal removal tool ②.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Before installing oil seal, clean the oil seal base.

– Apply a proper amount of grease to the inner and outer lips of the oil seal.

– Use the transmission oil seal installation tool ② to press the right transmission oil seal ① to the specified position.

– Add the hybrid transmission fluid. Refer to 4.2.8.1 Inspection of hybrid transmission fluid level

4.2.8.7 Removal and installation of hybrid transmission

Disassembly procedures

Tip:

After replacing a new hybrid transmission, use a diagnostic scanner to learn the resolver. Refer to 1.4.2.6 After-sales matching after module replacement

1 Remove the hybrid transmission. Refer to 2.10.2.2 Detaching engine and hybrid transmission

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, calibrate the steering angle. Refer to 1.4.2.7 Calibration of steering angle

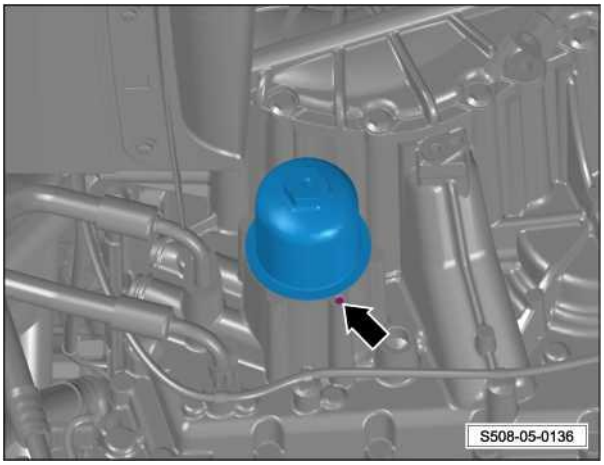
4.2.8.8 Replacement of filter components of hybrid transmission

Replacement procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Discharge the hybrid transmission fluid. Refer to 4.2.8.2 Hybrid transmission fluid change.

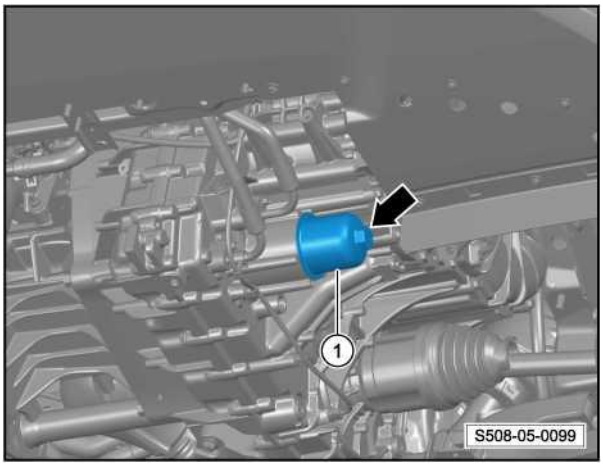
3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Replacement of transmission filter component

a. Unscrew the fixing bolt (see the arrow) of filter.

- Tightening torque of bolt: **6±1 N·m**

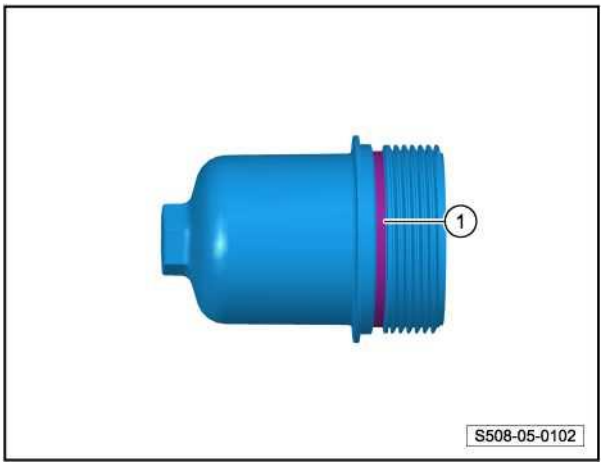


b. Unscrew the transmission filter shell ① in the position of (the arrow).

c. Remove transmission filter component.

- Tightening torque of transmission filter shell: 22±3N·m

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Apply a proper amount of clean lubricating oil to the new filter sealing ring ①.

– Check and add the hybrid transmission fluid. Refer to 4.2.8.1 Inspection of hybrid transmission fluid level

4.2.8.9 Removal and installation of MCU/GCU (integrated dual motor controller)

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

1 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant.

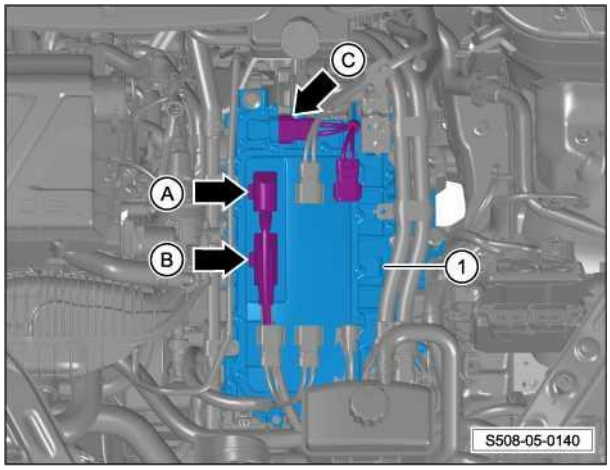
2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the HV electrical box bracket. Refer to 5.6.6.2 Removal and installation of HV box bracket

5 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly.

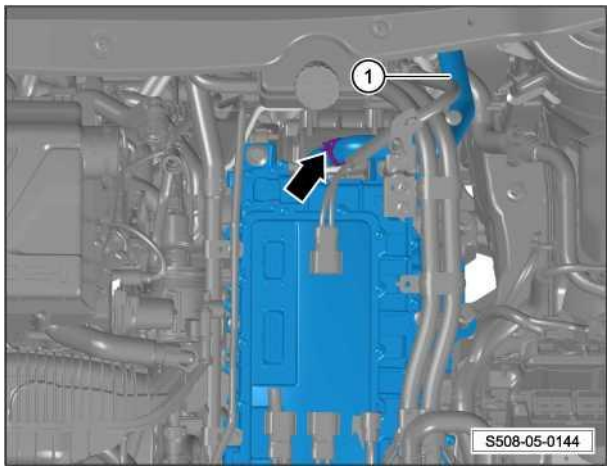
6 Remove the power suspension assembly (left), refer to 2.11.4.1 Removal and installation of power suspension assembly (left)



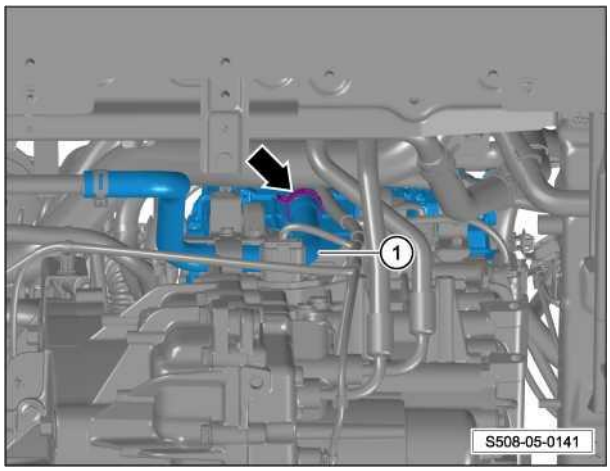
7 Remove the MCU/GCU (integrated dual motor controller)

a. Disconnect connectors (see arrows A and B) between the engine harness and the MCU/GCU (integrated dual motor controller).

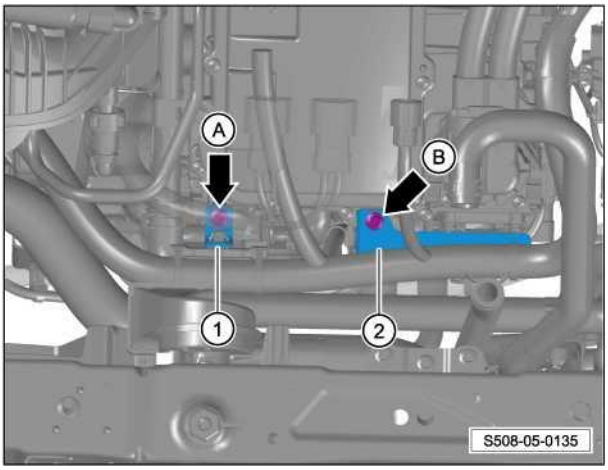
b. Disconnect the connector (see arrow C) between the GCU HV harness and the MCU/GCU (integrated dual motor controller).



c. Loosen the fixing clamp (see arrow) of the cooling water pipe, and disengage the low-temperature water pipe assembly ① from the MCU/GCU (integrated dual motor controller).



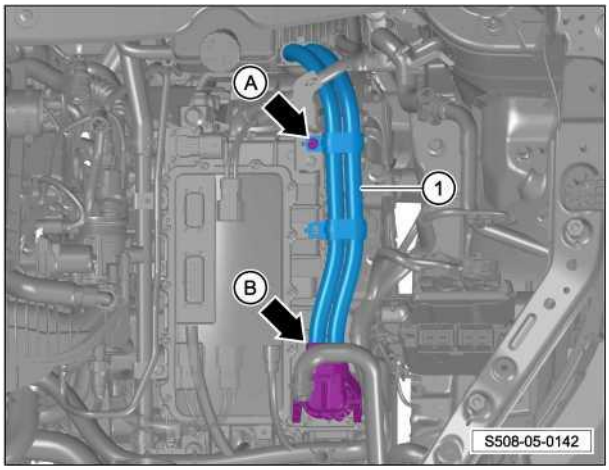
d. Loosen the fixing clamp (see arrow) of the cooling water pipe, and disengage the motor controller outlet hose ① and the MCU/GCU (integrated dual motor controller).



e. Unscrew the fixing bolt (see arrow A), and disengage the A/C HV harness bracket ① from the MCU/GCU (integrated dual motor controller).

f. Unscrew the fixing bolt (see arrow B), and disengage the engine harness bracket ② from the MCU/GCU (integrated dual motor controller).

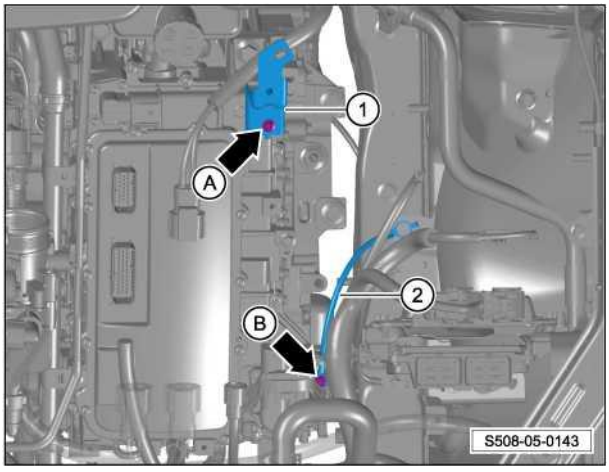
- Tightening torque of bolt (see arrow **A**): **10±1 N·m**
- Tightening torque of bolt (see arrow **B**): **10±1 N·m**



g. Unscrew the fixing bolt (see arrow A) of the battery pack HV harness bracket.

h. Disconnect the connector (see arrow B), and disengage the battery pack HV harness ① from the MCU/GCU (integrated dual motor controller).

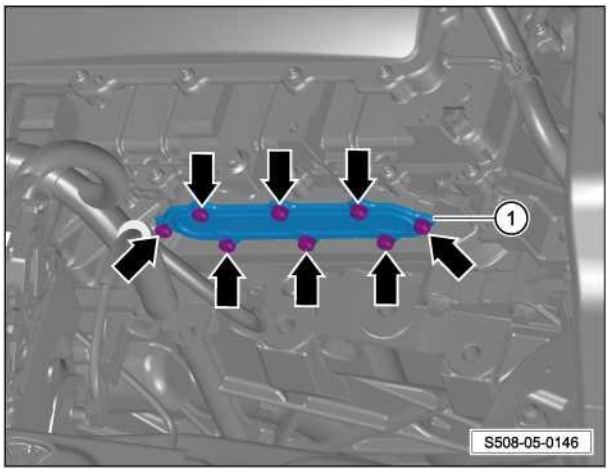
- Tightening torque of bolt: **10±1 N·m**



i. Unscrew the fixing bolt (see arrow A), and remove the harness bracket assembly 2 ①.

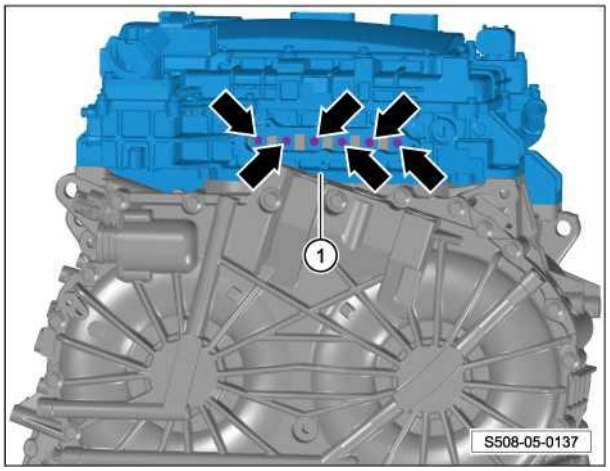
g. Unscrew the fixing bolt (see arrow B), and disengage the motor controller ground wire ② from the MCU/GCU (integrated dual motor controller).

- Tightening torque of bolt (see arrow **A**): **10±1 N·m**
- Tightening torque of bolt (see arrow **B**): **10±1 N·m**



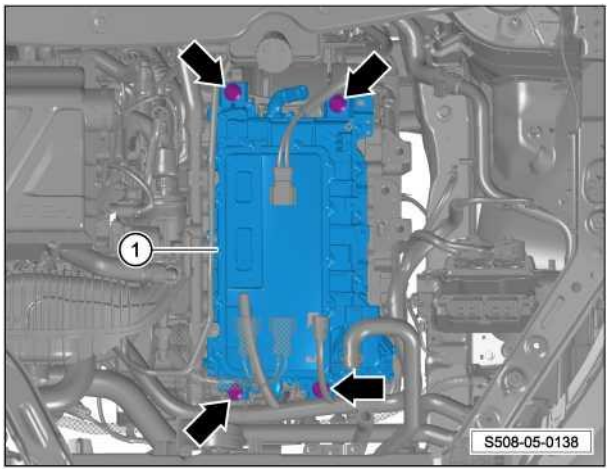
k. Unscrew the fixing bolt (see the arrow), and remove the motor three-phase copper bar connecting window ①.

- Tightening torque of bolt: 2±0.1N·m



l. Unscrew the fixing bolt of the motor control three-phase copper bar (see the arrow).

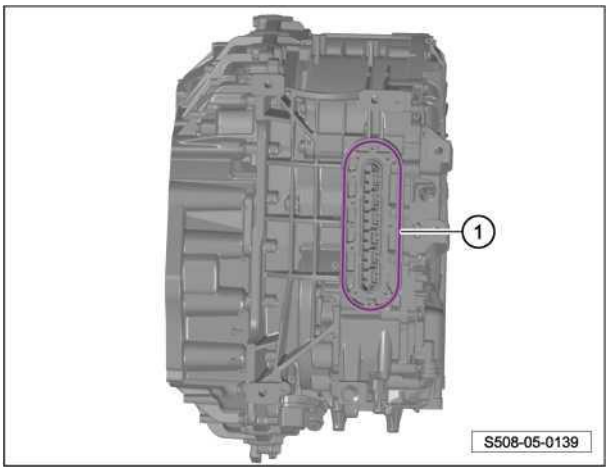
- Tightening torque of bolt: 11±2 N·m



m. Unscrew the fixing bolt (see the arrow), and remove MCU/GCU (integrated dual motor controller) ①.

- Tightening torque of bolt: 50±3 N·m

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– During installation, replace the sealing ring ① with a new one at the connector between the transmission and the MCU/GCU (integrated dual motor controller).

– When installing the MCU/GCU (integrated dual motor controller), note not to damage parts around it.

– To prevent damage caused by static electricity, do not touch the disconnected connector terminal.

– Prevent any foreign matter or water from entering the MCU/GCU (integrated dual motor controller).

– Add the coolant. Refer to 1.4.3.48 Coolant change

4.3 Electronic gearshift mechanism assembly

4.3.1 Specification

4.3.1.1 Fastener specifications

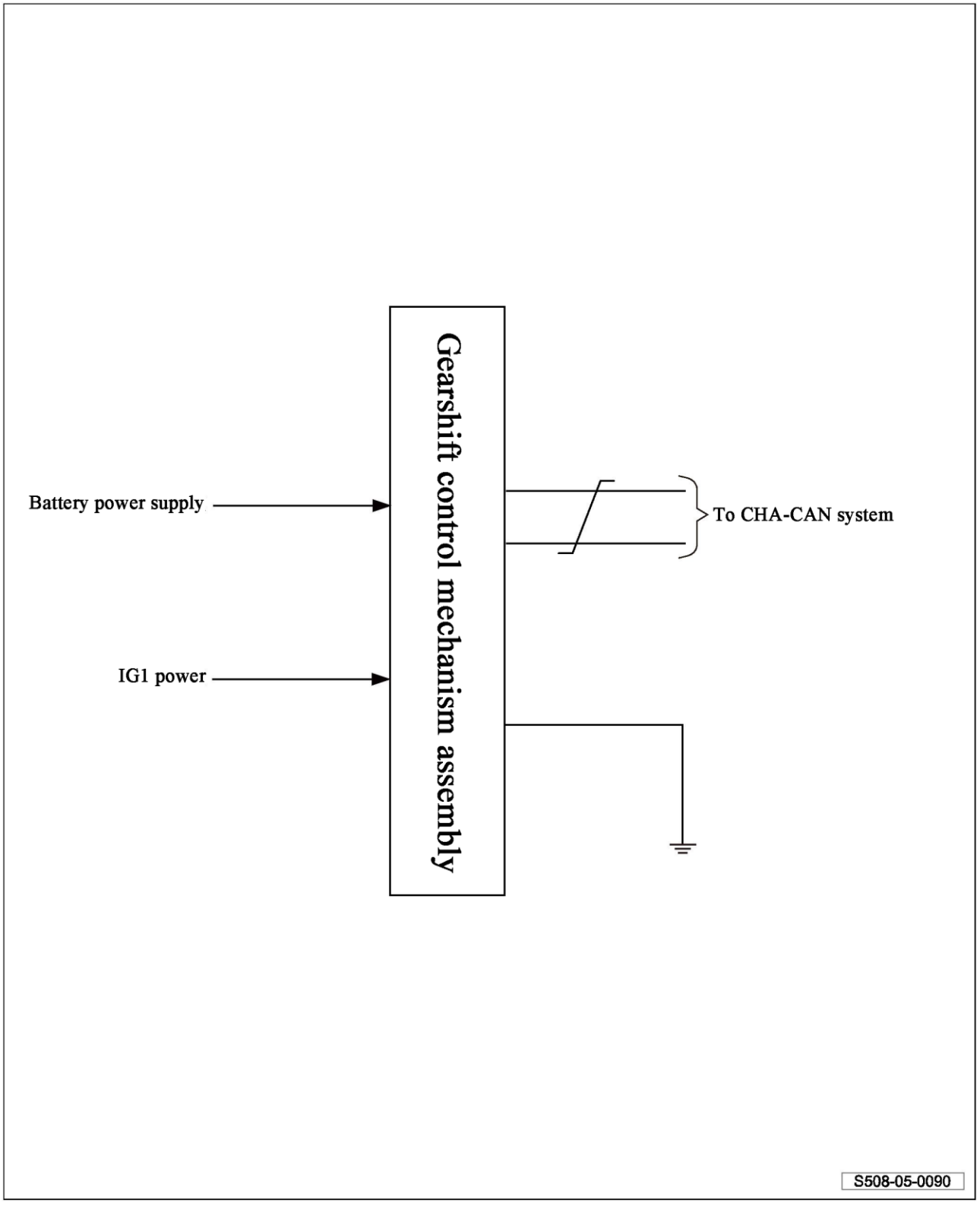
Tightening position	Specification	Tightening torque: N·m
Gearshift control mechanism assembly and control box assembly	Cross recessed hexagon head bolt	10±1

4.3.2 Component position

4.3.2.1 Component position

4.3.3 Electrical schematic diagram

4.3.3.1 Electrical schematic diagram



4.3.4 Diagnosis information and steps

4.3.4.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by GSM with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

4.3.4.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

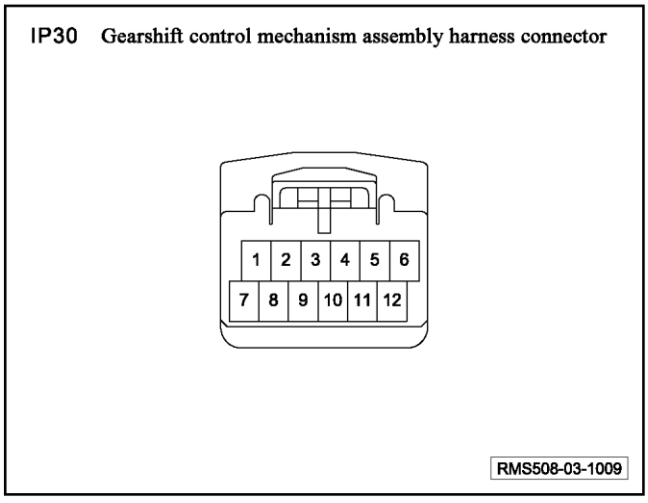
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

4.3.4.3 ECU terminal

Gearshift control mechanism assembly harness connector (IP30)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
3	0.5/red-green	Battery power supply	The start switch is put to any position	Battery power supply
4	0.35/black	Ground	—	0V
5	0.35/red-yellow	IG1 power	Put the start switch to “ON” position	Battery power supply
11	0.35/Light green and white	Chassis (CH)CAN-L	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference value (approximate value)
12	0.35/Light green	Chassis (CH)CAN-L	—	—

4.3.4.4 Active test

Overview:

To conduct an active test with a diagnostic scanner, you may operate the relay, actuator and other elements without removing any part. This can eliminate faults more effectively and quickly, greatly reducing the man-hours required for troubleshooting and improving the efficiency of fault diagnosis.

– Connect the intelligent tester to the vehicle.

– Turn the start switch to “ON” position.

– Perform the “active test” as displayed on the diagnostic scanner.

Note:

During the action test, do not operate for more than 3s; otherwise, ECU may be damaged. Repeated opening and closing within a period of time may damage parts.

S/N	Tester display items
1	P gear indicator
2	R gear indicator
3	N gear indicator
4	D gear indicator

4.3.4.5 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F193	Supplier hardware version No	V (fixed, version code)	-	-	-
		Large version (1-F)	1	15	-
		Small version (00-99)	0	99	-
F195	Supplier software version No	V (fixed, version code)	-	-	-
		Large version (1-F)	1	15	-
		Small version (00-99)	0	99	-
F180	Version No	4-digit: manufacturer	-	-	-
		10-digit: chip number	-	-	-
		4-digit: item code	-	-	-
		4-digit: BOOT version number	-	-	-
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-

		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
1100	Read the PSW1 ADC value	-	0	65535	-
1101	Read the PSW2 ADC value	-	0	65535	-
1102	Read the UNLOCK_SW1 ADC value	-	0	65535	-
1103	Read the UNLOCK_SW2 ADC value	-	0	65535	-
1104	Read the Hall angle	-	-	-	-
1105	Read the KL30 voltage value	-	0	65535	-

4.3.4.6 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for maintenance
B111716	Battery voltage is too low	Record DTC only	Battery fault	Confirm whether the battery functions normally
B111717	Battery voltage is too high	Record DTC only	Battery fault	Confirm whether the battery functions normally
U007488	CAN bus off	Record DTC only Shifting gear fails through GSM	1. CAN H is short-circuited to CAN L. 2. CAN BUS is short-circuited to VCC. 3. CAN BUS is short-circuited to GND.	Confirm whether there is any problem with CAN BUS harness
U029387	Lost communication with VCU	Record DTC only Shifting gear fails through GSM	1. The CAN BUS circuit does not work normally. 2. The corresponding node does not work normally.	1. Confirm whether VCU has message output. 2. Confirm whether GSM CAN BUS works normally.
U014087	Lost communication with BCM	Record DTC only The brightness and backlight of gear indicators cannot be adjusted through the clearance light switch	1. The CAN BUS circuit does not work normally. 2. The corresponding node does not work normally.	1. Confirm whether BCM outputs a message. 2. Confirm whether GSM CAN BUS works normally.
U012287	Lost communication with ESP	Record DTC only Pre-programming conditions are not	1. The CAN BUS circuit does not work normally.	1. Confirm whether ESP has message output.

		met.	2. The corresponding node does not work normally.	2. Confirm whether GSM CAN BUS works normally.
U010087	Lost communication with IVI	Record DTC only	1. The CAN BUS circuit does not work normally. 2. The corresponding node does not work normally.	1. Confirm whether IVI has message output. 2. Confirm whether GSM CAN BUS works normally.
P1C1C01	P button is stuck	Record DTC only The corresponding function of P button is affected.	Button stuck and poor contact	Check the P button mechanism or harness board
P1C1C02	The UNLOCK button is stuck.	Record DTC only The corresponding function of UNLOCK button is affected.	Button stuck and poor contact	Check the Unlock button mechanism or harness board
P1C1C03	Hall sensor fault	Record DTC only Gearshift action cannot be collected.	1. Hall sensor fault 2. The magnet drops or is not placed correctly.	Detect the status of magnet or Hall sensor

4.3.4.7 DTC: B111716, B111717

DTC	DTC definition
B111716	Battery voltage is too low
B111717	Battery voltage is too high

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses IF12 and IF23 of the gearshift control mechanism assembly.

A Check whether the fuses IF12 and IF23 are blown.

No → Go to Step 5.

Yes

Step 4	Repair the circuits of the fuses IF12 and IF23.

A Check whether the fuses IF12 and IF23 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

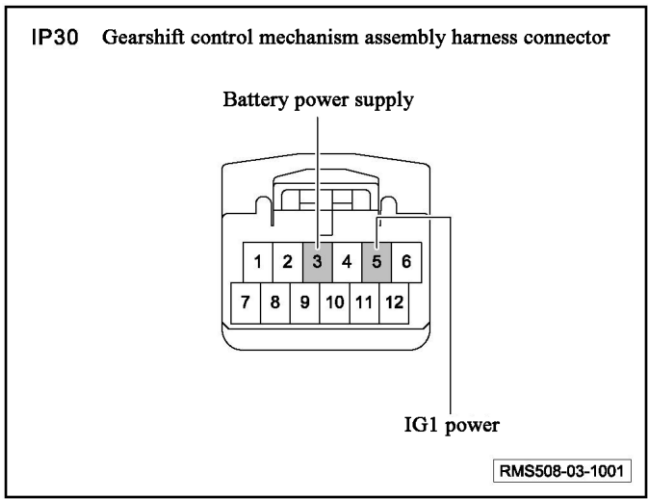
Rated value of fuse: **IF12 10A, IF23 5A**

D Confirm whether the gearshift control mechanism assembly works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the gearshift control mechanism assembly.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 3 and 5 of the gearshift control mechanism assembly harness connector IP30 and body ground.

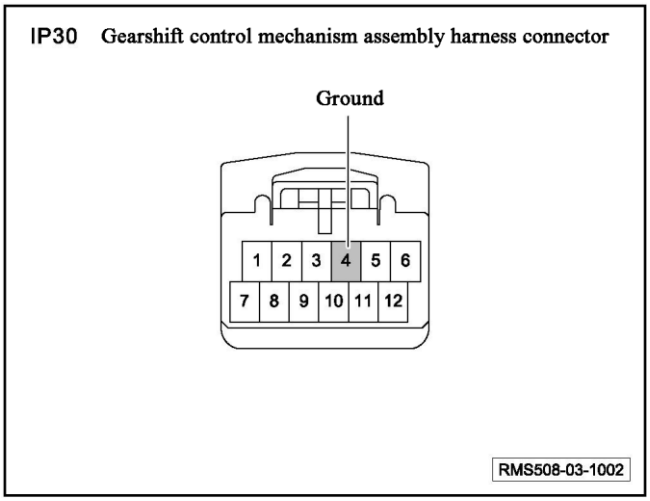
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the gearshift control mechanism assembly.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Measure the resistance between terminal 4 of the gearshift control mechanism assembly harness connector IP30 and body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 7	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

4.3.4.8 DTC: U007488

DTC	DTC definition
U007488	CAN BUS OFF

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

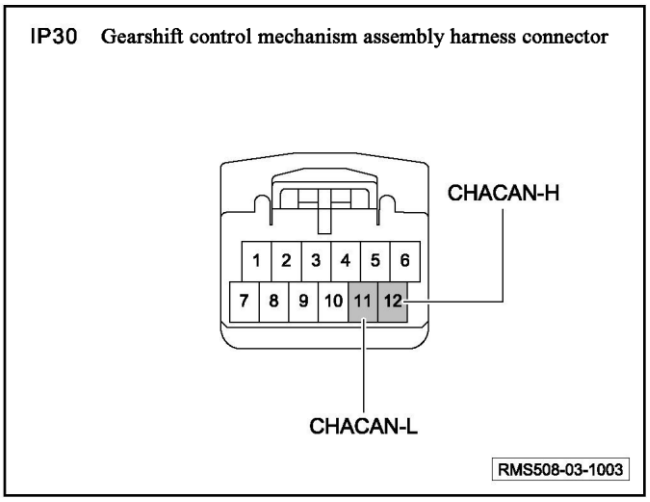
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Measure the resistance of circuit between terminals 12 and 11 of the gearshift control mechanism assembly harness connector IP30.

Standard resistance value: about **120Ω**

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check whether the CAN communication circuit is short to ground.

A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

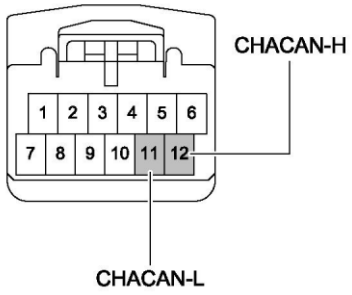
C Measure the resistance of circuit between terminals 12 and 11 of the gearshift control mechanism assembly harness connector IP30 and body ground.

Standard resistance value: **10kΩ** or higher

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

IP30 Gearshift control mechanism assembly harness connector



RMS508-03-1003

Yes

Step 4	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.3.4.9 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

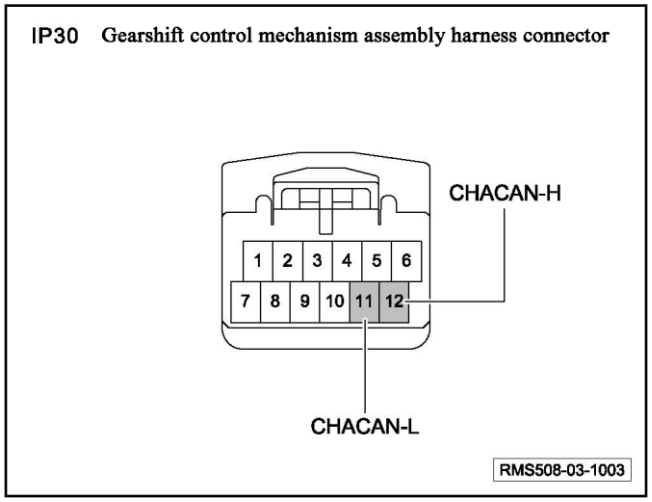
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the gearshift control mechanism assembly and VCU.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

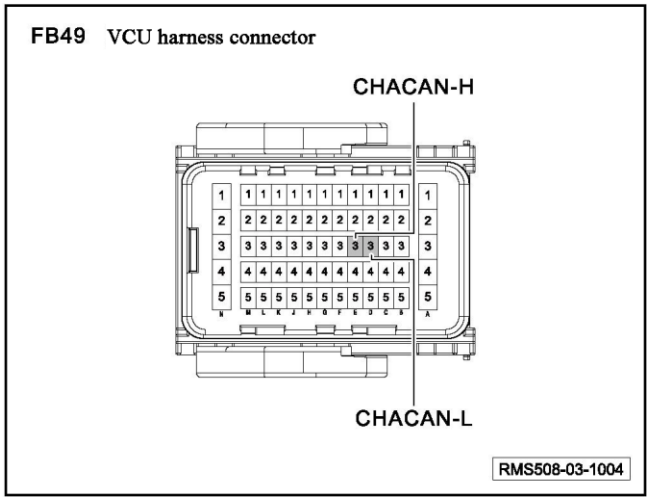
C Disconnect the VCU harness connector FB49.

D Measure the resistance between terminal 12 of the gearshift control mechanism assembly harness connector IP30 and terminal E3 of the VCU harness connector FB49.

E Measure the resistance between terminal 11 of the gearshift control mechanism assembly harness connector IP30 and terminal D3 of the VCU harness connector FB49.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.3.4.10 DTC: U014087

DTC	DTC definition
U014087	Lost communication with BCM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

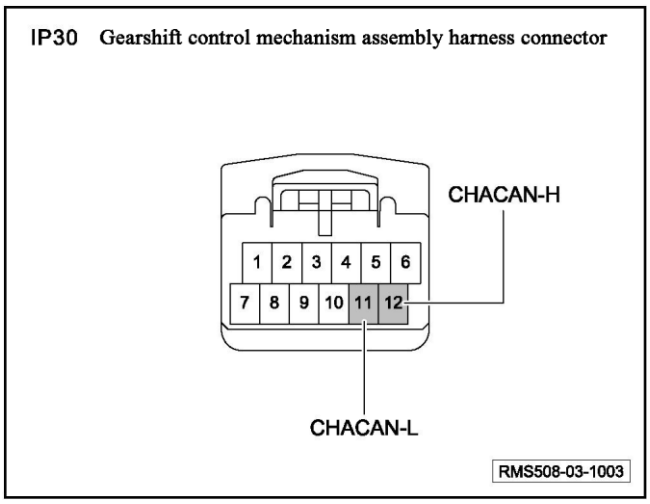
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the gearshift control mechanism assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 12 of the gearshift control mechanism assembly harness connector IP30 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 11 of the gearshift control mechanism assembly harness connector IP30 and terminal 17 of the body controller harness connector IP47.

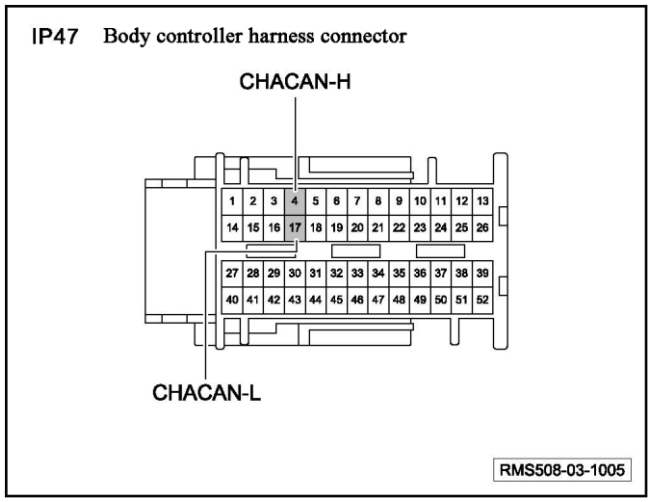
Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard

value

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground circuit of the body controller.

A Check whether the power supply ground circuit of the body controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.3.4.11 DTC: U012287

DTC	DTC definition
U012287	Lost communication with ESP

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

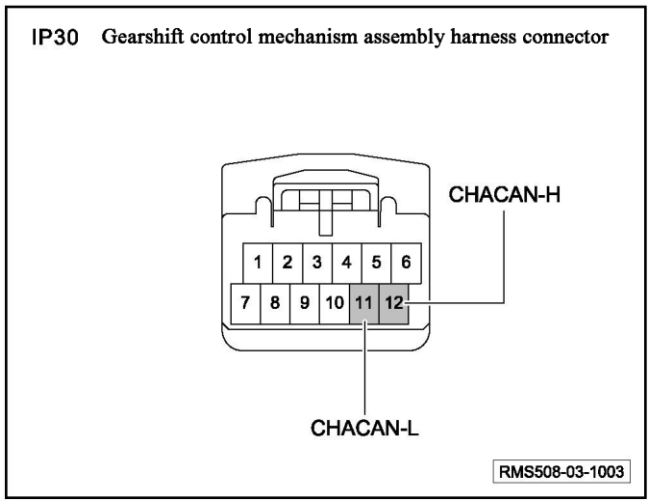
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the gearshift control mechanism assembly and the brake safety control system.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Disconnect the brake safety control system harness connector FB57.

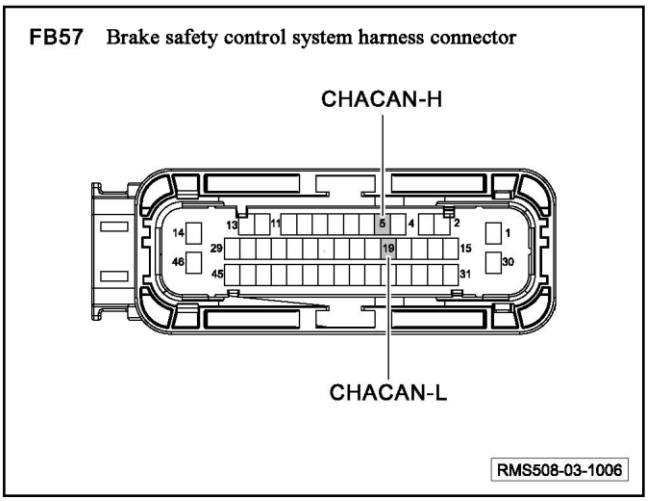
D Measure the resistance between terminal 12 of the gearshift control mechanism assembly harness connector IP30 and terminal 5 of the brake safety control system harness connector FB57.

E Measure the resistance between terminal 11 of the gearshift control mechanism assembly harness connector IP30 and terminal 19 of the brake safety control system harness connector FB57.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground circuit of the brake safety control system.

A Check whether the power supply ground circuit of the brake safety control system works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

4.3.4.12 DTC: U010087

DTC	DTC definition
U010087	Lost communication with IVI

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

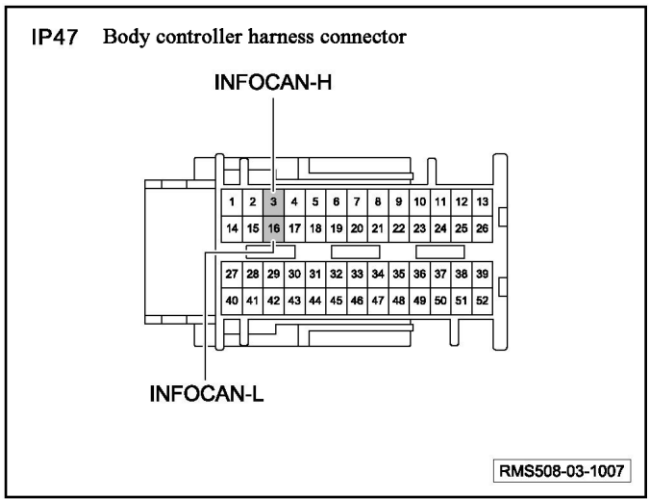
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the entertainment system host and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the entertainment system host harness connector IP14.

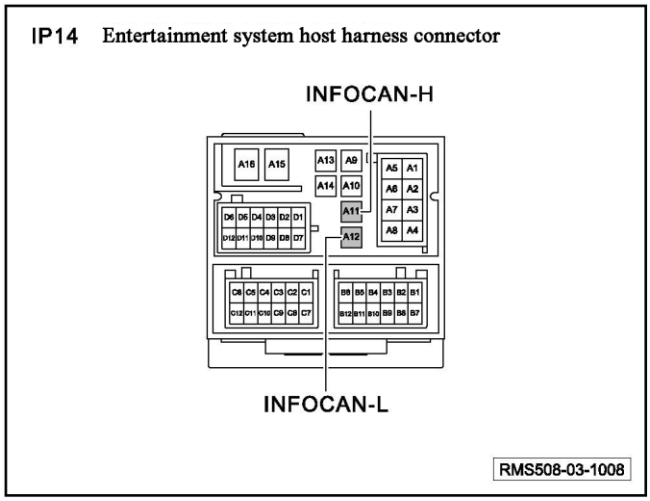
C Disconnect body controller harness connector IP47

D Measure the resistance between terminal A11 of the entertainment system host harness connector IP14 and terminal 3 of the body controller harness connector IP47.

E Measure the resistance between terminal A12 of the entertainment system host harness connector IP14 and terminal 16 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the gearshift control mechanism assembly and the body controller.

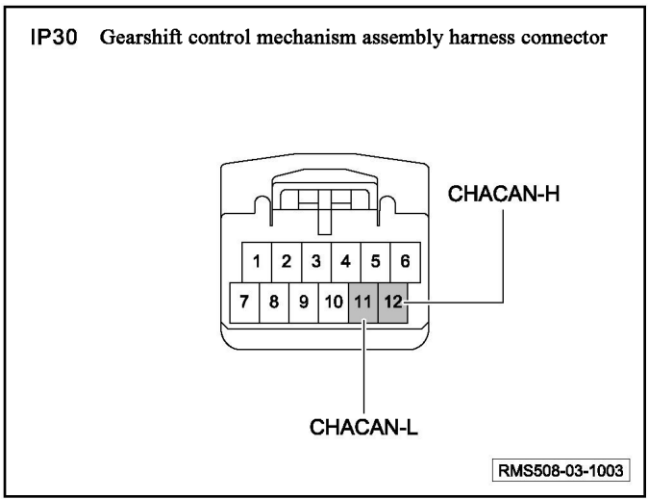
A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 11 of the gearshift control mechanism assembly harness connector IP30 and terminal 17 of the body controller harness connector IP47.

E Measure the resistance between terminal 12 of the gearshift control mechanism assembly harness connector IP30 and terminal 4 of the body



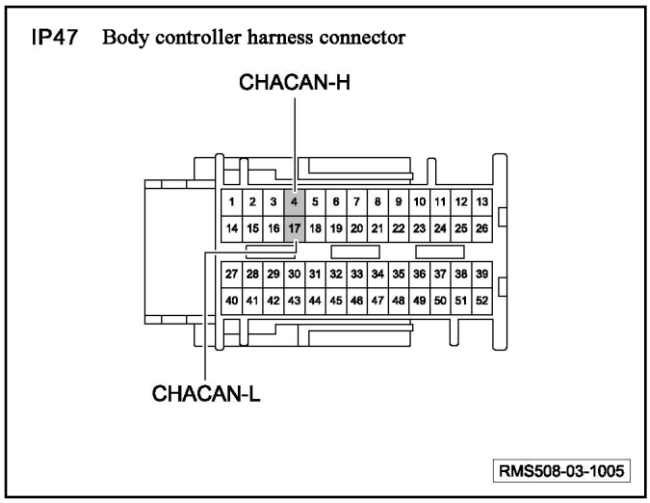
controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm if the resistance conforms to the standard value

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply ground circuit of the entertainment system host.

A Check whether the power supply ground circuit of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

4.3.4.13 DTC: P1C1C01 & P1C1C02

DTC	DTC definition
P1C1C01	P button is stuck
P1C1C02	The UNLOCK button is stuck.

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the button of the gearshift control mechanism assembly.

A Check whether the button of the gearshift control mechanism assembly is extruded by any foreign matter, stuck or damaged.

Yes → Repair or replace the gearshift control mechanism assembly.

No

Step 3	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

Yes → Repair or replace the harness.

No

Step 4	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

4.3.4.14 DTC: P1C1C03

DTC	DTC definition
P1C1C03	Hall sensor fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses IF12 and IF23 of the gearshift control mechanism assembly.

A Check whether the fuses IF12 and IF23 are blown.

No → Go to Step 5.

Yes

Step 3	Repair the circuits of the fuses IF12 and IF23.

A Check whether the fuses IF12 and IF23 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

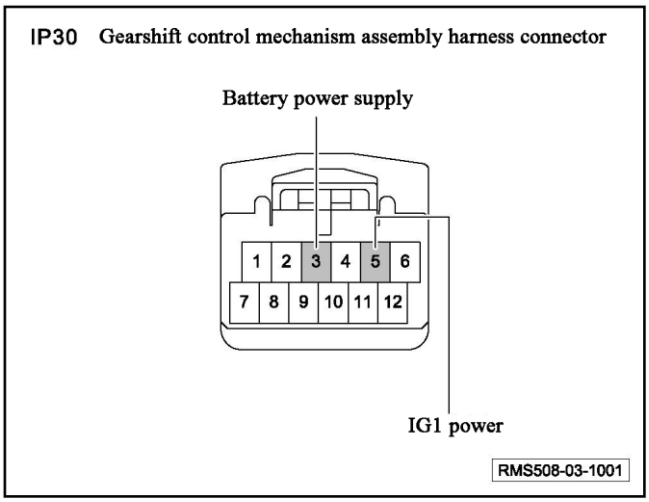
Rated value of fuse: **IF12 10A, IF23 5A**

D Confirm whether the gearshift control mechanism assembly works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the gearshift control mechanism assembly.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals 3 and 5 of the gearshift control mechanism assembly harness connector IP30 and body ground.

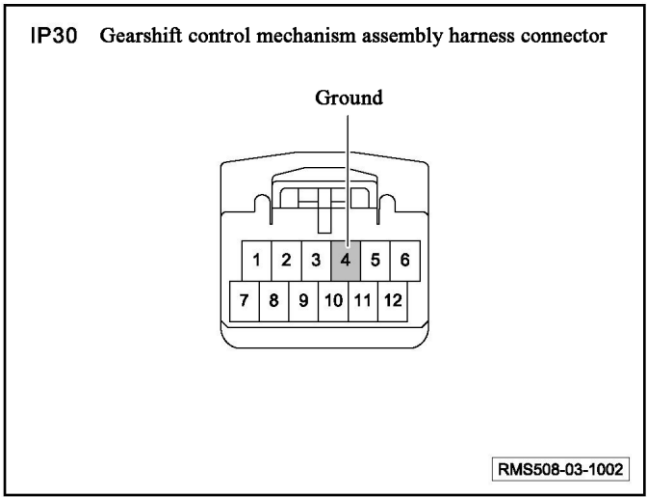
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the gearshift control mechanism assembly.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift control mechanism assembly harness connector IP30.

C Measure the resistance between terminal 4 of the gearshift control mechanism assembly harness connector IP30 and body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

4.3.5 Removal and installation

4.3.5.1 Removal and installation of gearshift control mechanism assembly

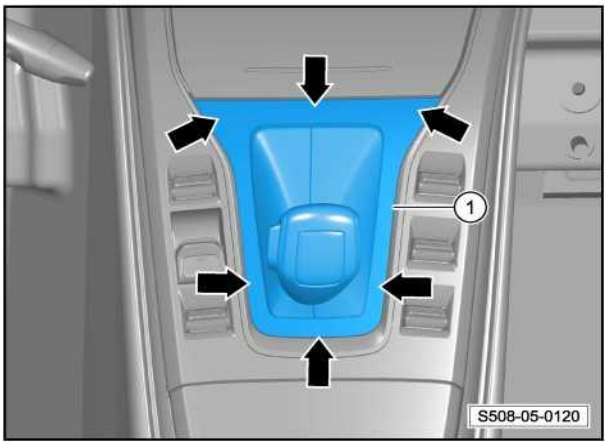
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

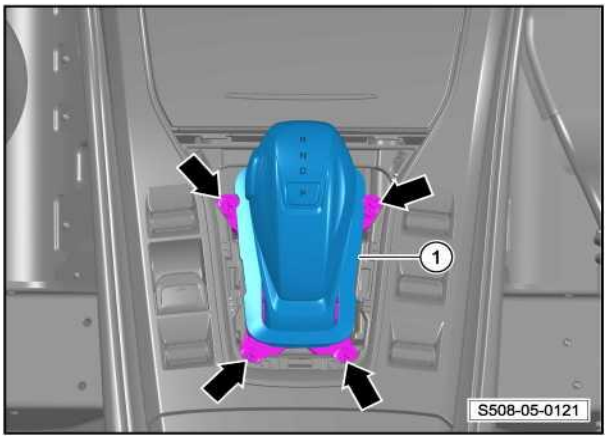
3 Remove the gearshift control mechanism assembly

a. Disengage fixing clips (see arrows), and remove the gearshift mechanism large panel assembly ①.

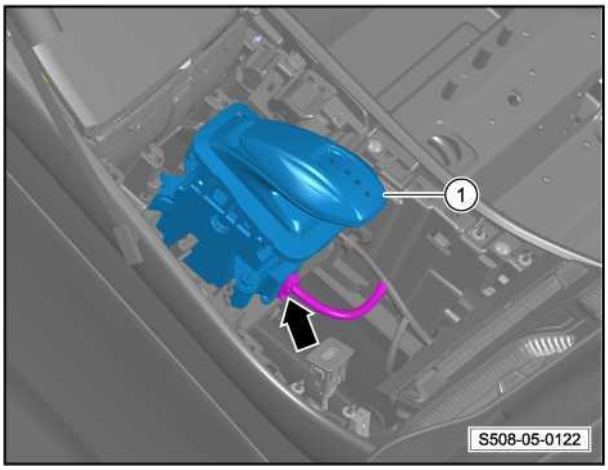


b. Unscrew the fixing bolts (see the arrows) and remove the gearshift control mechanism assembly ①.

- Tightening torque of bolt: **10±1 N·m**



c. Disconnect the connector (see arrow), and take out the gearshift control mechanism assembly ①.



Installation procedures

The installation procedure is to be performed basically in the reverse order:

Electric System

5.1 Warnings and notes 108
5.1.1 Warnings and notes 112
5.1.1.1 Warnings and notes 114
5.1.1.2 Warnings for operations related to the HV electric control system 116
5.1.1.3 Preparations for operations related to the HV electric control system 116
5.2 Electrified vehicle control system 118
5.2.1 Specification 121
5.2.1.1 Fastener specifications 121
5.2.2 System description 123
5.2.2.1 Overview of vehicle control system 125
5.2.2.2 Overview of HV interlocking system 125
5.2.2.3 Introduction to working modes of DE-i system 125
5.2.3 Component position 126
5.2.3.1 Component position 126
5.2.4 Exploded view 127
5.2.4.1 Exploded view 127
5.2.5 Electrical schematic diagram 128
5.2.5.1 Electrical schematic diagram 128
5.2.6 Diagnosis information and steps 130
5.2.6.1 Diagnostic instructions 130
5.2.6.2 Visual inspection 132
5.2.6.3 ECU terminals 132
5.2.6.4 Data list 132
5.2.6.5 DTC list 132
5.2.6.6 DTC: B111717, B111716 132
5.2.6.7 DTC: P3A8044 135
5.2.6.8 DTC: U007588 135
5.2.6.9 DTC: U007488 137
5.2.6.10 DTC: U010087 140
5.2.6.11 DTC: U011187 141
5.2.6.12 DTC: U011087, U031187 143
5.2.6.13 DTC: U029887 150
5.2.6.14 DTC: U010387 153
5.2.6.15 DTC: U014087 154
5.2.6.16 DTC: U045687 154
5.2.6.17 DTC: U016587 154
5.2.6.18 DTC: U015187 155
5.2.6.19 DTC: U031887 157
5.2.6.20 DTC: U012887 157
5.2.6.21 DTC: U015587 158
5.2.6.22 DTC: U019887 158
5.2.6.23 DTC: P3AA011, P0A0A01 159
5.2.6.24 DTC: P3AA112 159
5.2.6.25 DTC: P3AA21C, P3AA31C 160
5.2.6.26 DTC: P3AA723 160
5.2.6.27 DTC: P3AA823 160
5.2.6.28 DTC: P3AAA23 160
5.2.6.29 DTC: P3AB591 161
5.2.6.30 DTC: P3AC096 162
5.2.6.31 DTC: P3AC196 164
5.2.7 Removal and installation 164
5.2.7.1 Removal and installation of VCU 166
5.2.7.2 Removal and installation of electronic accelerator pedal assembly 167
5.3 Power battery management system 170
5.3.1 Specification 171
5.3.1.1 Fastener specifications 174
5.3.1.2 Specification and parameters of power battery 174
5.3.2 System description 174
5.3.2.1 System description 175
5.3.3 Component position 175
5.3.3.1 Component position 177
5.3.4 Exploded view 177
5.3.4.1 Exploded view 179
5.3.5 Electrical schematic diagram 179
5.3.5.1 Electrical schematic diagram 180
5.3.6 Diagnosis information and steps 180
5.3.6.1 Diagnostic instructions 182
5.3.6.2 Visual inspection 182
5.3.6.3 ECU terminals 182
5.3.6.4 Data list 182
5.3.6.5 DTC list 186
5.3.6.6 DTC: P3A0027, P3A0024 186

5.3.6.7 DTC: P3A0026 192
5.3.6.8 DTC: P3A002C, P3A001D..... 199
5.3.6.9 DTC: P3A0017, P3A0018.... 204
5.3.6.10 DTC: P3A000A, P3A001A..... 208
5.3.6.11 DTC: P3A0002, P3A0003 211
5.3.6.12 DTC: P3A0000 216
5.3.6.13 DTC: P3A002E..... 222
5.3.6.14 DTC: P3A000F, P3A0036..... 225
5.3.6.15 DTC: P3A0006 230
5.3.6.16 DTC: P3A0005, P3A0010 233
5.3.6.17 DTC: P3A000C 236
5.3.6.18 DTC: P3A0011, P3A0012 241
5.3.6.19 DTC: P3A0009, P3A0008 248
5.3.6.20 DTC: P3A002F, P3A0030 253
5.3.6.21 DTC: P3A0031 257
5.3.6.22 DTC: P3A0040, P3A0032..... 262
5.3.6.23 DTC: P3A0014 266
5.3.6.24 DTC: P3A0038 272
5.3.6.25 DTC: P3A0039 278
5.3.6.26 DTC: B111717, B111716 282
5.3.6.27 DTC: P3A0004 288
5.3.6.28 DTC: U029387 292
5.3.6.29 DTC: U007588 296
5.3.6.30 DTC: U015187 305
5.3.6.31 DTC: U045687 309
5.3.6.32 DTC: U016587 315
5.3.6.33 DTC: P3A0042, U01408 318
5.3.6.34 DTC: U029287 322
5.3.7 Removal and installation 327
5.3.7.1 Removal and installation of battery pack assembly 330
5.4 Battery thermal management system 336
5.4.1 Specification 340
5.4.1.1 Fastener specifications 346
5.4.2 System description..... 347
5.4.2.1 Overview of battery thermal management system 350
5.4.3 Component position..... 357
5.4.3.1 Component position..... 361
5.4.4 Exploded view 364
5.4.4.1 Exploded view 367
5.4.5 Removal and installation 367
5.4.5.1 Replacement of power battery coolant ...368
5.4.5.2 Removal and installation of thermal management integrated module 370
5.4.5.3 Removal and installation of battery pack connecting tube assembly 370
5.4.5.4 Removal and installation of plate heat exchanger outlet hose 373
5.4.5.5 Removal and installation of battery circulating coolant pump assembly 373
5.4.5.6 Removal and installation of battery compensation reservoir inlet hose 373
5.5 Charging system.....374
5.5.1 Specification.....374
5.5.1.1 Fastener specifications.....375
5.5.2 System description 375
5.5.2.1 System overview 378
5.5.3 Component position 378
5.5.3.1 Component position.....380
5.5.4 Exploded view.....380
5.5.4.1 Exploded view.....382
5.5.5 Electrical schematic diagram.....382
5.5.5.1 Electrical schematic diagram.....382
5.5.6 Diagnosis information and steps 382
5.5.6.1 Diagnostic instructions 385
5.5.6.2 Visual inspection 385
5.5.6.3 ECU terminals 394
5.5.6.4 Data list 398
5.5.6.5 DTC list.....401
5.5.6.6 DTC: U007388.....402
5.5.6.7 DTC: U029387.....404
5.5.6.8 DTC: P0A0A01.....408
5.5.6.9 DTC: P3C0016, P3C0117..... 410
5.5.6.10 DTC: P3C0211, P3C0300..... 413
5.5.6.11 DTC: P3C0600.....414
5.5.6.12 DTC: P3C084B, P3C094B..... 416
5.5.6.13 DTC: P3C1311, P3C1400..... 417
5.5.6.14 DTC: P3C1500.....418
5.5.6.15 DTC: P3C1617, P3C1716..... 420
5.5.6.16 DTC: P3C281C, P3C3400.....420
5.5.6.17 DTC: P3C4198, P3C4298 422
5.5.7 Removal and installation.....425

5.5.7.1 Removal and installation of HV electrical appliance two-in-one assembly 425

5.5.7.2 Removal and installation of slow charging socket assembly 425

5.6 HV distribution system 427

5.6.1 Specification 427

5.6.1.1 Fastener specifications 437

5.6.2 System description 442

5.6.2.1 System overview 442

5.6.3 Component position 442

5.6.3.1 Component position 443

5.6.4 Exploded view 443

5.6.4.1 Exploded view 444

5.6.5 Electrical schematic diagram 444

5.6.5.1 Electrical schematic diagram 445

5.6.6 Removal and installation 445

5.6.6.1 Removal and installation of HV box assembly 447

5.6.6.2 Removal and installation of HV box mounting bracket 449

5.6.6.3 Removal and installation of charger HV harness assembly 450

5.6.6.4 Removal and installation of A/C System HV harness 451

5.6.6.5 Removal and installation of battery package HV harness assembly 451

5.6.6.6 Removal and installation o GCU HV harness 451

5.7 Electric-driven and Electronically Controlled Thermal Management System 451

5.7.1 Specification 453

5.7.1.1 Fastener specifications 453

5.7.2 System description 454

5.7.2.1 Overview of electric-driven and electronically controlled thermal management system 454

5.7.3 Component position 456

5.7.3.1 Component position 456

5.7.4 Removal and installation 457

5.7.4.1 Replacement of electric drive coolant 457

5.7.4.2 Removal and installation of low-temperature radiator 462

5.7.4.3 Removal and installation of low-temperature radiator inlet hose 462

5.7.4.4 Removal and installation of low-temperature radiator water inlet hose assembly 462

5.7.4.5 Removal and installation of motor coolant pump I 463

5.7.4.6 Removal and installation of auxiliary water reservoir assembly 464

5.7.4.7 Removal and installation of low-temperature radiator outlet hose 467

5.7.4.8 Removal and installation of motor controller water outlet hose 468

5.7.4.9 Removal and installation of coolant pump water outlet hose assembly 471

5.7.4.10 Removal and installation of low-temperature water hose component 471

5.7.4.11 Removal and installation of DC-DC connecting water hose assembly 473

5.7.4.12 Removal and installation of rear middle passage electric drive water inlet hose 473

5.7.4.13 Removal and installation of rear middle passage electric drive water outlet hose 475

5.7.4.14 Removal and installation of charger water outlet hose assembly 479

5.1 Warnings and notes

5.1.1 Warnings and notes

5.1.1.1 Warnings and notes

Definitions of “Warning”, “Caution” and “Note”

The diagnosis and service procedures in the Service Manual contain general and specific “Warning”, “Caution” and “Note”. It helps after-sales service technicians identify the faults and repair the vehicles, thus restoring the normal functions of the vehicles. However, certain procedures may present a hazard to technicians if they are not followed in the recommended manner.

“Warnings”, “Caution” and “Notes” are elements designed to prevent these hazards, but not all hazards can be foreseen. Such information is placed at conspicuous locations within the Service Manual. They are formulated to prevent the following consequences:

- Serious personal injury;
- Vehicle damage;
- Unnecessary vehicle repairs;
- Unnecessary replacement of parts;
- Improper repair or replacement of vehicle components;

WARNING Definition

When encountering a “Warning”, you will be asked to take a necessary action or not to take a prohibited action. If a “Warning” is not heeded, the following consequences may occur:

- Serious personal injury;
- Serious injury to the driver or passenger(s) of the vehicle, if the vehicle has been improperly repaired.

Definition of “Caution”

“Caution” requires special attention to required measures or prohibited measures. If a “Caution” is not heeded, the following consequences may occur:

- Vehicle damage;
- Unnecessary vehicle repairs;
- Unnecessary replacement of parts;
- Abnormal operation or performance of the systems and components that have been repaired;
- Damage to relevant systems or parts;
- Damage to fasteners and basic or special tools;
- Leakage of coolant, lubricating oil or other main fluids;

Definition of “Note”

“Note” highlights the necessity of certain diagnosis or maintenance procedure and it is given to:

- Specify the maintenance procedure;
- Offer supplementary information to finish a maintenance procedure;
- Explain the reason for operation in accordance with the recommended maintenance procedure;
- Offer information that helps to finish a maintenance procedure in a more effective way;
- Offer information on previous experience to technicians, so that they can finish a maintenance procedure easier;

Warning about vehicle lifting

Warning!

To avoid any vehicle damage, serious personal injury or death when major components are removed from the vehicle and the vehicle is supported by a hoist, support the vehicle with jack stands at the location where the components are removed.

Assistant driving warning

Warning!

An assistant should drive the vehicle while the technician checks for the location of the reported condition. Otherwise, traffic accidents may be caused and the vehicle may be damaged.

Warnings on disconnection of battery terminal

Warning!

Unless otherwise stated in the operating procedures, power off all electrical appliances and turn off the start switch before repairing electrical components. If the tool or equipment is likely to be in touch with the exposed live electrical terminal easily, disconnect the negative terminal of battery. Violation against any these safety instructions may cause personal injury and vehicle damage.

Warnings about Moving Components and Hot Surface

Warning!

When working around the powertrain in service, avoid touching the moving components and hot surfaces to prevent scalds.

Warnings about Removal of Expansion Tank Cover

Warning!

In order to avoid scalds, do not remove the expansion tank cover before the vehicle is cooled down. If the expansion tank cover is removed while the vehicle is not cooled down yet, the cooling system will release hot high-pressure liquid and steam.

Warning about cooling system service

Warning!

Even through the solution in the radiator does not boil, its temperature is much higher than the boiling temperature if the cooling system is under pressure. During the maintenance of cooling system, the coolant will boil immediately and may splash to the operator if the expansion tank cover is opened when the vehicle has not cooled down and the pressure is still high, thus causing severe scald.

Warnings for road test

Warning!

Road test the vehicle and observe all traffic laws and regulations on the premise of safety. Do not try any operation which may endanger the vehicle control. Violation of the above safety instructions may cause severe injury and vehicle damage.

Warnings on power battery

Warning!

The rated voltage of power battery is 393.1V, which is very high and very dangerous to human body, and shall be paid with high attention! Non-professionals are prohibited to repair or check the power battery without permission. Otherwise, there is a risk of severe burns, electric shocks and even death. It is prohibited to remove the power battery without permission.

Warnings on HV safety preventive measures

HV components of the vehicle include drive control device, HV distribution unit, on-board charger, HV main cable, power battery, drive motor, electric compressor, etc.

The surface temperature of drive motor and drive control device will be high after a certain period of driving. If A/C is used for refrigeration, the surface temperature of A/C electric compressor and radiator will be high. In such cases, do not touch the above components with bare hands.

It is strictly prohibited to disassemble any HV electrical apparatus element in the vehicle, or unplug or disconnect any on-board HV connector or cable without permission; otherwise, serious injuries due to electric shock and damage to vehicle may be caused. The orange wiring harnesses arranged in the vehicle are HV cables, which shall be distinguished from others.

Warnings on vehicle collision accidents

Warning!

In case of vehicle collision (including collision with body front, rear, left and right and collision with the ground):

- Stop the vehicle safely even if it can still run, pull up the EPB switch and turn the start switch to OFF position; do not touch metal parts of the body.
- Under any circumstances, it is forbidden for any person to repair the vehicle when the power supply of the vehicle is not completely disconnected.
- Check whether the high-voltage components and wiring harness of the vehicle are damaged or exposed (the position of the components can be determined by the layout of high-voltage components). To avoid personal injury, please do not touch HV harnesses, connectors and other HV components. Do not touch the damaged or exposed wire harness to avoid high voltage electric shock. Check HV wiring harness distributed on the vehicle body carefully for damage. Wear insulating protective clothing (including insulating gloves, insulating shoes and insulating clothing) withstanding a voltage above 1000V when you need to contact any high-voltage cables or components.
- If the damage of the vehicle cannot be estimated, please do not touch the vehicle. Keep away from the vehicle, and immediately contact professional technicians to inspect and repair the vehicle. Be sure to inform the emergency personnel who come to handle the accident without delay that the vehicle is a hybrid electric vehicle, and do not allow anyone to approach, touch or move the vehicle.
- If the driver and passenger(s) are trapped and cannot turn off the high-voltage maintenance switch, please try to cut the vehicle after confirmation from professional personnel, and do not touch the high-voltage cables (with orange skins) and the power battery during cutting. If the power battery suffers electrolyte leakage, plenty of fire water shall be used to flush the battery and ground before cutting to wash away or dilute the leaked electrolyte, so as to prevent sparks from igniting the electrolyte during cutting and causing a fire.
- It is strictly prohibited to remove the HV wiring harness and parts from the engine compartment without permission. The surface of HV wiring harness is orange.
- Leakage or damage of electrolyte of the power battery may cause a fire. Please do not touch the leaked electrolyte with your hands. If your skin or eyes contact the electrolyte, please rinse immediately with plenty of water and seek medical attention immediately to avoid injury.
- If the vehicle smokes or catches fire, please leave the vehicle immediately, and put out the fire with a carbon dioxide or dry powder extinguisher; otherwise, serious injury or death may be caused.
- If towing is required, front wheels must be raised off the ground because the drive motor may generate electricity, thus damaging HV components of the vehicle and even causing a fire, if the front wheels touch the ground during towing.
- If the vehicle needs to be repaired or painted after collision, HV components such as power battery, HV wiring harness and motor controller must be removed before painting. The power battery is exposed to the spraying operation room with high temperature, which may affect the service life of the power battery. In addition, if the power battery on the vehicle is not removed, it may bring potential safety hazards to maintenance personnel who have not been trained in maintenance.
- Place the reflective tripod about 100m behind the vehicle immediately in case of fault or accident, or about 150m behind the vehicle on expressway to warn the passing vehicles and pedestrians for avoidance.

Warning on vehicle startup

Warning!

Do not operate the start switch continuously.

Warning on driving

Warning!

Drunk driving is prohibited.

Accidental movement of vehicle may result in serious injury.

Do not operate the start switch while driving.

Do not depress the accelerator pedal during gear shifting, and do not shift gear when depressing the accelerator pedal, so as to avoid losing control of the vehicle.

Please observe the gear information displayed on the instrument to confirm whether it is your desired gear when shifting gears or parking.

Do not depress the brake pedal and accelerator pedal simultaneously.

Emergency braking should be avoided while the vehicle is running.

Vehicles should slow down as much as possible during turning, and no sharp turning is allowed.

For the sake of safety, do not climb steep slopes.

When the vehicle is ON and the gearshift lever is at D or R position, be sure to depress the brake pedal or apply the electronic parking brake; otherwise, the vehicle will creep. If you leave the vehicle, be sure to apply the electronic parking brake and shift to P position.

Do not park the vehicle on a ramp by depressing the accelerator pedal, but depress the brake pedal to keep the vehicle stationary.

Avoid driving the vehicle through deep water. If it is necessary to pass through a ponding road, the wading depth shall not exceed lower edge of the vehicle body and the vehicle shall be driven at low speed.

Warning on parking

Warning!

The improper parking may lead to the serious injuries.

At the time of parking, be sure to shift to P position and lift the electronic parking brake switch to avoid accidental movement.

Never leave children or people with limited mobility in the vehicle. They may release the electronic parking brake switch and operate the shift control mechanism, which may cause the vehicle to move, leading to accidents and serious injuries.

Warnings on maintenance

Warning!

The rated voltage of the HV power battery of this vehicle is 393.1V (water-cooled), and the temperature will be high after the vehicle runs. You must take protective measures and observe the following precautions when checking or maintaining the vehicle:

Park the vehicle on a level road, pull up the electronic parking brake switch and shift to P position.

Turn off all the electrical appliances and turn off the Start switch.

Please disconnect the negative pole of 12V battery during maintenance since the cooling fan of this vehicle may be started at any time.

During maintenance, please fix or take off loose clothing and remove ornaments such as rings and watches, and please wear protective goggles. Metal ornaments in contact with live parts will cause electric shock or burn.

It is prohibited to maintain, remove, move or replace HV components, harnesses and connectors without authorization, otherwise it may cause serious burn or electric shock and even cause serious personal casualty.

It is forbidden to enter the area under a vehicle supported only by jacks. Do use a safety bracket for operation under the vehicle.

Children or pets are prohibited from coming into contact with vehicle oil.

Pay attention to the polarity when connecting the 12V battery cable. Never connect the positive cable to the negative terminal or the negative cable to the positive terminal.

Caution about fastener

Notes

Please use proper fasteners in proper positions, and ensure that the part No. of the fastener for replacement is correct. The fasteners to be replaced or to be provided with thread locking adhesive or sealant will be specially noted in the service procedure. Unless otherwise stated, do not apply paint, lubricating oil or corrosion inhibitor to the fastener or its joint surface. These coatings affect fastener torque and joint clamping force and may damage the fastener. Install fasteners in correct tightening sequence and specifications to avoid damage to parts and systems.

Caution about handling of components sensitive to electrostatic discharge

Notes

Electrostatic discharge (ESD) will damage many solid electrical elements. Not all components susceptible to ESD are marked with the ESD symbol. So please handle all electrical elements carefully. Observe the following safety instructions to protect electrical elements against ESD:

- Touch a metal grounding point to release the static electricity in the body (especially after sliding off the seat) before starting to repair any electronic element.
- Do not touch any bare terminal because it may be connected with a circuit easily damaged by ESD.
- Do not contact the tool with any exposed terminal when repairing a connector.
- Unless specially specified, do not remove any component from its protective case.

Unless otherwise specially required in the diagnosis procedure, avoid the following operations:

- Bridging or grounding components or connectors.
- Connect probes of the test equipment with components or connectors. Connect the ground wire before using test probes.
- Ground the protective case of the component before opening it. Do not put any solid component on the metal platform or the top of other electrical equipment.

Caution on setting the start switch to OFF when disconnecting the battery

Notes

Be sure to set the start switch to OFF mode before connecting or disconnecting the battery cables, battery charger or jumper cables. Failure to do so may damage the control module or other electrical elements.

Caution about no twisting or bending during hose installation

Notes

Do not twist the inlet and outlet hose during installation. Do not bend or deform the hose for easy installation. Otherwise, the components may be damaged.

Important about Machined Surface Damage

Notes

Do not cut, scratch or damage the sealing face which is the machining face. Damage to the machining face will result in leakage.

Caution about powertrain control module and ESD

Notes

Do not touch any connector pin or welding component on the circuit board to prevent damage to the electrical control module of the vehicle by ESD.

Caution on removal of the gear ring

Notes

Do not pry off the gear ring from the differential reducer housing, because doing so will damage the gear ring or the differential reducer housing.

Caution about sealant

Notes

Do not let room temperature-cured sealant enter the tapped blind hole. Otherwise, fasteners will be hydraulically locked when they are tightened. Hydraulic locking of fasteners will cause damage to them and other components, and failure to reach a proper clamp force during tightening. An improper clamp force may lead to leakage due to improper sealing. If fasteners fail to be tightened properly, components will get loose or disengaged, causing serious damage to the drive motor.

Caution about diagnostic scanner

Notes

Pay attention to the following conditions before diagnosis of the vehicle to prevent damage to the control module:

- Software versions of the diagnostic scanner and the terminal must be the latest ones.
- The vehicle battery must be fully charged and the battery voltage shall in the range of 12~14 V.
- Diagnostic scanner and terminal cables must be connected firmly.
- Do not connect the battery charger with the battery when programming the control module.

Caution about tester probe

Notes

Do not insert the tester probe (such as digital multimeter) into the harness connector or the fuse box terminal. The probe will deform most terminals. A deformed terminal will result in poor contact and system fault. Use special tools to detect the terminal from the front. Do not inspect the terminal with a clip or any other substitute.

Notes

When testing any assembly with a special tool, ensure that the terminal test adapter selected matches the connector terminal in dimension. Do not select any adapter by visual estimation for the hole of some connector terminal appears larger than the actual terminal in the hole. Larger terminal test adapter will damage the terminal.

Caution about parking

Notes

Park the vehicle carefully on the place with projection or fixed stop blocks to prevent the vehicle damper or other components from damage. Please stop the vehicle for inspection before wheels contact these protrusions.

Take the key when leaving the vehicle.

5.1.1.2 Warnings for operations related to the HV electric control system

Warning!

The vehicle is a hybrid power system and is equipped with 393.1V HV power battery.

Be sure to operate the system correctly according to the instructions in this Manual. Otherwise, serious injury or electrocution may be caused.

Do not touch any HV cable and HV component. If necessary, follow the instructions below:

– Do wear HV protective articles such as: HV insulated gloves, insulated shoes and special insulated tools for HV operation.

- During the use of the vehicle, the HV system may be in a state of high voltage and high temperature. Please follow the warning sign instructions to avoid high voltage and high temperature injury.
- Insulate the removed cable with insulating tapes.

When the HV system is repaired, the following precautions must be noted to prevent possible personal injuries:

Turn off all the electrical appliances and turn off the Start switch.

Disconnect the 12V battery negative terminal.

During operation of the HV system, HV protective articles such as HV insulated gloves, insulated shoes and special tools for HV insulation must be worn.

HV electricians shall ensure that the power supply is cut off and wait for 10min before operation.

Relevant HV electricians shall be consulted in case of any doubt. Before performing any operation of the HV system and repairing the vehicle body, HV electricians must cut off the power supply of the system.

If the power supply of the HV system cannot be cut off, only professional electricians can carry out the maintenance.

Notes for inspection and repair of HV circuit:

Technicians must be professionally trained before they can repair and inspect HV systems.

The "Warning: High Voltage! Do Not Touch" sign shall be used to inform other technicians of that the HV system is being inspected or repaired.

All HV harnesses and connectors shall be orange. Power battery and other HV parts are provided with "High Voltage" warning labels. Please do not touch these harnesses or parts without permission.

Do not lean your body or put the tools against any HV circuit and its components. Never use any cutting-formed and sharp tools near HV components and circuits.

Do not use any power supply, such as those for fusion welding, brazing, thermal bonding and operations with hot air, near HV components and circuits.

Do not seriously twist or bend the HV circuits. In case of any abnormality or doubt, consult the HV electrician or professional electrician.

No attempt shall be made to repair any harness or connector if such harness or connector of the HV circuit is faulty. Please directly replace the damaged or faulty HV cable or connector.

The one wearing an artificial cardiopulmonary aid is not allowed to work on vehicles equipped with HV systems. Artificial cardiopulmonary aids include built-in analgesic pump, implantable defibrillator, cardiac pacemaker, insulin pump, hearing-aid, etc.

5.1.1.3 Preparations for operations related to the HV electric control system

Personal preparations:

- •Before operation of the HV system, do wear HV protective articles such as HV insulated gloves, insulated shoes, etc.
- Do not carry metal articles during operation.
- Confirm breakage before using 1000V durable insulated gloves.

Site inspections:

- Put a triangular warning sign "warning: high voltage, do not touch" in a visible position (such as vehicle roof) to warn other personnel.
- Before parking the vehicle to be repaired in the repair work area, make sure that there is no water on the ground, and do not operate in humid environment.
- Make sure that the work area is equipped with carbon dioxide fire extinguishers.

Preparation of maintenance tools:

- Use special insulated tools for HV operation or the tools with insulation treatment.

Cutting off power supply of HV system:

- Turn off all the electrical appliances and turn off the Start switch.
- Disconnect the 12V battery negative terminal.

5.2 Electrified vehicle control system

5.2.1 Specification

5.2.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
VCU and mounting bracket	Hexagon head flange bolt M6×16	10±1
Connection of the electronic accelerator pedal assembly to the body	Hexagon flange nut M6	10±1

5.2.2 System description

5.2.2.1 Overview of vehicle control system

Overview

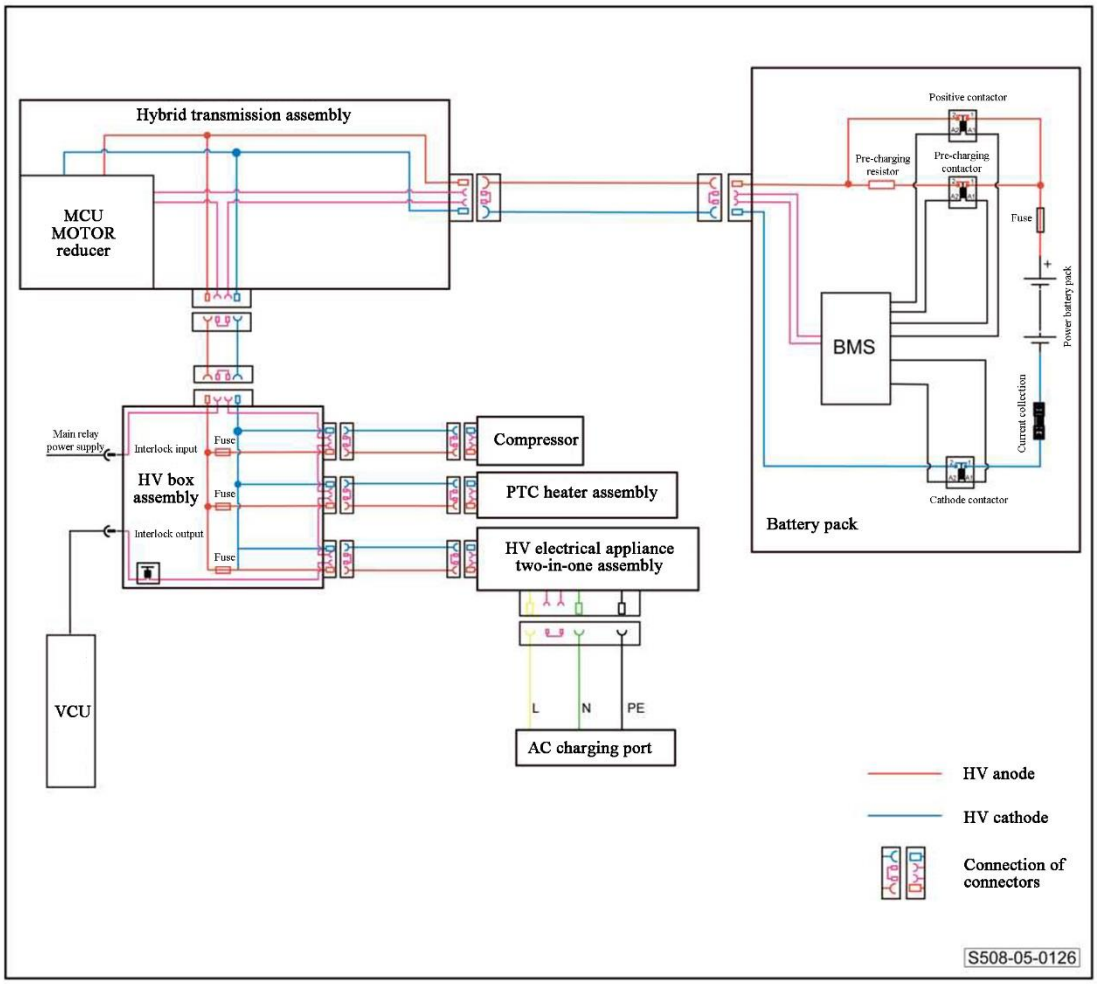
The VCU ensures stable operation of vehicle under various working conditions with control strategies, and adjusts the energy output while ensuring the vehicle performance, so as to achieve the maximum endurance mileage. In case of any fault, it can judge the fault level and adjust the driving mode and energy output to ensure the safety of driver and vehicle.

5.2.2.2 Overview of HV interlocking system

I. Function description

The HV interlocking function is realized by VCU, battery pack assembly, HV electrical appliance two-in-one assembly, HV box assembly, compressor, PTC heater assembly, hybrid transmission assembly and AC electrical interface.

II. Schematic diagram of HV interlocking



5.2.2.3 Introduction to working modes of DE-i system

Selection of DE-I system working mode

EV/HEV button on the center console can be pressed to switch to EV or HEV mode, and the instrument will display the mode being selected. When the system is in EV mode, the instrument displays EV mileage. When the system is in HEV mode, the instrument displays HEV mileage. The DRIVE MODE button can be pressed to switch among ECO/NORMAL/SPORT, i.e. three driving modes of economy/normal/sport.

"EV" – pure electric drive mode

In EV mode, the power battery provides electric energy to drive the vehicle by the electric motor, and this mode can meet the driving requirements under various operating conditions, such as starting, reversing, creeping, accelerating, and driving at a constant speed.

"HEV" – hybrid power drive mode

In HEV mode, if the engine does not start in case of high SOC level or low power demand, the vehicle will be driven by EV preferentially.

In HEV mode, in case of low SOC level and high power demand, the engine starts and operates in series

mode to meet the power demand.

In HEV mode, the engine starts to operate in parallel mode at medium and high speeds under some operating conditions to improve fuel economy.

ECO driving mode

Toggle "DRIVE MODE" button until the ECO indicator on the instrument turns on, and enter the ECO mode to minimize energy consumption.

NORMAL driving mode

Toggle "DRIVE MODE" button until the NORMAL indicator on the instrument turns on, and enter the NORMAL mode to ensure ride comfort and energy consumption at the same time.

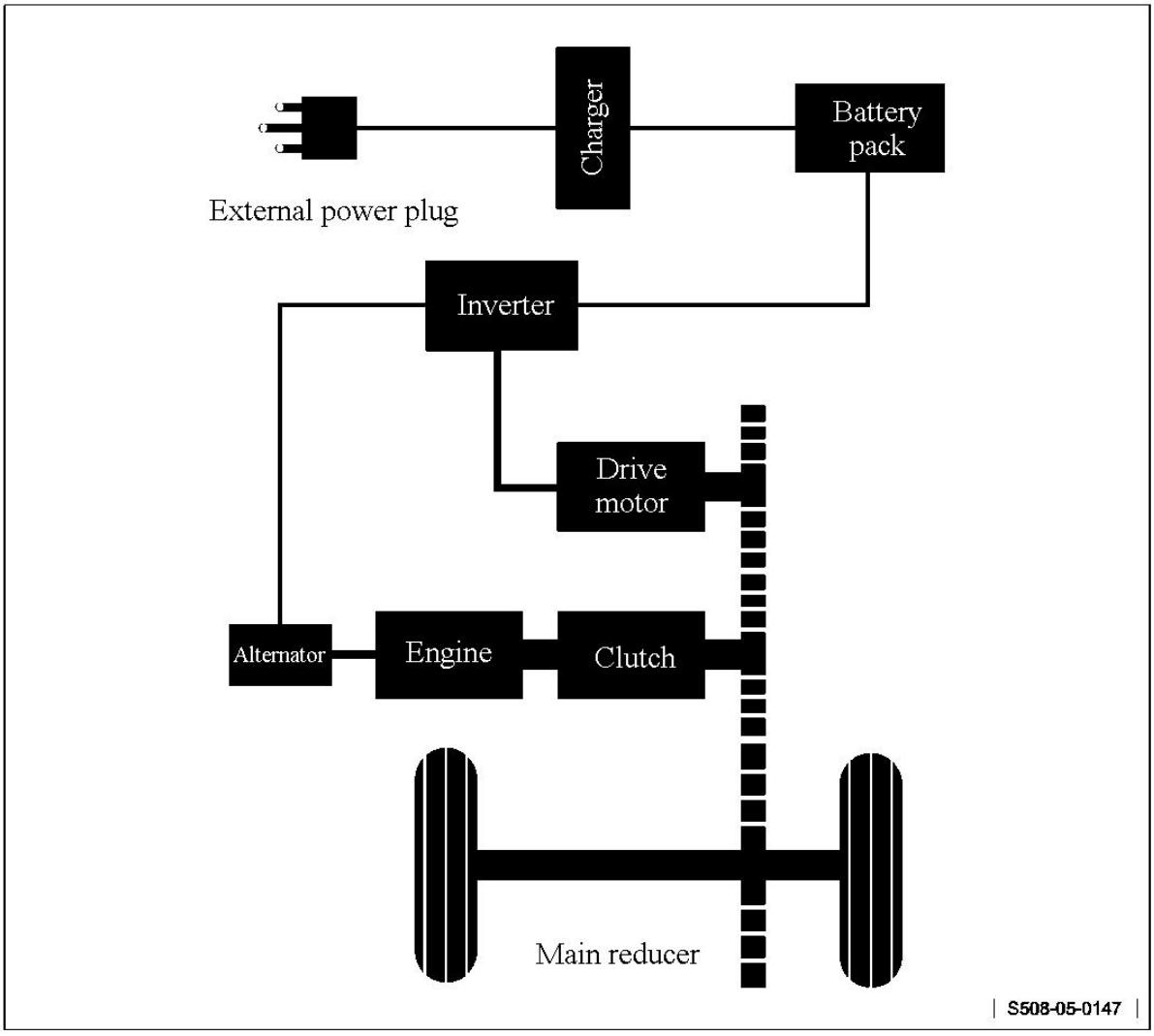
SPORT driving mode

Toggle "DRIVE MODE" button until the SPORT indicator light on the instrument turns up. This indicates that the vehicle has switched to SPORT mode to ensure the best power performance.

EV MAX vehicle mode

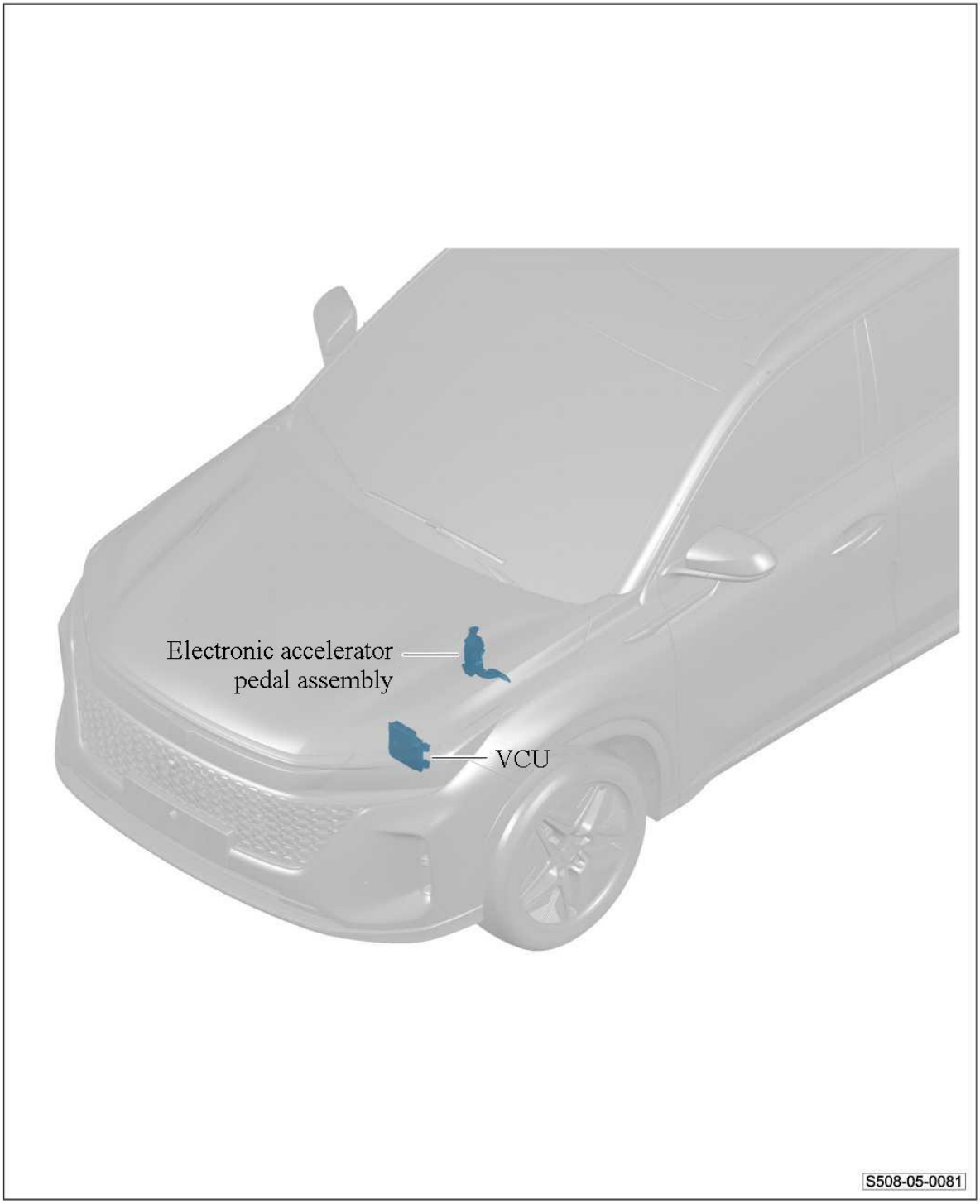
EV MAX mode can meet the driver's demand of "continuous electricity without fuel", which ensures pure electric running of the vehicle to the greatest extent. To switch the vehicle to the EV MAX mode in case of sufficient battery level, toggle the "EV" button backward and hold for 3s until the EV indicator on the instrument turns blue. At this time, the output power is limited to some extent, and the vehicle will switch to HEV mode automatically when the battery level is further reduced.

Schematic Diagram of DE-i System



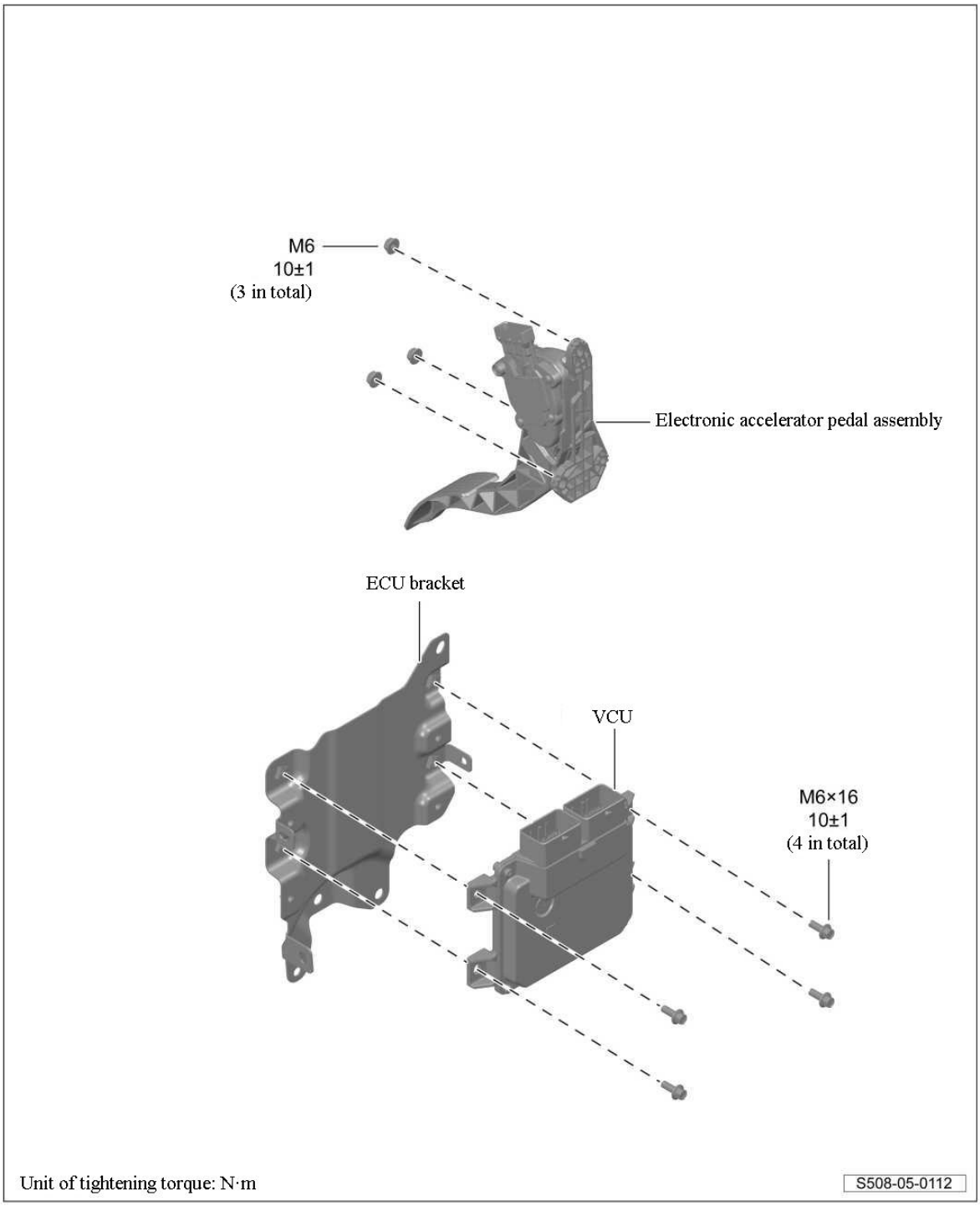
5.2.3 Component position

5.2.3.1 Component position



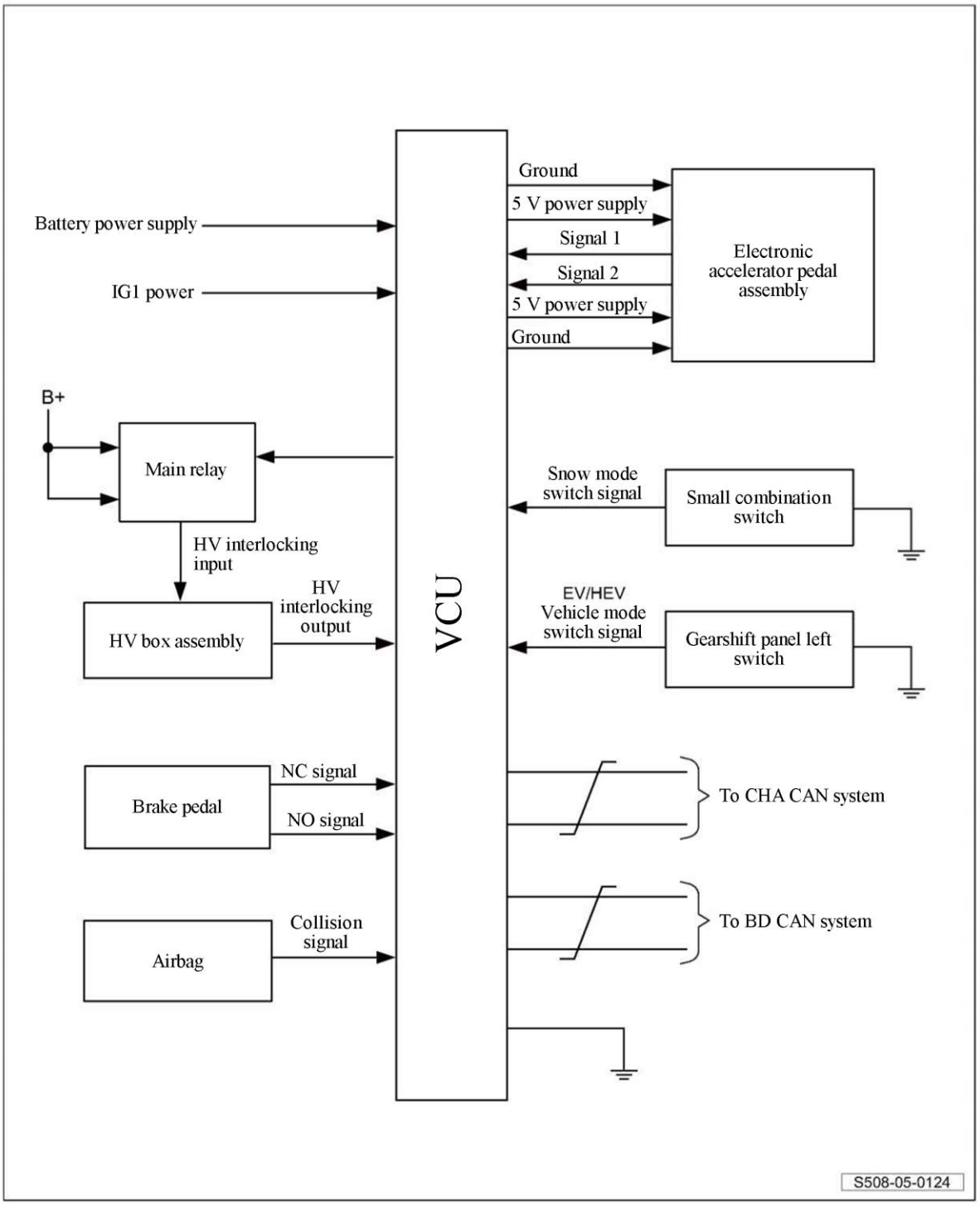
5.2.4 Exploded view

5.2.4.1 Exploded view



5.2.5 Electrical schematic diagram

5.2.5.1 Electrical schematic diagram



5.2.6 Diagnosis information and steps

5.2.6.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read via the OBD diagnosis interface of the vehicle. Based on the VCU data sheet, the switch and sensor values can be obtained by reading the data sheet displayed on the diagnostic scanner without removing any parts. Reading the data list is the first step in troubleshooting, and one of the methods to reduce the diagnosis time.

5.2.6.2 Visual inspection

- Confirmation of fault symptom

The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

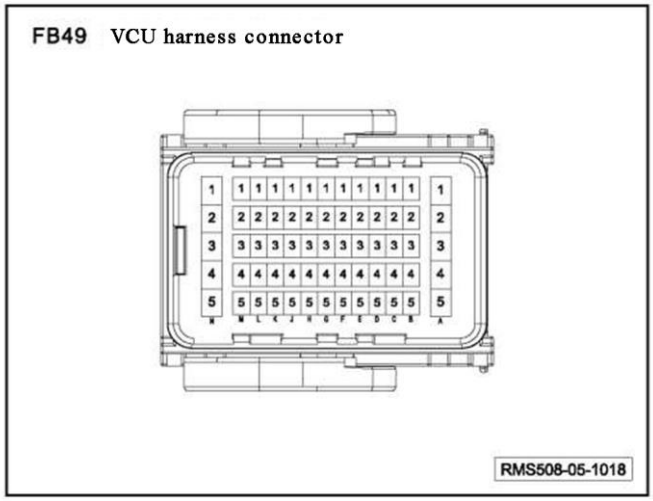
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

5.2.6.3 ECU terminals

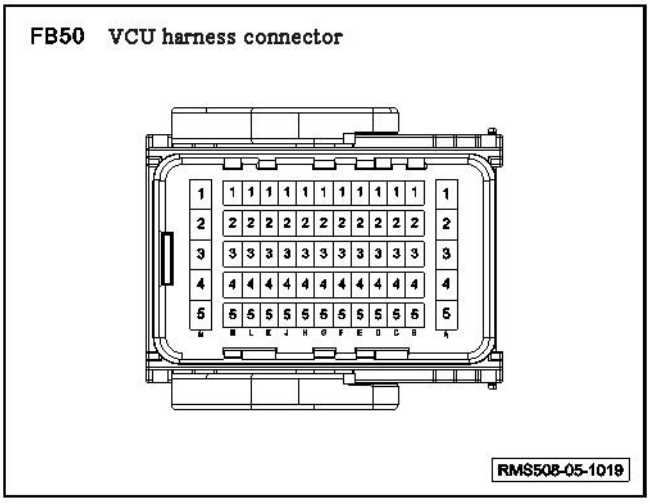
FB49 harness connector of VCU



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
C3	0.35/brown	BD CAN-H	–	–
C4	0.35/brown-white	BD CAN-L	–	–
D3	0.35/Light green and white	CHA CAN-L	–	–
E3	0.35/Light green	CHA CAN-H	–	–

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
H4	0.35/gray-yellow	VCU main relay control	–	–
M2	0.5/gray-red	IG1 power	Put the start switch to “ON” position	Battery voltage
N1	0.5/red	VCU constant power	The start switch is put to any position	Battery voltage
N2	0.5/red	VCU constant power	The start switch is put to any position	Battery voltage
N3	0.5/black	Ground	–	0V
N4	0.5/black	Ground	–	0V

FB50 harness connector of VCU



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
A1	0.5/red	VCU constant power	The start switch is put to any position	Battery voltage
A3	0.5/black	Ground	–	0V
D2	0.5/gray	Brake signal (NO)	–	–
E3	0.35/yellow-black	EV/HEV vehicle mode switch	–	–
E4	0.35/green-black	Accelerator pedal power supply 2	–	–
F4	0.35/green-purple	Accelerator pedal power supply 2 negative	–	–
G2	0.35/Yellow	“Snow” mode switch	–	–
G3	0.5/gray-black	Brake light NC	–	–
G4	0.35/green-white	Accelerator pedal power	–	–

		supply 1		
H3	0.35/green-orange	Accelerator pedal signal 1	–	–
H4	0.35/green, pink, red	Accelerator pedal power supply 1 negative	–	–
J4	0.35/green-red	Accelerator pedal signal 2	–	–
K3	0.35/blue-yellow	Collision signal	–	–
M3	0.35/Yellow and purple	Interlocking	–	–

5.2.6.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	“1”	“X”	-
		Month	“1”	“C”	-
		Day	“1”	“Z”	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
0x0F80	Accelerator pedal voltage	Power feedback voltage of accelerator pedal 1	0	10	V
		Power feedback voltage of accelerator pedal 2	0	10	V
		Accelerator pedal 1 signal voltage	0	5	V
		Accelerator pedal 2 signal voltage	0	5	V
0x0F81	CAN transceiver fault status	BD-CAN transceiver status	0	1	-
		CHA-CAN transceiver status	0	1	-
0x0F82	Hard wire signal input valid	KL15 wake-up input	0	1	-
		Vehicle mode switch input	0	1	-
		“Snow” mode switch input	0	1	-
		Brake switch NO input	0	1	-
		Brake switch NC input	0	1	-
		Collision signal input	0	1	-
		PDU HV interlocking signal input	0	1	-

0x0F83	Hard wire signal output valid	Main relay output	0	1	-
0x0203	SK anti-theft password	-	-	-	-
0x0F84	Actual gear of vehicle	-	0	15	-
0x0F85	Vehicle mode	-	0	3	-

5.2.6.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
B111716	Excessively low VCU supply voltage	1. The maximum speed is limited to 100 km/h after 30s; 2. The maximum speed is limited to 60 km/h after 60s; 3. If the vehicle speed is lower than or equal to 60 km/h after this fault is detected, the maximum speed shall be limited to 60 km/h immediately.	1. Undervoltage of auxiliary battery 2. Abnormal operation of DCDC	1. Replace the auxiliary battery 2. Overhaul the DCDC
B111716	Excessively low VCU supply voltage	1. The maximum speed is limited to 100 km/h after 30s; 2. The maximum speed is limited to 60 km/h after 60s; 3. If the vehicle speed is lower than or equal to 60 km/h after this fault is detected, the maximum speed shall be limited to 60 km/h immediately.	1. Undervoltage of auxiliary battery 2. Abnormal operation of DCDC	1. Replace the auxiliary battery 2. Overhaul the DCDC
		If the vehicle speed is lower than or equal to 60km/h, the maximum speed shall be limited to 60 km/h immediately.		
B111717	Excessively high VCU supply voltage	1. The maximum speed is limited to 100 km/h after 30s; 2. The maximum speed is limited to 60 km/h after 60s; 3. If the vehicle speed is lower than or equal to 60 km/h after this fault is	1. Undervoltage of auxiliary battery 2. Abnormal operation of DCDC	1. Replace the auxiliary battery 2. Overhaul the DCDC

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
		detected, the maximum speed shall be limited to 60 km/h immediately.		
P3A8044	EEPROM fault	Do not apply high voltage	Hardware fault	Replace the VCU
U007588	BD-CAN Bus-OFF	1. Delay 30s to exit the ready state and power off the HV 2. When the vehicle speed is less than 20 km/h, exit the ready state and power off the HV immediately	1. CAN node hardware fault 2. Harness short-circuited or open-circuited	1. Check and repair each CAN node 2. Check and repair the harness
U007488	CHA-CAN Bus-OFF	1. Turn off and disable cruise control; 2. The maximum speed is limited to 100 km/h after 30s; 3. The maximum speed is limited to 60 km/h after 60s; 4. If the vehicle speed is lower than or equal to 60 km/h after this fault is detected, the maximum speed shall be limited to 60 km/h immediately.	1. CAN node hardware fault 2. Harness short-circuited or open-circuited	1. Check and repair each CAN node 2. Check and repair the harness
U010087	Lost communication with EMS	Disable the HEV	1. EMS fault 2. Harness fault	1. Check and repair the EMS 2. Check and repair the harness
U011187	Lost communication with BMS	1. Do not apply high voltage 2. The default BMS peak charging and discharging power is 0.	1. BMS fault 2. Harness fault	1. Check and repair the BMS 2. Check and repair the harness
U011087	Lost communication with MCU	1. Delay 30s to exit the ready state and power off the HV 2. When the vehicle speed is less than 20 km/h, exit the ready state and power off the HV immediately	1. MCU fault 2. Harness fault	1. Check and repair the MCU 2. Check and repair the harness

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
U031187	Lost communication with GCU	Disable the HEV	1. GCU fault	1. Check and repair the GCU
B111716	Excessively low VCU supply voltage	1. The maximum speed is limited to 100 km/h after 30s; 2. The maximum speed is limited to 60 km/h after 60s 3. If the vehicle speed is lower than or equal to 60 km/h after this fault is detected, the maximum speed shall be limited to 60 km/h immediately	1. Undervoltage of auxiliary battery 2. Abnormal operation of DCDC	1. Replace the auxiliary battery 2. Overhaul the DCDC
			2. Harness fault	2. Check and repair the harness
U029887	Lost communication with DCDC	Disable DCDC	1. DCDC fault 2. Harness fault	1. Check and repair the DCDC 2. Check and repair the harness
U010387	Lost communication with GSM	-	1. GSM fault 2. Harness fault	1. Check and repair the GSM 2. Check and repair the harness
U014087	Lost communication with BDC	-	1. BDC fault 2. Harness fault	1. Check and repair the BDC 2. Check and repair the harness
U045687	Lost communication with CCU	-	1. CCU fault 2. Harness fault	1. Check and repair the CCU 2. Check and repair the harness
U016587	Lost communication with PTC	-	1. PTC fault 2. Harness fault	1. Check and repair the PTC 2. Check and repair the harness
U015187	Lost communication with ABM	-	1. ABM fault 2. Harness fault	1. Check and repair the ABM 2. Check and repair the harness
U015587	Lost communication with IC	-	1. IC fault 2. Harness fault	1. Check and repair the IC 2. Check and repair the harness
U019887	Lost communication	-	1. T-BOX fault 2. Harness fault	1. Check and repair the Tbox

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
	with T-BOX			2. Check and repair the harness
U031887	Lost communication with BSC	1. Turn off and disable cruise control; 2. The maximum speed is limited to 100 km/h after 30s; 3. The maximum speed is limited to 60 km/h after 60s; 4. If the vehicle speed is lower than or equal to 60 km/h after this fault is detected, the maximum speed shall be limited to 60 km/h immediately.	1. BSC fault 2. Harness fault	1. Check and repair the BSC 2. Check and repair the harness
U012887	Lost communication with EPB	-	1. EPB fault 2. Harness fault	1. Check and repair the EPB 2. Check and repair the harness
P3AA011	PDU HV interlocking channel short-circuited to ground	-	Harness fault	Repair the harness
P3AA112	Main relay channel short-circuited to power supply	-	Harness fault	Repair the harness
P3AA21C	Accelerator pedal position sensor 1 power supply fault	1. Use another accelerator pedal signal value 2. The opening of accelerator pedal is 0 by default if both values are invalid	1. Accelerator pedal fault 2. Harness fault	1. Check and repair the accelerator pedal 2. Check and repair the harness
B111716	Excessively low VCU supply voltage	1. The maximum speed is limited to 100 km/h after 30s; 2. The maximum speed is limited to 60 km/h after 60s 3. If the vehicle speed is lower than or equal to 60 km/h after this fault is detected, the	1. Undervoltage of auxiliary battery 2. Abnormal operation of DCDC	1. Replace the auxiliary battery 2. Overhaul the DCDC

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
		maximum speed shall be limited to 60 km/h immediately		
		The opening of accelerator pedal is 0		
P3AA31C	Accelerator pedal position sensor 2 power supply fault	1. Use another accelerator pedal signal value 2. The opening of accelerator pedal is 0 by default if both values are invalid	1. Accelerator pedal fault 2. Harness fault	1. Check and repair the accelerator pedal 2. Check and repair the harness
P3AA429	Opening input of accelerator pedal 1 out of range	1. Use another accelerator pedal signal value 2. The opening of accelerator pedal is 0 by default if both values are invalid	1. Accelerator pedal fault 2. Harness fault	1. Check and repair the accelerator pedal 2. Check and repair the harness
P3AA529	Opening input of accelerator pedal 2 out of range	1. Use another accelerator pedal signal value 2. The opening of accelerator pedal is 0 by default if both values are invalid	1. Accelerator pedal fault 2. Harness fault	1. Check and repair the accelerator pedal 2. Check and repair the harness
P3AA628	Excessive difference between openings of accelerator pedals 1 and 2	Use a smaller accelerator pedal opening value	1. Accelerator pedal fault 2. Harness fault	1. Check and repair the accelerator pedal 2. Check and repair the harness
P3AA723	Abnormal brake pedal	1. Brake pedal is not depressed by default 2. Disable cruise control	1. BSC fault 2. Brake switch fault 3. Harness fault	1. Check and repair the BSC 2. Check and repair the brake switch 3. Repair the harness
P3AA823	Vehicle mode switch stuck	Unable to switch vehicle mode manually	1. Vehicle mode switch fails 2. Harness fault	1. Check and repair the vehicle mode switch 2. Check and repair the harness
P3AAA23	“Snow” mode switch stuck	Unable to switch to "Snow" mode	1. “Snow” mode switch fails 2. Harness fault	1. Check and repair the “Snow” mode switch 2. Check and repair the harness
P0A0A01	PDU HV interlocking fault	1. Delay 30s to exit the ready state and power off the HV 2. When the vehicle speed is less than 20	1. PDU HV wiring harness is disconnected 2. Harness fault	1. Check and repair the PDU HV wiring harness 2. Check and repair the harness

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
		km/h, exit the ready state and power off the HV immediately 3. Do not power on HV if it is not powered on		
P3AB591	Collision fault	Power off the HV immediately	Vehicle collision	Drive the vehicle to a designated service provider for repair
P3AC096	The number of engine start failures out of limit	Disable the HEV	1. Engine system fault 2. Alternator system fault	Drive the vehicle to a designated service provider for repair
P3AC196	The number of HV power-on out of limit	None, record DTC only	High-voltage system fault	Drive the vehicle to a designated service provider for repair

5.2.6.6 DTC: B111717, B111716

DTC	DTC definition
B111717	Excessively high VCU supply voltage
B111716	Excessively low VCU supply voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: 11~14V

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses LF01 and LF29 of the VCU.

A Check whether the fuses LF01 and LF29 are blown.

No → Go to Step 5.

Yes

Step 4	Repair the circuits of fuses LF01 and LF29.

A Check whether the circuits of fuses LF01 and LF29 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

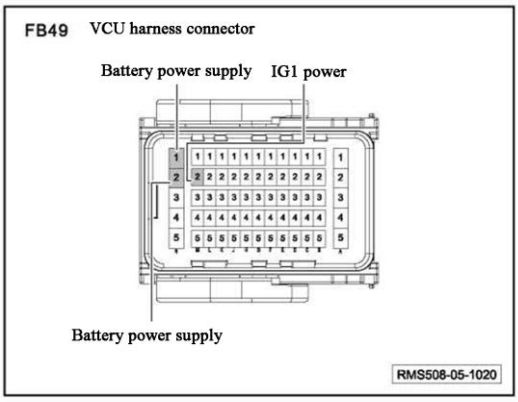
Rated value of fuse: LF01: 10A, LF29: 5A

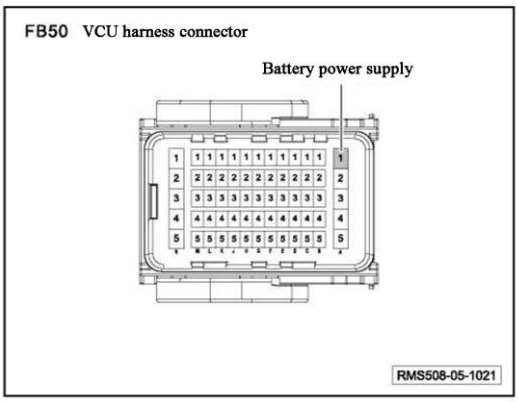
D Confirm whether the VCU works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the VCU.





A Turn the start switch to "OFF" position.

B Disconnect harness connectors FB49 and FB50 of the VCU.

C Put the Start switch to “ON” position.

D Measure the voltage between terminals N1, N2 and M2 of VCU harness connector FB49 and the body ground.

E Measure the voltage between terminal A1 of the VCU harness connector FB50 and the body ground.

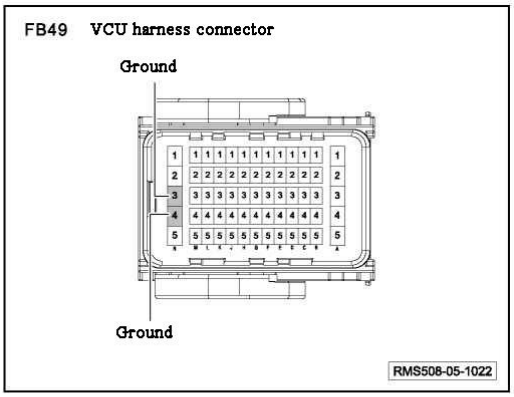
Standard voltage value: 11~14V

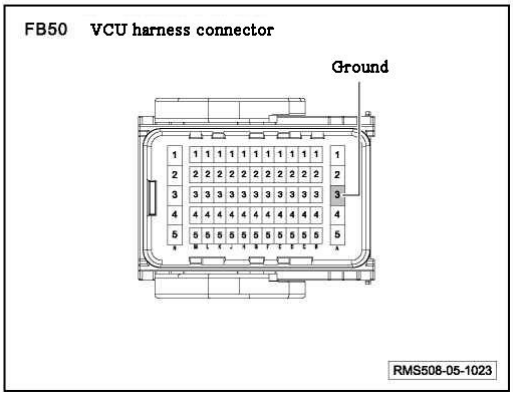
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the VCU.





A Turn the start switch to "OFF" position.

B Disconnect harness connectors FB49 and FB50 of the VCU.

C Measure the resistance between terminals N3 and N4 of the VCU harness connector FB49 and the body ground.

D Measure the resistance between terminal A3 of VCU harness connector FB50 and the body ground.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 7	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

5.2.6.7 DTC: P3A8044

DTC	DTC definition
P3A8044	EEPROM fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check power ground circuit of the VCU.

A Check whether the power ground circuit of the VCU is normal.

No → Repair or replace the harness.

Yes

Step 3	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

5.2.6.8 DTC: U007588

DTC	DTC definition
U007588	BD-CAN Bus-OFF

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

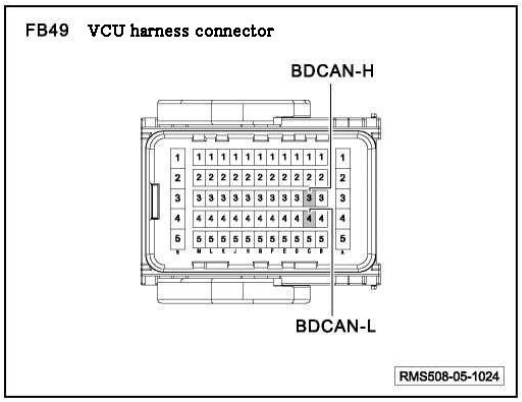
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Measure the resistance of circuit between terminals C3 and C4 of the VCU harness connector FB49.

Standard resistance value: about 120Ω

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.2.6.9 DTC: U007488

DTC	DTC definition
U007488	CHA-CAN Bus-OFF

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

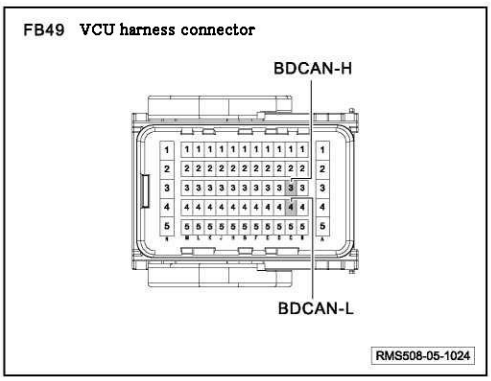
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Measure the resistance of circuit between terminals E3 and D3 of the VCU harness connector FB49.

Standard resistance value: about 120Ω

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.2.6.10 DTC: U010087

DTC	DTC definition
U010087	Lost communication with EMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

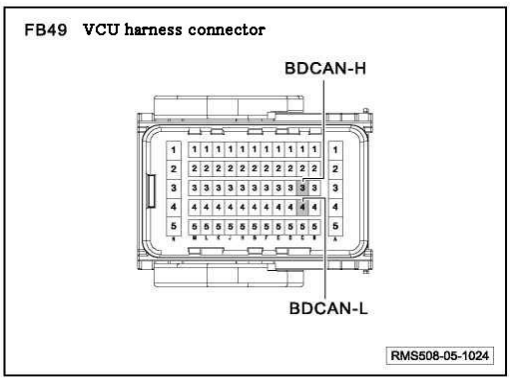
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between VCU and ECU assembly.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the ECU assembly harness connector EN01.

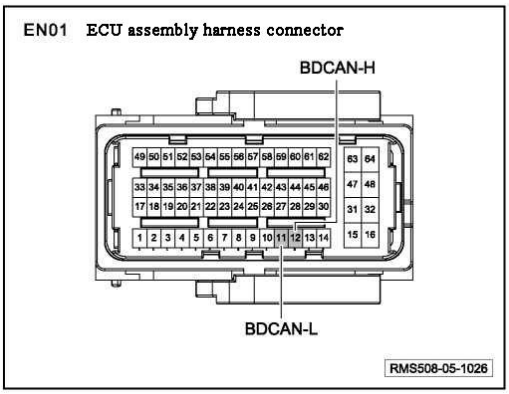
D Measure the resistance between the terminal C3 of VCU harness connector FB49 and the terminal 12 of ECU assembly harness connector EN01.

E Measure the resistance between terminal C4 of VCU harness connector FB49 and terminal 11 of ECU assembly harness connector EN01.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

No

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.2.6.11 DTC: U011187

DTC	DTC definition
U011187	Lost communication with BMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

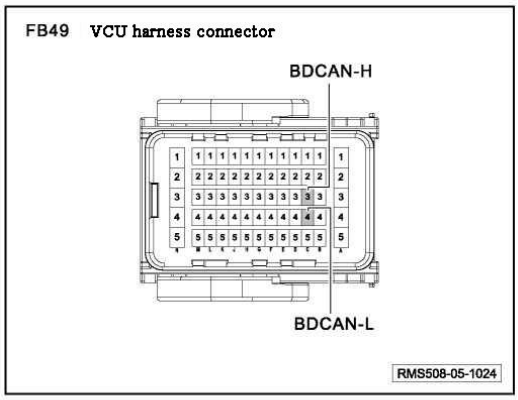
D Read the DTC again.

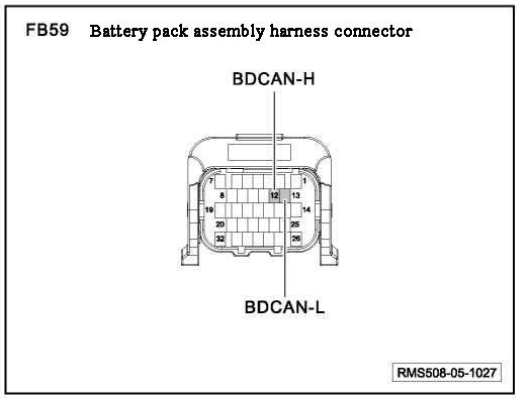
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between VCU and the battery pack assembly.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the battery pack assembly harness connector FB59.

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 12 of the battery pack assembly harness connector FB59.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 13 of the battery pack assembly harness connector FB59.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the battery pack assembly.

A Check whether the power supply and ground wires of the battery pack assembly are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.2.6.12 DTC: U011087, U031187

DTC	DTC definition
U011087	Lost communication with MCU
U031187	Lost communication with GCU

1. Diagnosis steps

Step 1	Check the DTCs. .

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

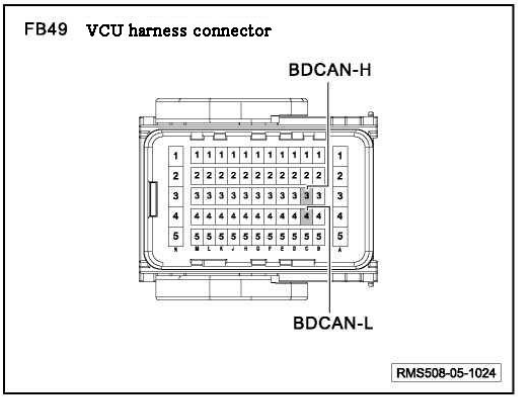
D Read the DTC again.

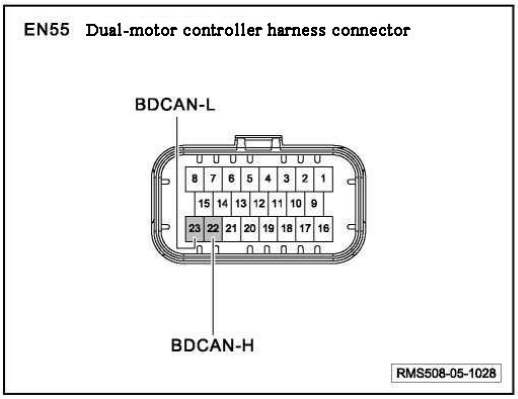
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between VCU and the dual-motor controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect dual-motor harness connector EN55.

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 22 of the dual-motor controller harness connector EN55.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 23 of the dual-motor controller harness connector EN55.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.2.6.13 DTC: U029887

DTC	DTC definition
U029887	Lost communication with DCDC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

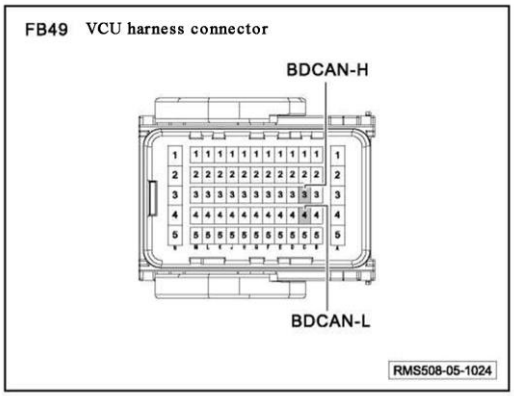
D Read the DTC again.

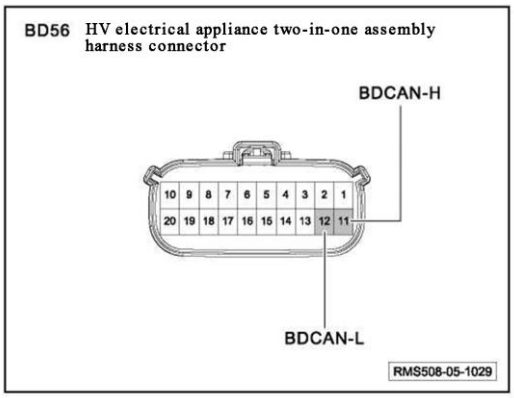
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the VCU and the HV electrical appliance two-in-one assembly.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 11 of the HV electrical appliance two-in-one assembly harness connector BD56.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 12 of the HV electrical appliance two-in-one assembly harness connector BD56.

Standard resistance value: <1Ω

F Confirm whether the resistance reaches the standard value

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the HV electrical appliance two-in-one assembly.

A Check whether the power supply ground wire of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

No

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.2.6.14 DTC: U010387

DTC	DTC definition
U010387	Lost communication with GSM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

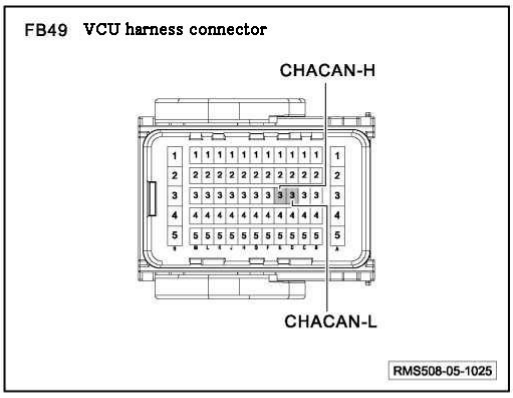
D Read the DTC again.

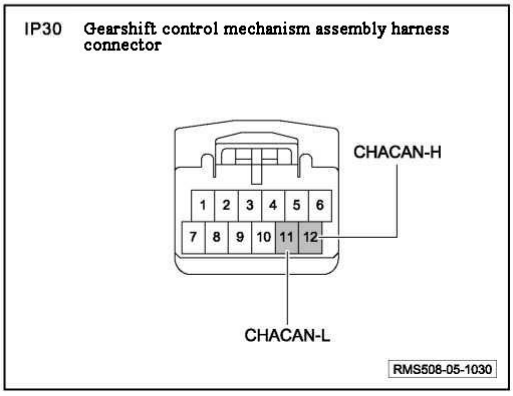
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the VCU and the gearshift control mechanism assembly.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the gearshift control mechanism assembly harness connector IP30.

D Measure the resistance between terminal E3 of VCU harness connector FB49 and terminal 12 of gearshift control mechanism assembly harness connector IP30.

E Measure the resistance between terminal D3 of VCU harness connector FB49 and terminal 11 of gearshift control mechanism assembly harness connector IP30.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

No

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes — The system works normally.

Next

Step 6	The diagnosis is over.

5.2.6.15 DTC: U014087

DTC	DTC definition
U014087	Lost communication with BCM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

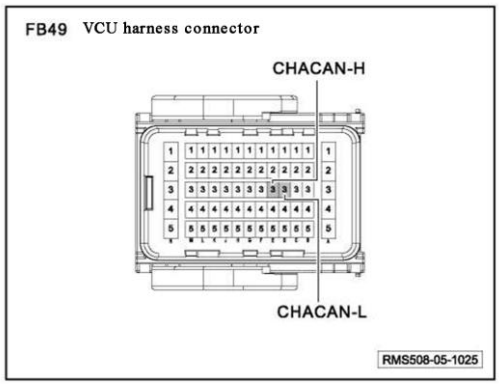
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CHACAN data communication wire between VCU and body controller assembly.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the body controller assembly harness connector IP47

D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller assembly harness connector IP47.

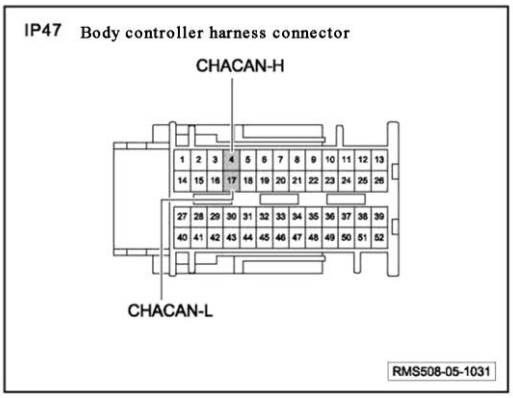
E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller assembly harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

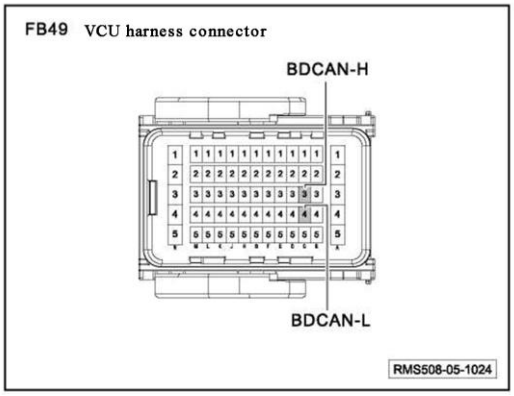
No — Check the CAN data communication wire for possible short circuit, open

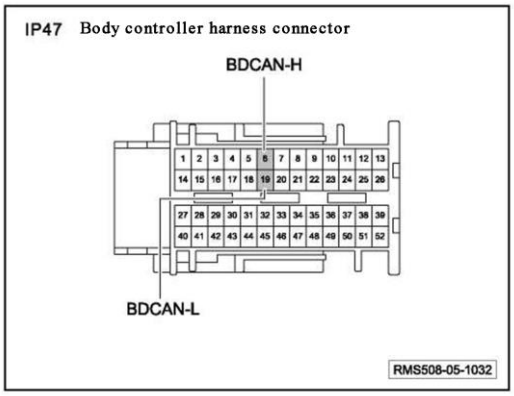
circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the BDCAN data communication wire between VCU and body controller assembly.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the body controller assembly harness connector IP47

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller assembly harness connector IP47.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller assembly harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the body controller assembly.

A Check whether the power supply ground wire of the body controller assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the body controller assembly.

A Replace the body controller assembly.

B Is the fault eliminated after replacing the body controller assembly?

Yes → The system works normally.

No

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.2.6.16 DTC: U045687

DTC	DTC definition
U045687	Lost communication with CCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

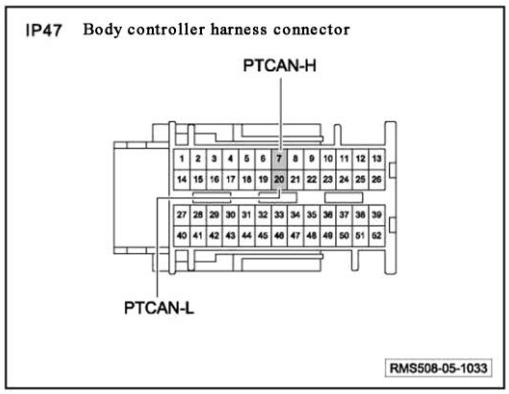
D Read the DTC again.

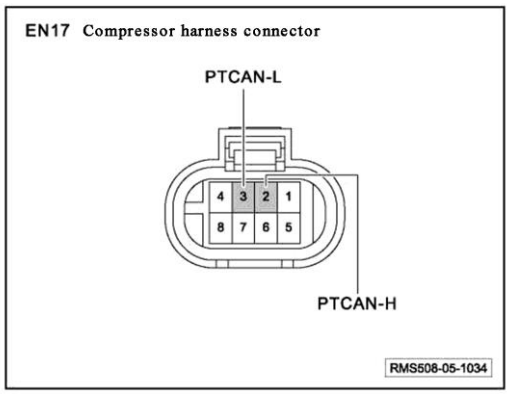
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the compressor.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the compressor harness connector EN17.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 2 of the compressor harness connector EN17.

E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the compressor harness connector EN17.

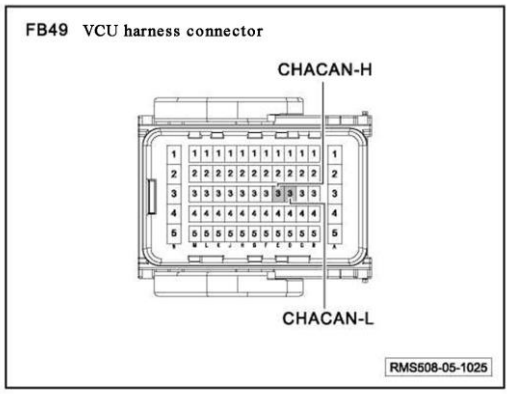
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CHACAN data communication wire between the VCU and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

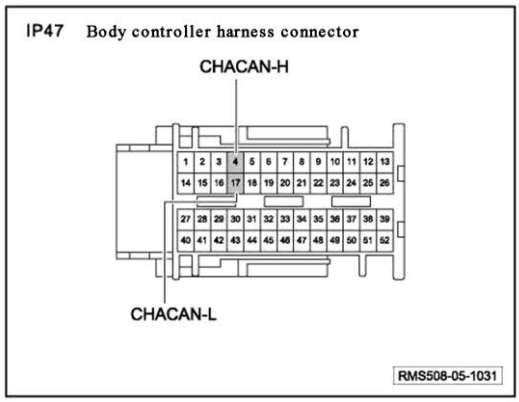
D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

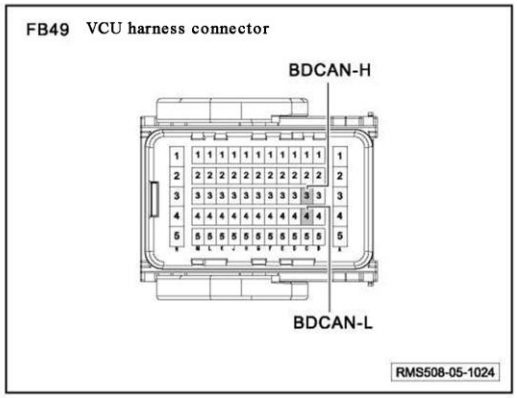
F Confirm whether the resistance conforms to the standard.

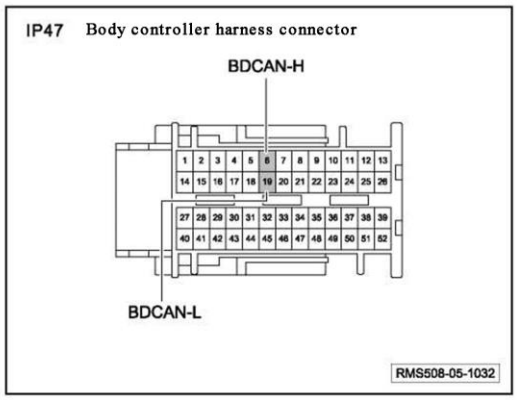
No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the BDCAN data communication wire between the VCU and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 5	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

5.2.6.17 DTC: U016587

DTC	DTC definition
U016587	Lost communication with PTC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

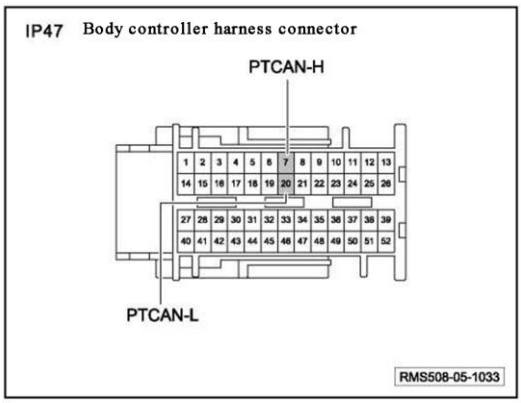
D Read the DTC again.

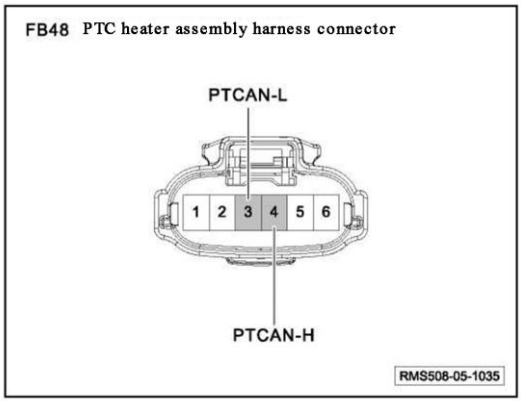
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the PTC heater assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the PTC heater assembly harness connector FB48.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 4 of the PTC heater assembly harness connector FB48.

E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the PTC heater assembly harness connector FB48.

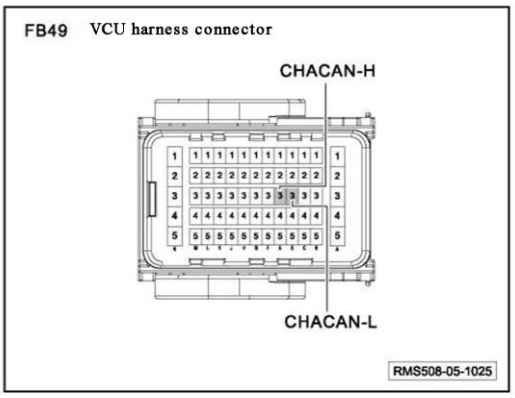
Standard resistance value: <1Ω

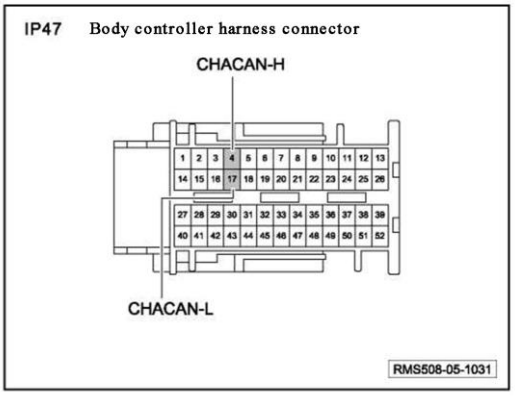
F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CHACAN data communication wire between the VCU and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller harness connector IP47.

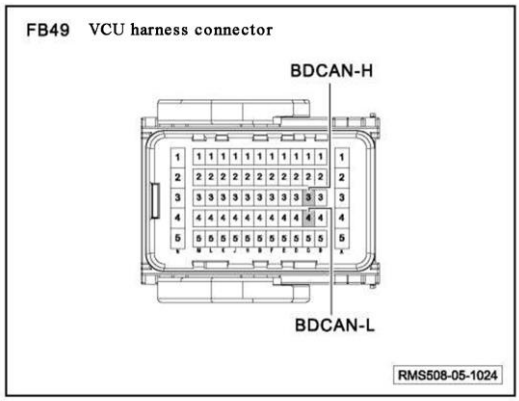
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the BDCAN data communication wire between the VCU and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

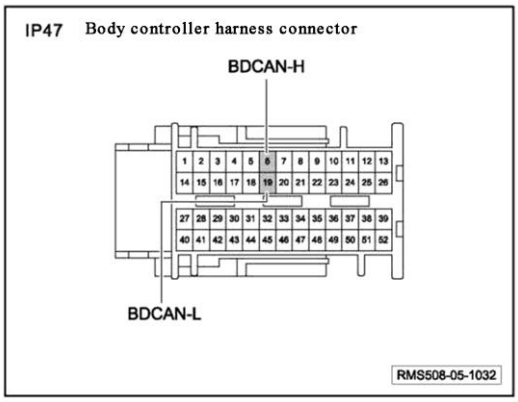
D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

5.2.6.18 DTC: U015187

DTC	DTC definition
U015187	Lost communication with ABM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

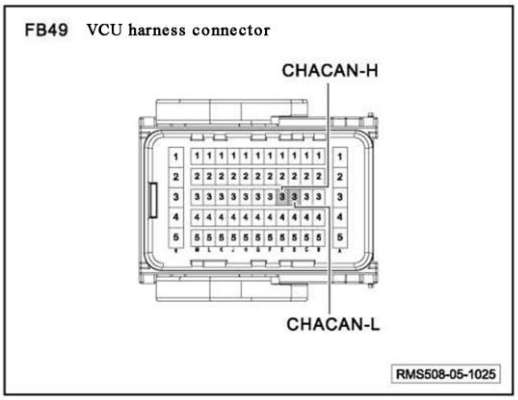
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between VCU and airbag ECU.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect airbag ECU harness connector IP36.

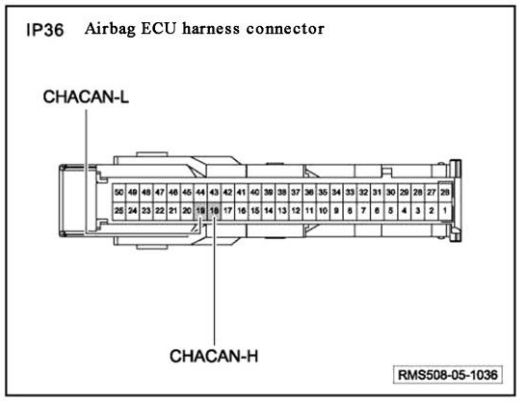
D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 18 of the airbag ECU harness connector IP36.

E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 19 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.2.6.19 DTC: U031887

DTC	DTC definition
U031887	Lost communication with BSC

1. Diagnosis steps

Step 1 Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

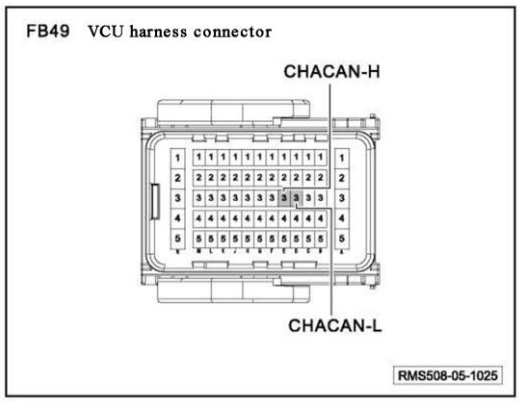
D Read the DTC again.

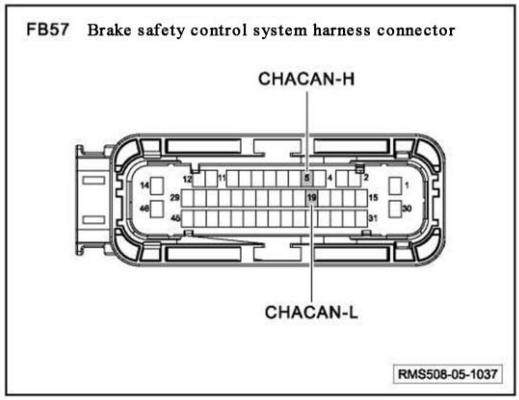
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between VCU and brake safety control system.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the brake safety control system harness connector FB57.

D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 5 of brake safety control system harness connector FB57.

E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 19 of brake safety control system harness connector FB57.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

No → The system works normally.

Next

Step 7	The diagnosis is over.

5.2.6.20 DTC: U012887

DTC	DTC definition
U012887	Lost communication with EPB

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

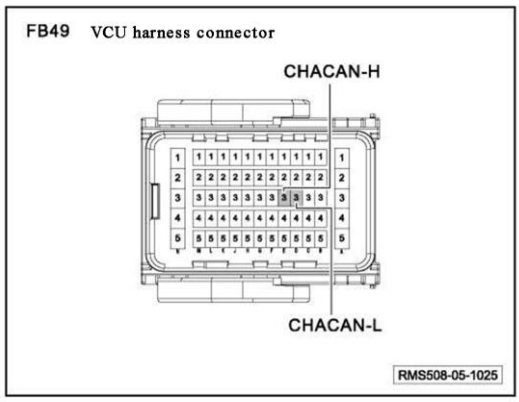
D Read the DTC again.

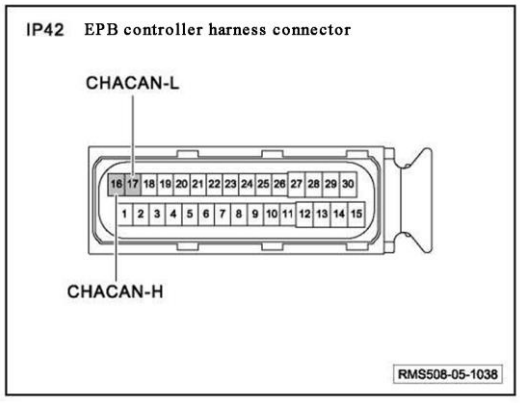
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the VCU and the EPB controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect EPB controller harness connector IP42.

D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 16 of the EPB controller harness connector IP42.

E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the EPB controller harness connector IP42.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

No

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.2.6.21 DTC: U015587

DTC	DTC definition
U015587	Lost communication with IC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

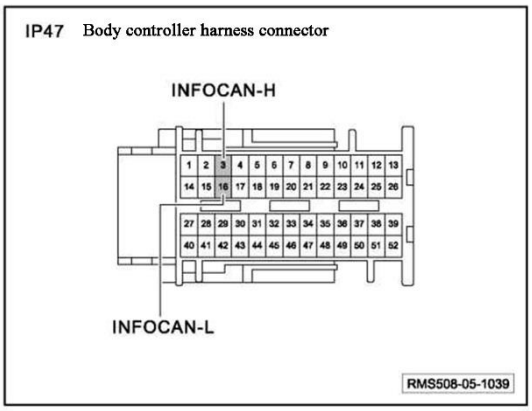
D Read the DTC again.

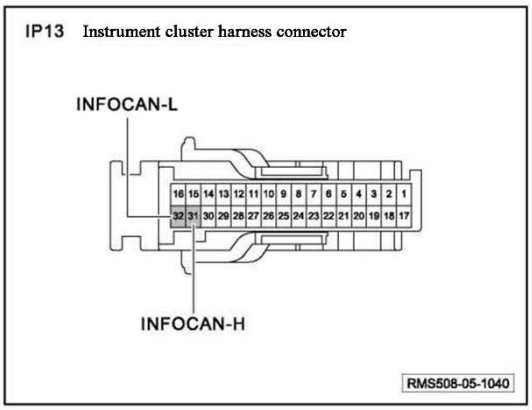
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: <1Ω

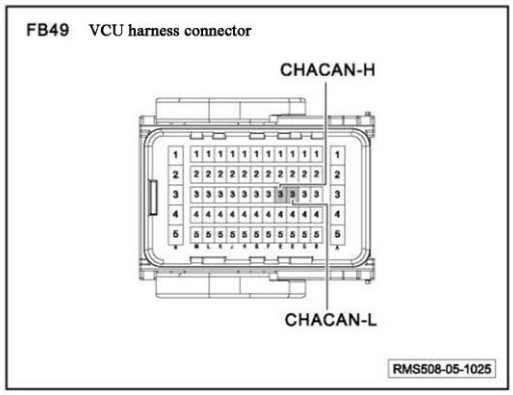
F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CHACAN data communication wire between the VCU and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller harness connector IP47.

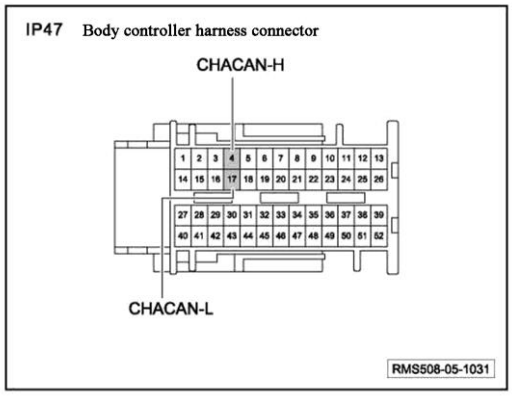
E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

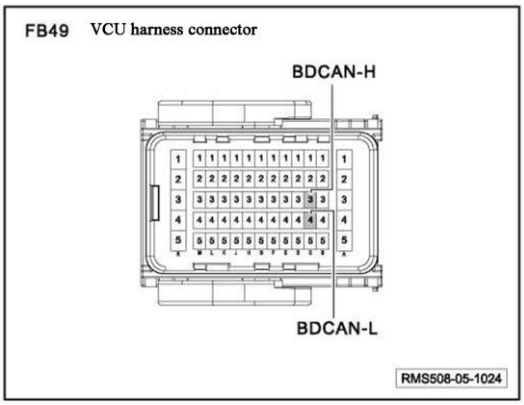
No

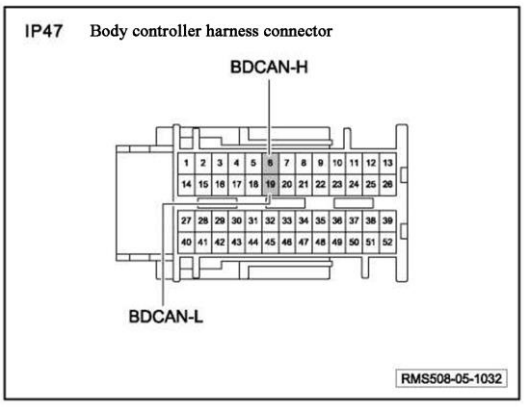
Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the BDCAN data communication wire between the VCU and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 5	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the instrument cluster assembly.

A Replace the instrument cluster assembly.

B Is the fault eliminated after replacing the instrument cluster assembly?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

5.2.6.22 DTC: U019887

DTC	DTC definition
U019887	Lost communication with T-BOX

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

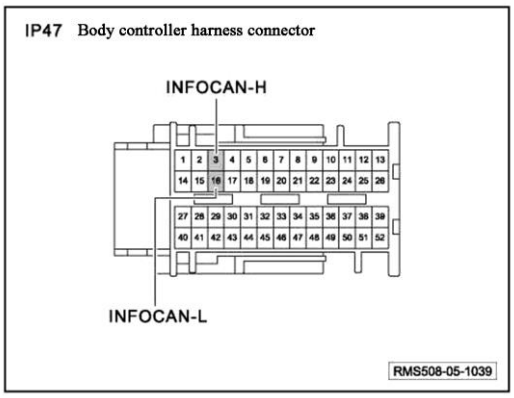
D Read the DTC again.

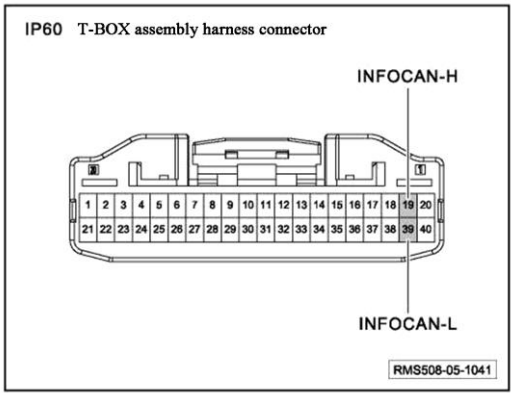
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

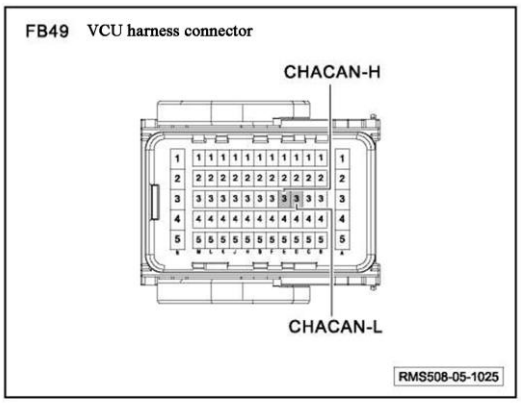
Standard resistance value: <1Ω

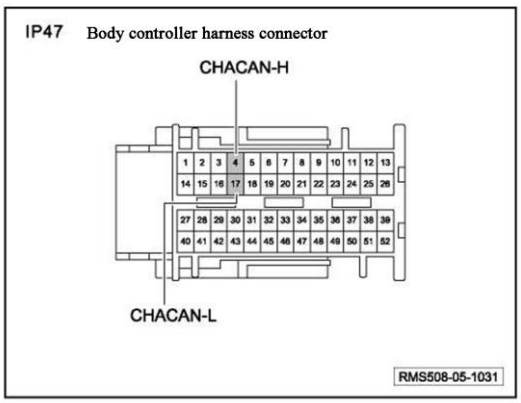
F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CHACAN data communication wire between the VCU and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

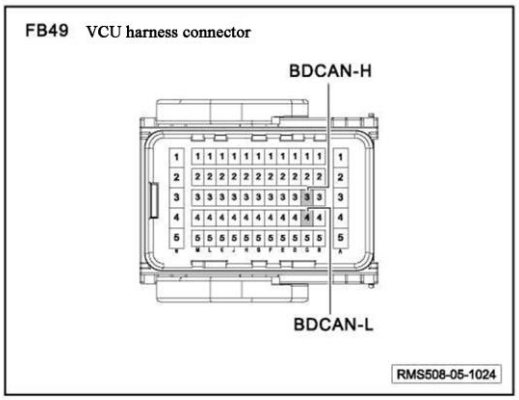
F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the BDCAN data communication wire between the VCU and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller harness connector IP47.

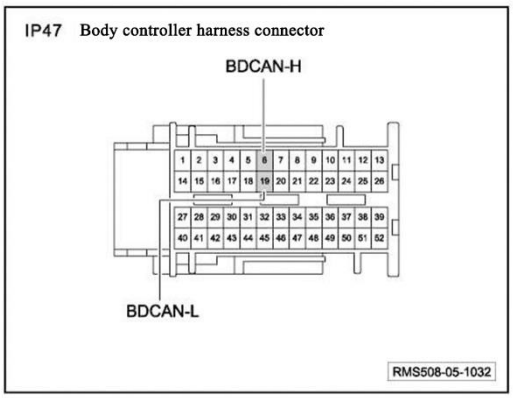
E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply and ground wires of the T-BOX assembly.

A Check whether the power supply ground wire of the T-BOX assembly is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes | The system works normally.

Next

Step 9	The diagnosis is over.

5.2.6.23 DTC: P3AA011, P0A0A01

DTC	DTC definition
P3AA011	PDU HV interlocking channel short-circuited to ground
P0A0A01	PDU HV interlocking fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

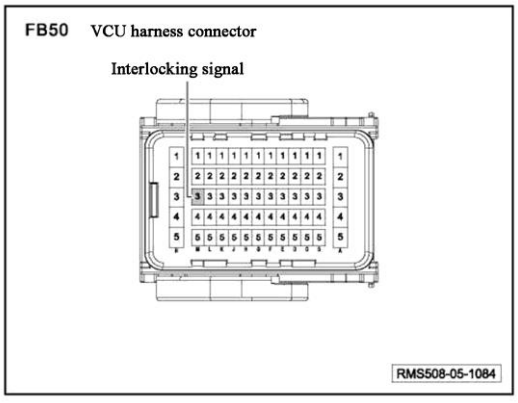
D Read the DTC again.

E Check whether the same DTC is displayed.

No | As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the HV interlocking circuit between VCU and HV box assembly for open-circuit.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

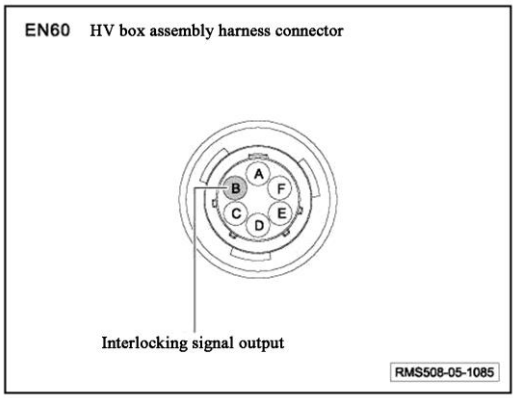
C Disconnect the HV box assembly harness connector EN60.

D Measure the resistance between terminal M3 of the VCU harness connector FB50 and terminal B of the HV box assembly harness connector EN60.

Standard resistance value: <1Ω

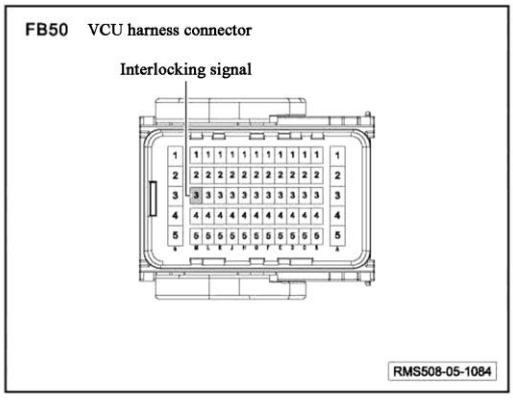
E Confirm whether the resistance conforms to the standard.

No | Repair or replace the harness.



Yes

Step 3	Check the HV interlocking circuit between VCU and HV box assembly for short-circuit to power supply.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the HV box assembly harness connector EN60.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal M3 of the VCU harness connector FB50 and the body ground.

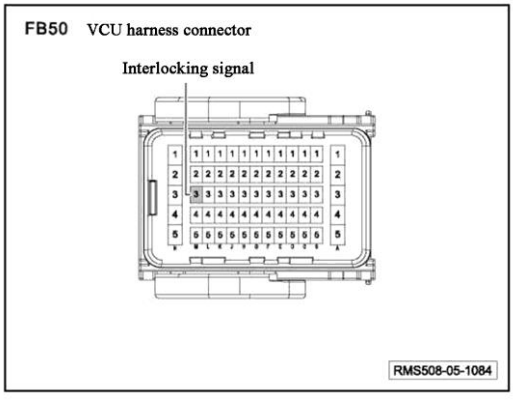
Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.

No — Repair or replace the harness.

Yes

Step 4	Check the HV interlocking circuit between VCU and HV box assembly for short-circuit to ground.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the HV box assembly harness connector EN60.

D Measure the resistance between terminal M3 of the VCU harness connector FB50 and the body ground.

Standard resistance value: 10kΩ or higher

E Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 5	Replace the HV box assembly.

A Replace the HV box assembly.

B Is the fault eliminated after replacing the HV box assembly?

Yes → The system works normally.

No

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.2.6.24 DTC: P3AA112

DTC	**DTC definition**
P3AA112	Main relay channel short-circuited to power supply

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the terminals of VCU and engine compartment fuse box harness connector.

A Turn the start switch to "OFF" position.

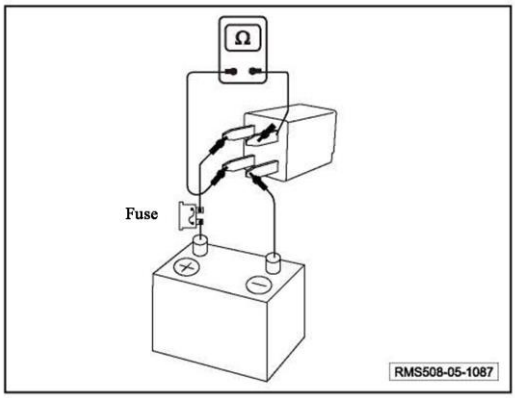
B Disconnect the VCU, VCU main relay LRP06 and engine compartment fuse box harness connector.

C Check the terminals in the harness connector for looseness, poor contact, bending, corrosion, contamination, deterioration or damage.

Yes → Repair the harness or connector.

No

Step 3	Check the main relay of the VCU.



A Turn the start switch to "OFF" position.

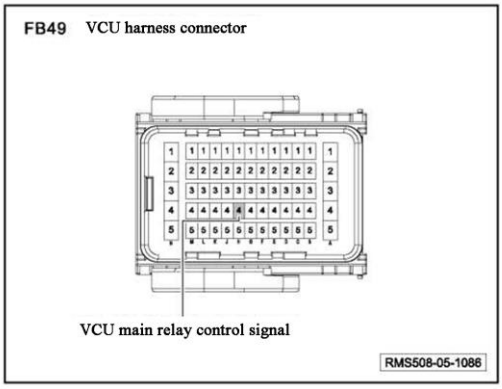
B Remove the VCU main relay LRP06.

C Connect one end of the coil of the VCU main relay to the battery positive terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the VCU main relay.

Yes

Step 4	Check control circuit of the VCU main relay for open-circuit.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Remove the VCU main relay LRP06.

D Measure the resistance between terminal H4 of the VCU harness connector FB49 and slot 86 of the VCU main relay LRP06.

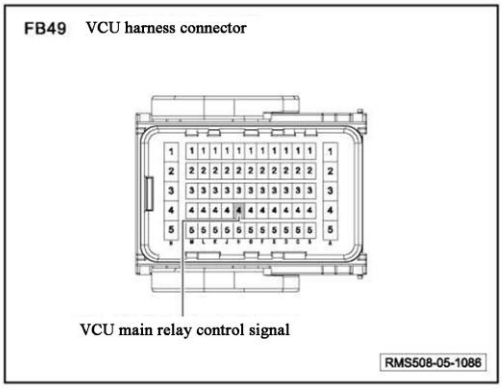
Standard resistance value: <1Ω

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the control circuit of the VCU main relay is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Remove the VCU main relay LRP06.

D Measure the resistance between terminal H4 of the VCU harness connector FB49 and the body ground.

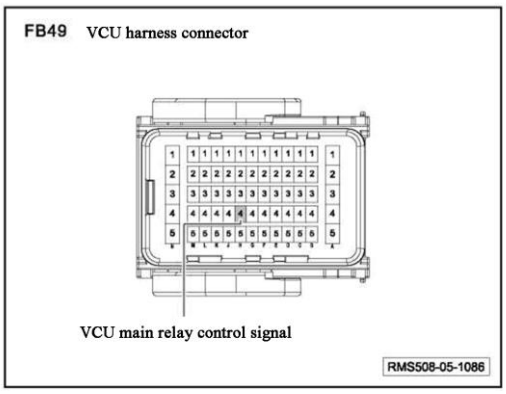
Standard resistance: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 6	Check whether the control circuit of the VCU main relay is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Remove the VCU main relay LRP06.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal H4 of the VCU harness connector FB49 and the body ground.

Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

5.2.6.25 DTC: P3AA21C, P3AA31C.....

DTC	DTC definition
P3AA21C	Accelerator pedal position sensor 1 power supply fault
P3AA31C	Accelerator pedal position sensor 2 power supply fault
P3AA429	Opening input of accelerator pedal 1 out of range
P3AA529	Opening input of accelerator pedal 2 out of range
P3AA628	Excessive difference between openings of accelerator pedals 1 and 2

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

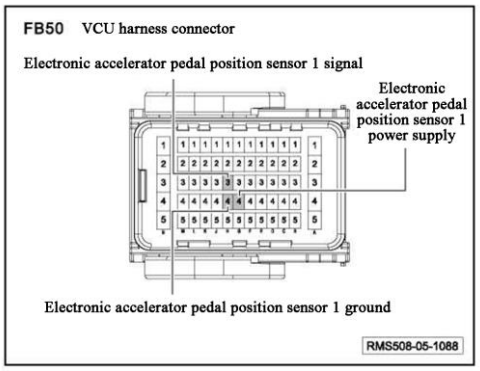
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the electronic accelerator pedal position sensor 1 for open circuit.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the electronic accelerator pedal harness connector FB06.

D Measure the resistance between terminal G4 of the VCU harness connector FB50 and terminal 3 of the electronic accelerator pedal harness connector FB06.

E Measure the resistance between terminal H3 of the VCU harness connector FB50 and terminal 4 of the electronic accelerator pedal harness connector FB06.

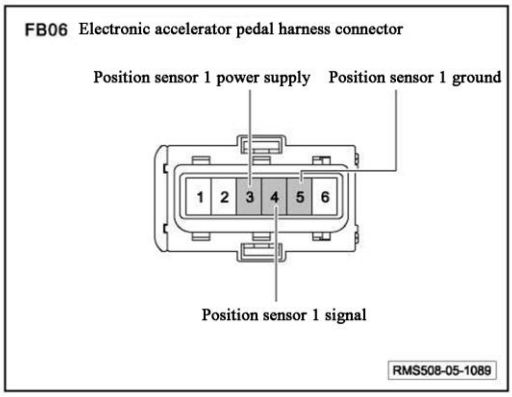
F Measure the resistance between terminal H4 of the VCU harness connector FB50 and terminal 5 of the electronic accelerator pedal harness connector FB06.

Standard resistance value: <1Ω

G Confirm whether the resistance conforms to the standard.

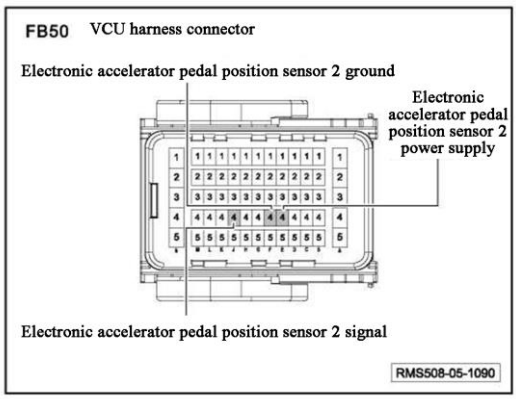
No

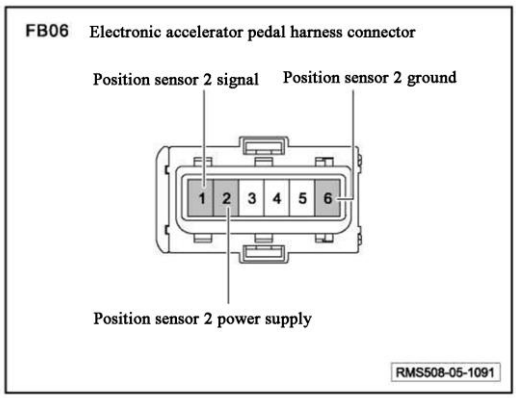
Repair or replace the harness.



Yes

Step 3	Check the electronic accelerator pedal position sensor 2 for open circuit.





A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the electronic accelerator pedal harness connector FB06.

D Measure the resistance between terminal J4 of the VCU harness connector FB50 and terminal 1 of the electronic accelerator pedal harness connector FB06.

E Measure the resistance between terminal E4 of the VCU harness connector FB50 and terminal 2 of the electronic accelerator pedal harness connector FB06.

F Measure the resistance between terminal F4 of the VCU harness connector FB50 and terminal 6 of the electronic accelerator pedal harness connector FB06.

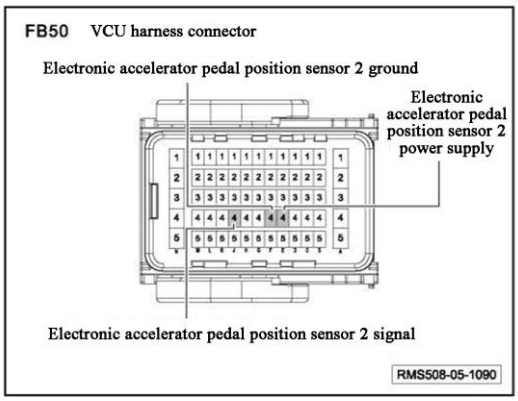
Standard resistance value: <1Ω

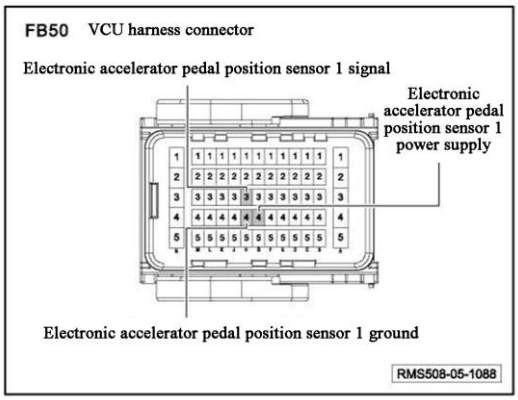
G Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 4	Check whether the circuit of the electronic accelerator pedal is short-circuited to the power supply.





A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the electronic accelerator pedal harness connector FB06.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals E4, F4, J4, G4, H3 and H4 of the VCU harness connector FB50 and the body ground.

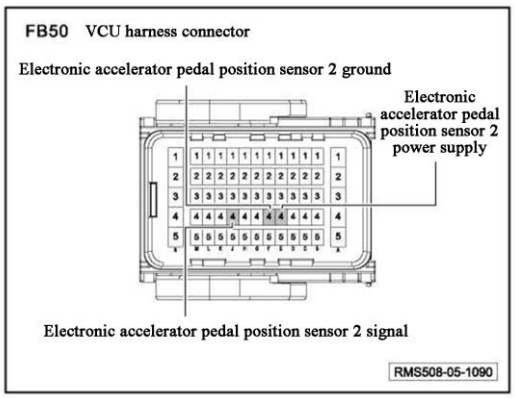
Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check whether the circuit of the electronic accelerator pedal is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

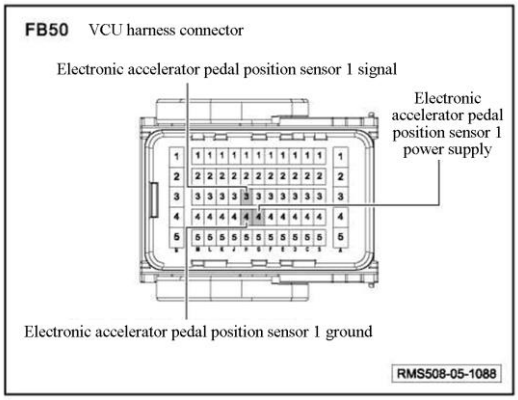
C Disconnect the electronic accelerator pedal harness connector FB06.

D Measure the resistance between terminals E4, F4, J4, G4, H3 and H4 of the VCU harness connector FB50 and the body ground.

Standard resistance value: 10kΩ or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 6	Replace the electronic accelerator pedal assembly.

A Replace the electronic accelerator pedal assembly.

B Is the fault eliminated after replacing the electronic accelerator pedal assembly?

Yes → The system works normally.

No

Step 7	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

5.2.6.26 DTC: P3AA723

DTC	Description
P3AA723	Abnormal brake pedal

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the brake light switch is installed correctly.

A Check whether the brake lamp switch is installed correctly.

No → Reinstall the brake light switch.

Yes

Step 3	Check the brake light switch.

A Turn the start switch to "OFF" position.

B Disconnect the brake light switch harness connector.

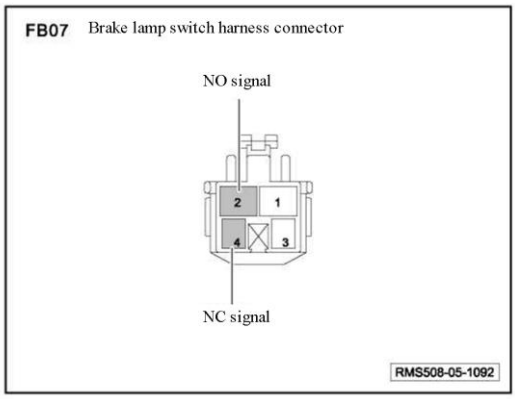
C Depress the brake pedal, and measure whether the internal circuit between terminals 1 and 2 of the brake light switch component is conductive.

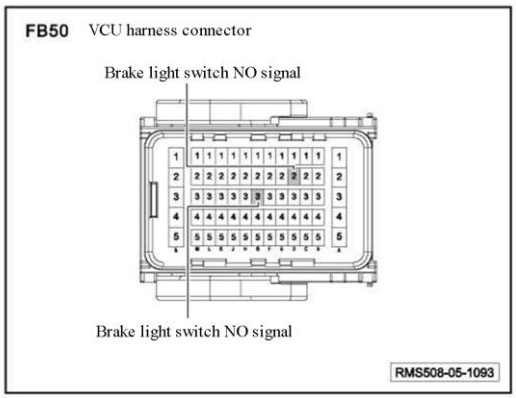
D Release the brake pedal, and measure whether the internal circuit between terminals 3 and 4 of the brake light switch component is conductive.

No → Replace the brake light switch.

Yes

Step 4	Check the circuit between the brake lamp switch and the VCU.





A Turn the start switch to "OFF" position.

B Disconnect the brake light switch harness connector FB07.

C Disconnect VCU harness connector FB50.

D Measure the resistance of circuit between terminal 2 of brake lamp switch harness connector FB07 and terminal D2 of VCU harness connector FB50.

E Measure the resistance of circuit between terminal 4 of brake lamp switch harness connector FB07 and terminal G3 of VCU harness connector FB50.

Standard resistance value: <1Ω

F Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Check the power supply circuit of the brake light switch.

A Check whether the power supply circuit of the brake light switch is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.2.6.27 DTC: P3AA823

DTC	DTC definition
P3AA823	Vehicle mode switch stuck

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

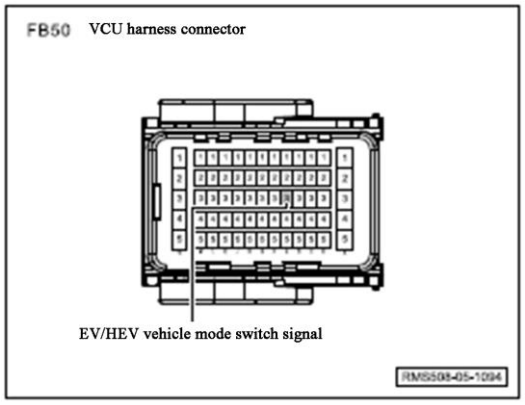
Step 2	Check the gearshift panel left switch assembly.

A Check whether the left switch assembly button of gearshift panel is stuck or squeezed by foreign matters.

Remove foreign matters, or replace the gearshift panel left switch assembly.

No

Step 3	Check for open-circuit between the VCU and the gearshift panel left switch.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

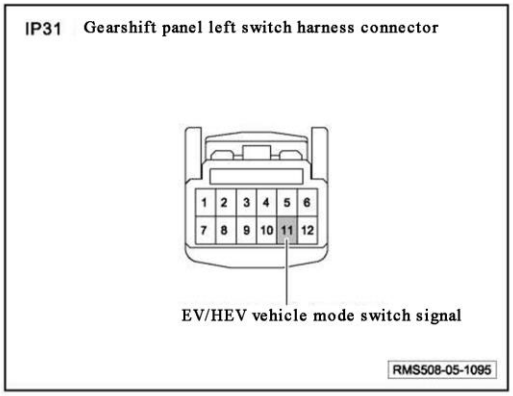
C Disconnect the gearshift panel left switch harness connector IP31.

D Measure the resistance between terminal E3 of the VCU harness connector FB50 and terminal 11 of the gearshift panel left switch harness connector IP31.

Standard resistance value: <1Ω

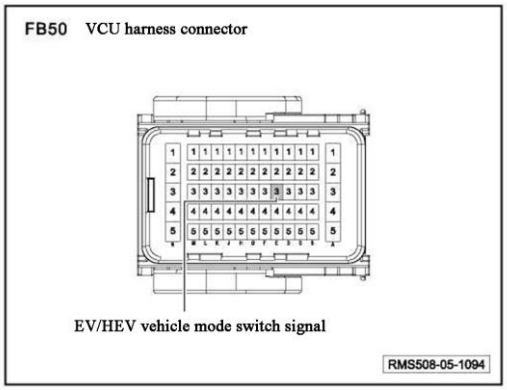
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 4	Check for short-circuit to power supply between the VCU and the gearshift panel left switch.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the gearshift panel left switch harness connector IP31.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal E3 of the VCU harness connector FB50 and the body ground.

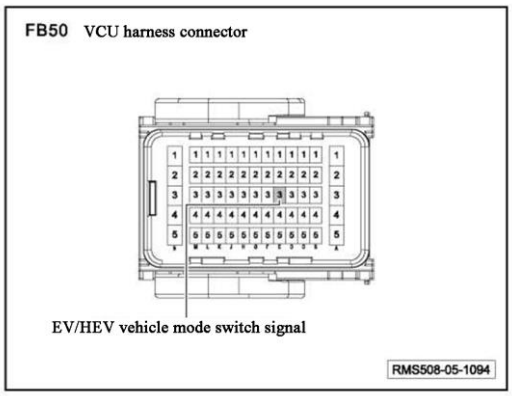
Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.

No — Repair or replace the harness.

Yes

Step 5	Check for short-circuit to ground between the VCU and the gearshift panel left switch.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the gearshift panel left switch harness connector IP31.

D Measure the resistance between terminal E3 of the VCU harness connector FB50 and the body ground.

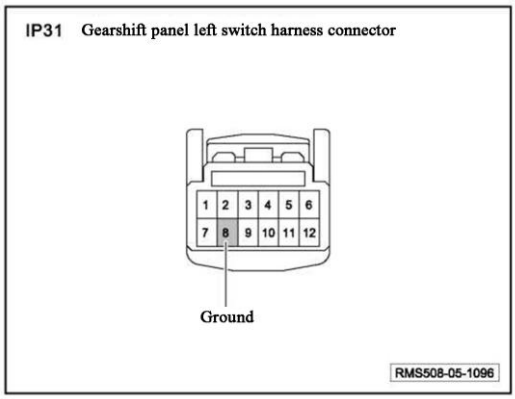
Standard resistance value: 10kΩ or higher

E Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the gearshift panel left switch.



A Turn the start switch to "OFF" position.

B Disconnect the gearshift panel left switch harness connector IP31.

C Measure the resistance between terminal 8 of the gearshift panel left switch harness connector IP31 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 7	Replace the gearshift panel left switch assembly.

A Replace the gearshift panel left switch assembly.

B Is the fault eliminated after replacing the gearshift panel left switch assembly?

Yes — The system works normally.

No

Step 8	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes — The system works normally.

Next

Step 9	The diagnosis is over.

5.2.6.28 DTC: P3AAA23

DTC	DTC definition
P3AAA23	“Snow” mode switch stuck

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

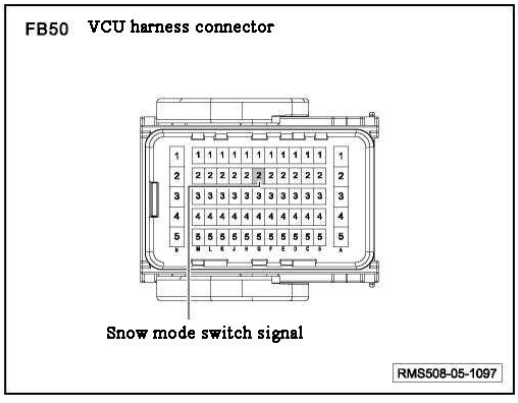
Step 2	Check the small switch set.

A Check whether the button of small switch set is stuck or squeezed by foreign matters.

Yes — Remove foreign matters or replace the small switch set.

Yes

Step 3	Check for open-circuit between the VCU and the small switch set.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

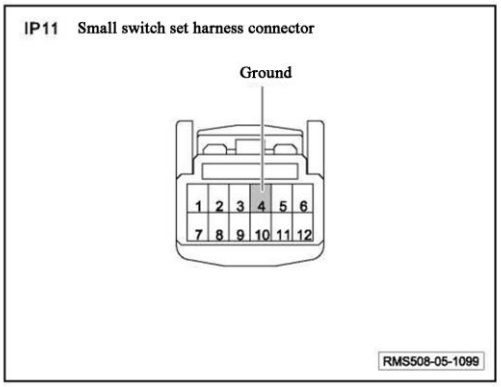
C Disconnect the small switch set harness connector IP11.

D Measure the resistance between terminal G2 of the VCU harness connector FB50 and terminal 3 of the small switch set harness connector IP11.

Standard resistance value: <1Ω

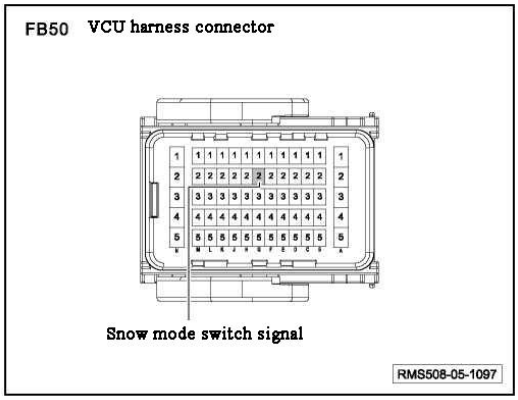
E Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.



Yes

Step 4	Check for short-circuit to power supply between the VCU and the small switch set.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the small switch set harness connector IP11.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal G2 of the VCU harness connector FB50 and the body ground.

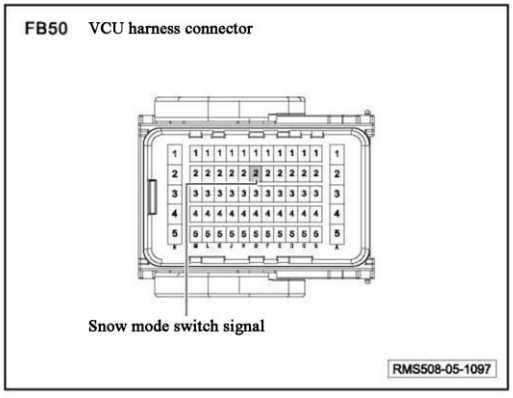
Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.

No — Repair or replace the harness.

Yes

Step 5	Check for short-circuit to ground between the VCU and the small switch set.



A Turn the start switch to "OFF" position.

B Disconnect VCU harness connector FB50.

C Disconnect the small switch set harness connector IP11.

D Measure the resistance between terminal G2 of the VCU harness connector FB50 and the body ground.

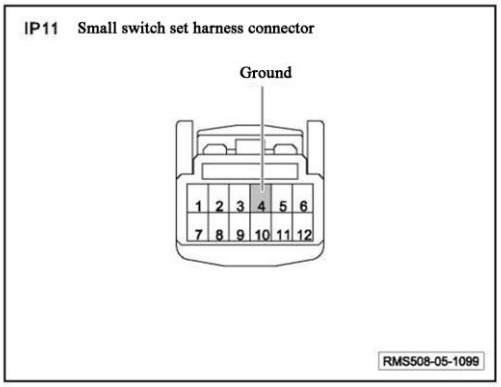
Standard resistance value: 10kΩ or higher

E Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 6	Check ground circuit of the small switch set.



A Turn the start switch to "OFF" position.

B Disconnect the small switch set harness connector IP11.

C Measure the resistance between terminal 4 of the small switch set harness connector IP11 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the small switch set.

A Replace the small switch set.

B Is the fault eliminated after replacing the small switch set?

The system works normally.

No

Step 8	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

The system works normally.

Next

Step 9	The diagnosis is over.

5.2.6.29 DTC: P3AB591

DTC	DTC definition
P3AB591	Collision fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the airbag ECU.

A Connect the diagnostic scanner to OBD interface.

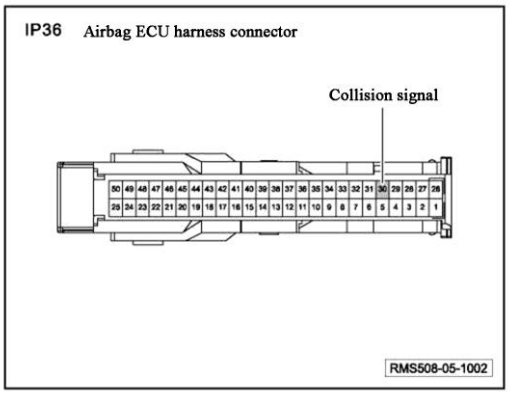
B Turn the start switch to the “ON” position, and read and record the DTC of airbag ECU.

C Check whether the same DTC is displayed.

Yes → Give priority to repairing the fault of airbag ECU.

No

Step 3	Check the collision signal line between airbag ECU and VCU harness connector for open-circuit.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

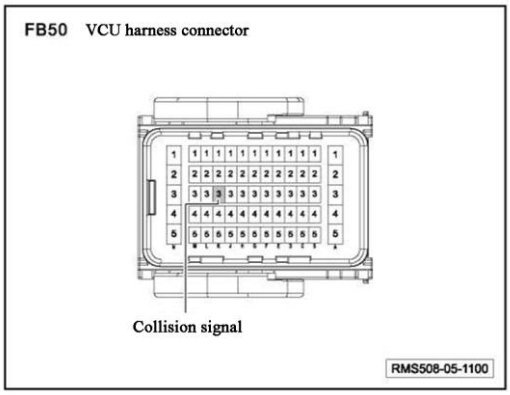
C Disconnect VCU harness connector FB50.

D Measure the resistance between terminal 30 of the airbag ECU harness connector IP36 and terminal K3 of the VCU harness connector FB50.

Standard resistance value: lower than 1Ω

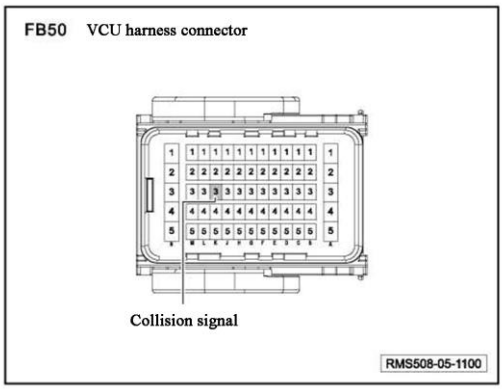
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 4	Check the collision signal line between airbag ECU and VCU harness connector for short-circuit to ground.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect VCU harness connector FB50.

D Measure the resistance between terminal K3 of the VCU harness connector FB50 and the body ground.

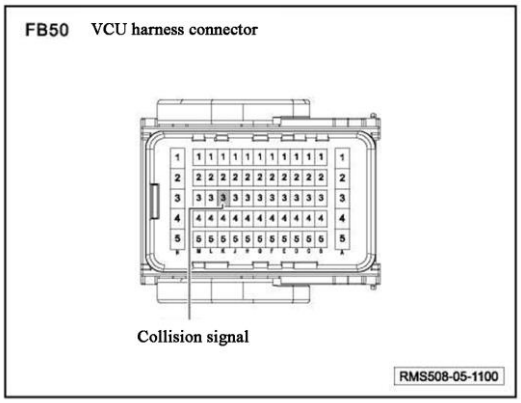
Standard resistance value: 10kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 5	Check the collision signal line between airbag ECU and VCU harness connector for short-circuit to power supply.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect VCU harness connector FB50.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal K3 of the VCU harness connector FB50 and the body ground.

Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No → Repair or replace the harness.

Yes

Step 7	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

5.2.6.30 DTC: P3AC096

DTC	DTC definition
P3AC096	The number of engine start failures out of limit

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the DTC of ECU assembly.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to the “ON” position, and read and record the DTC of ECU assembly.

C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults of ECU assembly.

No

Step 3	Check the DTC of the dual-motor controller.

A Connect the diagnostic scanner to OBD interface.

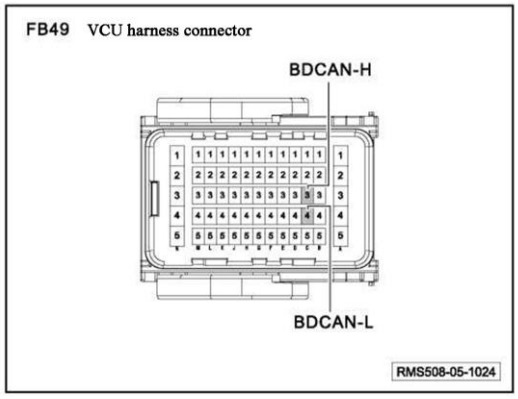
B Turn the start switch to the “ON” position, and read and record the DTC of dual-motor controller.

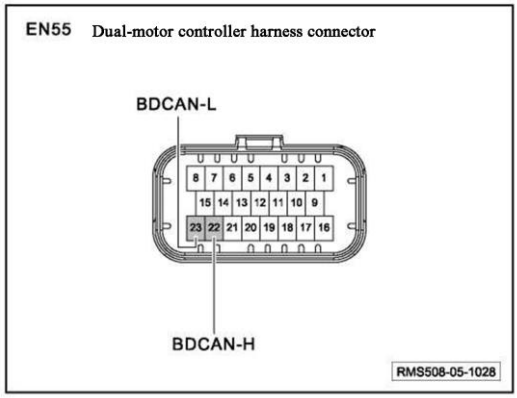
C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults of dual-motor controller.

No

Step 4	Check the CAN data communication wire between VCU and the dual-motor controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect dual-motor harness connector EN55.

D Measure the resistance between terminal C3 of VCU harness connector FB49 and terminal 22 of the dual-motor controller harness connector EN55.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 23 of the dual-motor controller harness connector EN55.

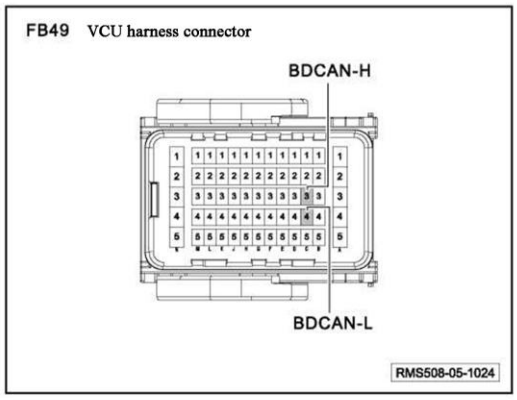
Standard resistance value: <1Ω

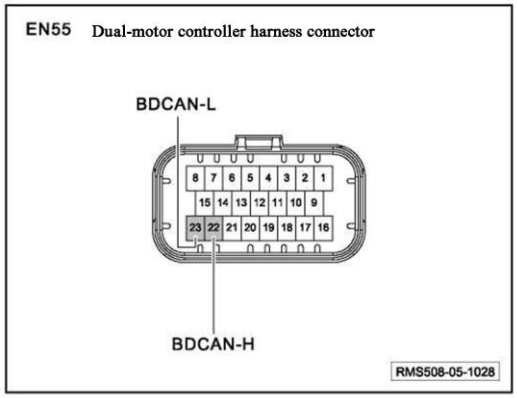
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 5	Check the CAN data communication wire between VCU and ECU assembly.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the ECU assembly harness connector EN01.

D Measure the resistance between the terminal C3 of VCU harness connector FB49 and the terminal 12 of ECU assembly harness connector EN01.

E Measure the resistance between terminal C4 of VCU harness connector FB49 and terminal 11 of ECU assembly harness connector EN01.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 6	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No — Repair or replace the harness.

Yes

Step 7	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes — The system works normally.

Next

Step 8	The diagnosis is over.

5.2.6.31 DTC: P3AC196

DTC	DTC definition
P3AC196	The number of HV power-on out of limit

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the DTC of battery pack assembly.

A Connect the diagnostic scanner to OBD interface.

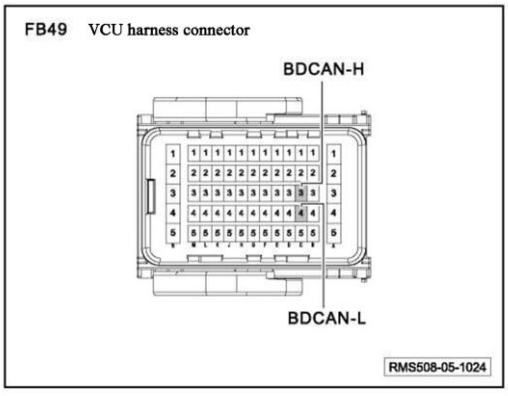
B Turn the start switch to the “ON” position, and read and record the DTC of battery pack assembly.

C Check whether the same DTC is displayed.

Give priority to repairing the faults of battery pack assembly.

No

Step 3	Check the CAN data communication wire between VCU and the battery pack assembly.



A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect the battery pack assembly harness connector FB59.

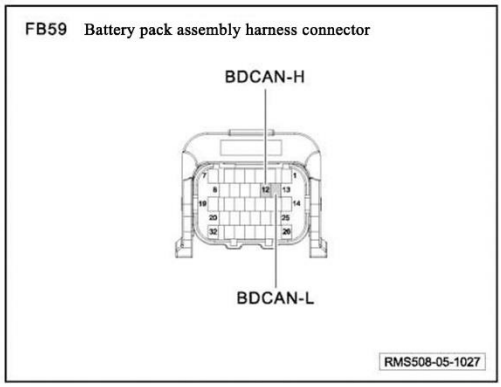
D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 12 of the battery pack assembly harness connector FB59.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 13 of the battery pack assembly harness connector FB59.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.2.7 Removal and installation

5.2.7.1 Removal and installation of VCU

Disassembly procedures

Notes:

Carefully remove and install the VCU to avoid collision and moisture.

During removal and installation, do not touch connector pins with your hands or forcefully remove the housing. Otherwise, the internal electric elements can be damaged.

1 Turn off all the electrical appliances and turn off the Start switch.

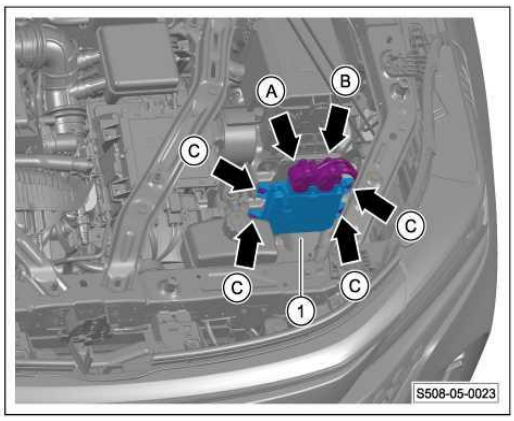
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

4 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).



7 Remove the VCU

a. Disconnect the VCU connectors (see arrows A and B).

b. Unscrew the fixing bolts (see arrow C), and take out the VCU ①.

- Tightening torque of bolt: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to

the following items:

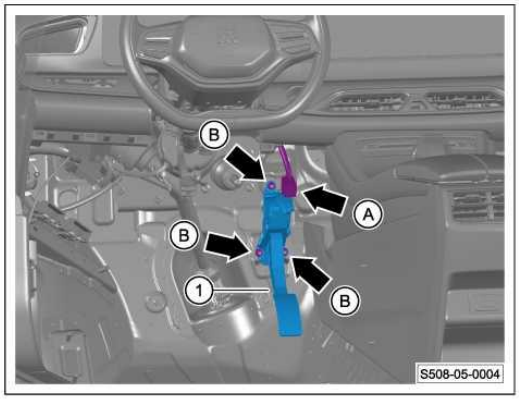
– To replace the VCU with a new one, refer to 1.4.2.6 "Module replacement and after-sales matching operation"

5.2.7.2 Removal and installation of electronic accelerator pedal assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the electronic accelerator pedal assembly

a. Disconnect the connector (see arrow A) of the electronic accelerator pedal assembly.

b. Unscrew the fixing nuts (see arrow B) and take out the electronic accelerator pedal assembly ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

5.3 Power battery management system

5.3.1 Specification

5.3.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
The power battery is connected to the vehicle body	Hexagon flange bolt c/w flat washer M12×1.5×60	110±6
Power battery ground and vehicle body	Hexagon head bolt c/w plain washer cluster M6×16	10±1

5.3.1.2 Specification and parameters of power battery

Parameter		Value	Unit
Power battery assembly	Model	SZCA01ASZQ	/
	Rated capacity	49.5	Ah
	Rated voltage	393.1	V
	Standard voltage of energy storage device cell	3.64	V
	Rated output current	49.5	A
	Weight	141±4.2	kg
	Maximum discharging power	151.4	KW
	Maximum charging power	48	KW

5.3.2 System description

5.3.2.1 System description

Overview

Compared with the battery pack of non-plug-in hybrid electric vehicles, the battery pack of plug-in hybrid electric vehicles is relatively large and can be charged externally. You can drive this kind of vehicles in a pure electric mode. When the battery runs out, you can drive it in a hybrid mode (with power mainly supplied by internal combustion engine) and charge the battery in time.

Plug-in hybrid electric vehicles have larger batteries, longer mileage, and better charging conditions in case of short-distance driving. Plug-in hybrid electric vehicles can be used as battery electric vehicles without refueling, and have the advantages of battery electric vehicles.

Plug-in hybrid models solve the problem of endurance mileage effectively suffered by battery electric vehicles, and combine traditional powertrain with battery electric powertrain to make up for their disadvantages and maximize their advantages.

Power battery maintenance

Do not fully discharge the power battery, which discharges very slowly even if the vehicle is not running; avoid long-term parking for three consecutive months. In case of long-term parking, charge the vehicle to 100% SOC at least once every three months and then discharge it to 60%~80% SOC. In some cases, we need to power off the vehicle for a long time (for example, parking in an airport during travel); however, we shall ensure a SOC of 40% to 60% at the same time.

SOC protection function

The vehicle has the power battery SOC protection function, which is played to start the engine and charge the power battery in time when the SOC is lower than 19%.

When the vehicle runs stably at a certain speed after the engine startup, a part of the torque output by the engine drives the alternator to generate electricity and charge the battery.

In-situ power generation function

If the SOC is lower than a certain value during parking, the engine will drive the alternator to generate power to charge the power battery. The engine speed will be higher than its normal idling speed in the power generation process. This is a normal phenomenon. The in-situ power generation is disabled until the SOC achieves a certain value.

Charging temperature limit

Do not expose the vehicle to an ambient temperature above 55°C or below -30°C for more than 24h.

Energy feedback function

Energy feedback refers to the conversion of excess kinetic energy into electric energy for reuse during braking or sliding of the vehicle. Energy feedback settings with different strengths represent the intensity of kinetic energy converted into electric energy. The stronger the feedback is, the higher the electric energy feedback efficiency will be and the more obvious the sense of deceleration will be.

Power generation by pressing the accelerator pedal

With the vehicle in P gear and in HEV mode, when SOC is lower than a certain value, press the accelerator pedal to trigger the power generation function. The different generated power can be achieved by controlling the accelerator pedal stroke.

During the in-situ power generation, the instrument shows a slightly lower generated power due to the consumption of electrical appliances.

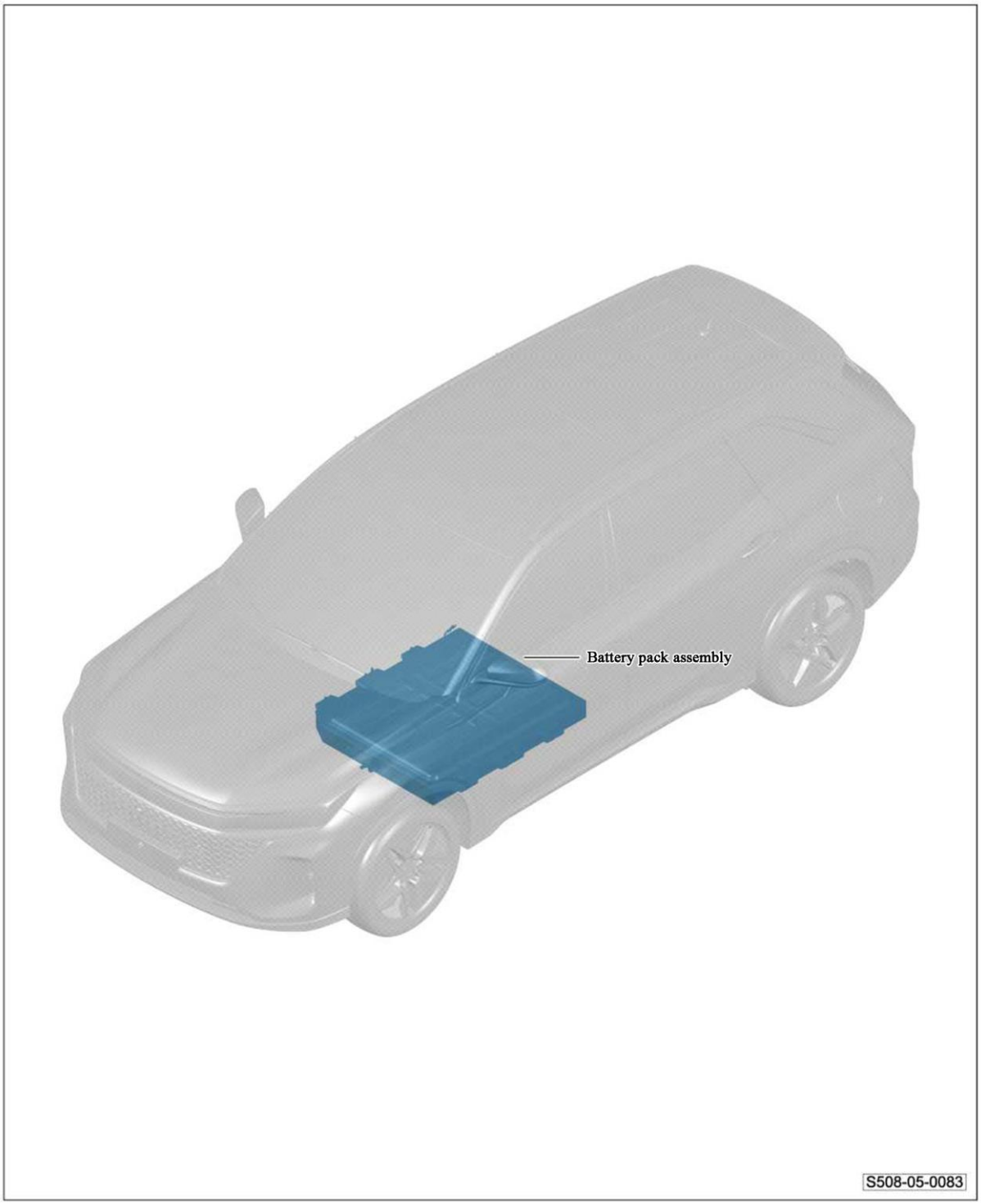
Basic requirements for using power battery pack system

– Ensure correct and reliable connection of all connectors before using the battery system.

- Keep the system as clean as possible in order to prolong its service life.
- Do not use the power battery pack out of its service environment; otherwise, abnormities such as insufficient power will be caused.
- Avoid using it in an environment with dust, volatile gases, high salt content and corrosive substances.
- Do not place it in a high-temperature environment such as flame.
- Do not expose the power battery pack to the sun for a long time.
- Be sure to disconnect connectors of the power battery pack before plugging and unplugging each connector.
- Take off watches, rings and other metal ornaments and use tools with insulated handles in case of hot-line work.
- Do not conduct series charge and discharge tests on the battery pack without a management system, so as to prevent overcharge or overdischarge of the battery.
- Consider the height of vehicle from the ground when driving in poor road conditions, so as to avoid squeezing the power battery pack.
- Decelerate (to a recommended speed of less than or equal to15 km/h) when passing through a wading section.
- Do not power up or drive the vehicle continuously, and cut off the power supply and leave the vehicle in a short time when the vehicle is soaked in accumulated water.
- Do not allow non-professionals to remove the power battery pack. If it is really necessary to remove the battery pack, please contact professionals.
- No non-professional personnel are allowed to disassemble or open the battery pack. It is recommended to contact a professional to deal with the fault (if any) of power battery.
- Do not disassemble or disassemble the power battery without permission. Otherwise, the unit or individual will bear the corresponding responsibility for environmental pollution or safety accidents caused thereby.
- Power battery is a special chemical product, which needs to be used and maintained correctly. In addition, the power battery capacity is subject to natural attenuation due to the chemical properties.

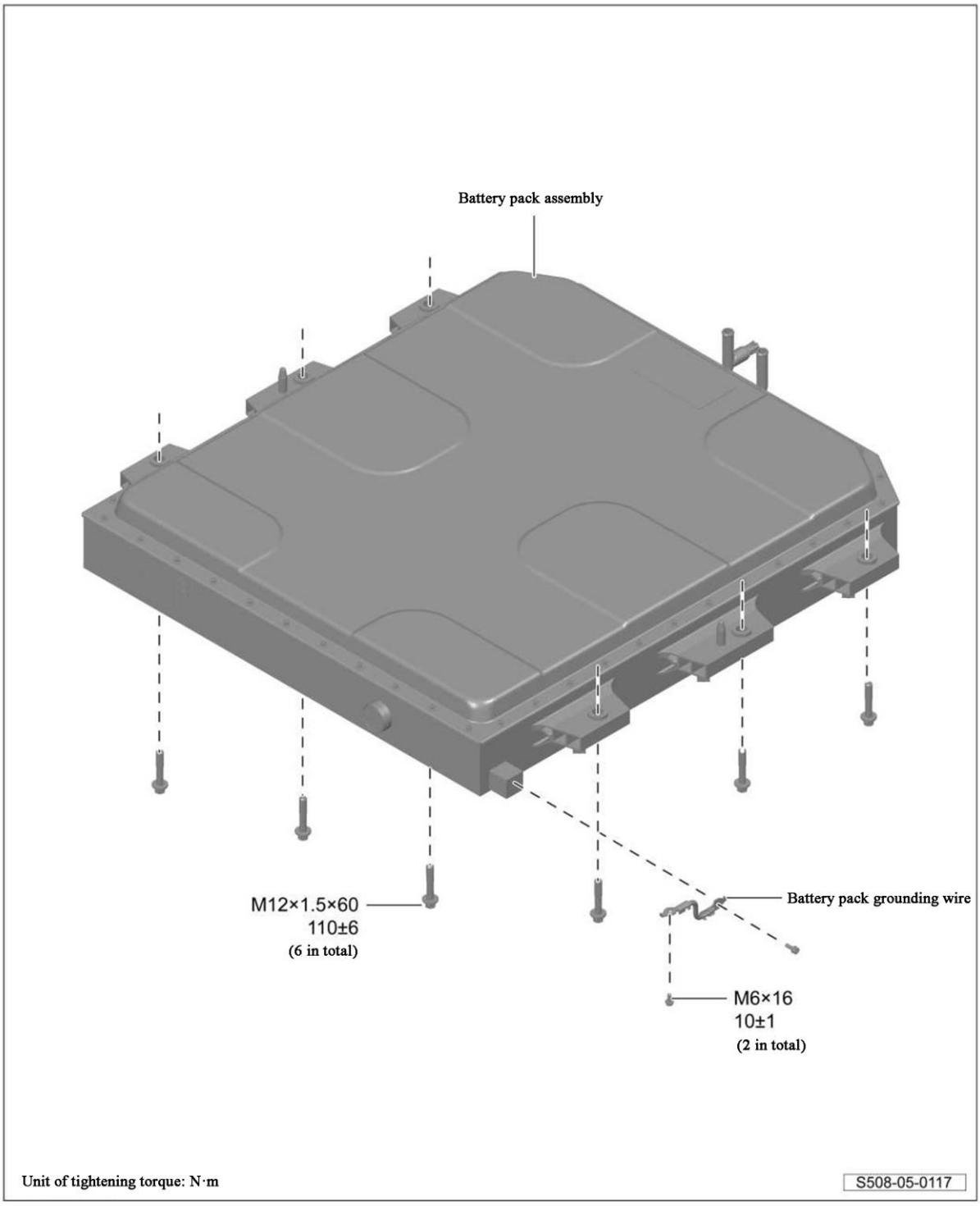
5.3.3 Component position

5.3.3.1 Component position



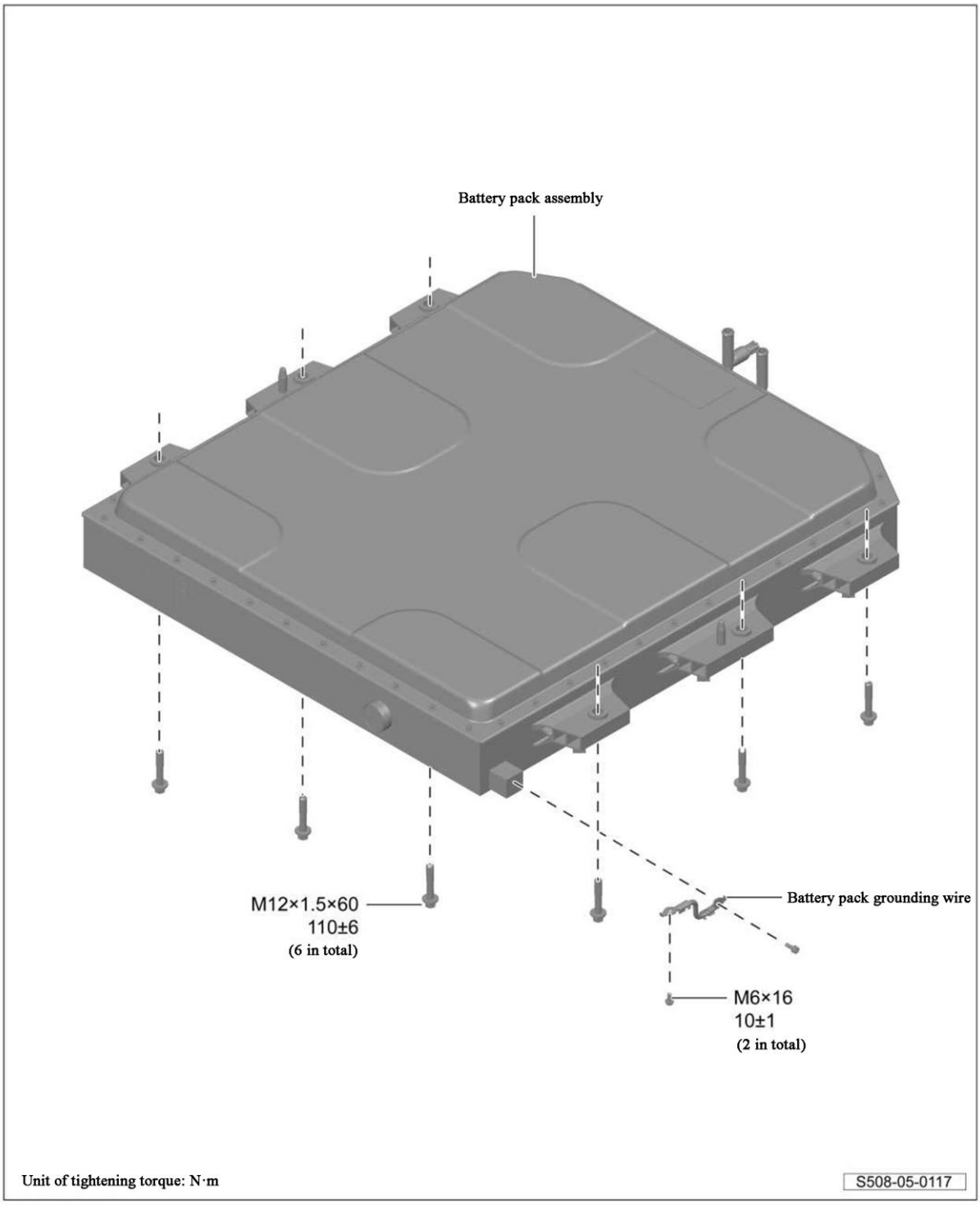
5.3.4 Exploded view

5.3.4.1 Exploded view



5.3.5 Electrical schematic diagram

5.3.5.1 Electrical schematic diagram



5.3.6 Diagnosis information and steps

5.3.6.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read via the OBD diagnosis interface of the vehicle. Based on the data sheet of the BMS battery pack assembly, the switch and sensor values can be obtained by reading the data sheet displayed on the diagnostic scanner without removing any parts. Reading the data list is the first step in troubleshooting, and one of the methods to reduce the diagnosis time.

5.3.6.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.

- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

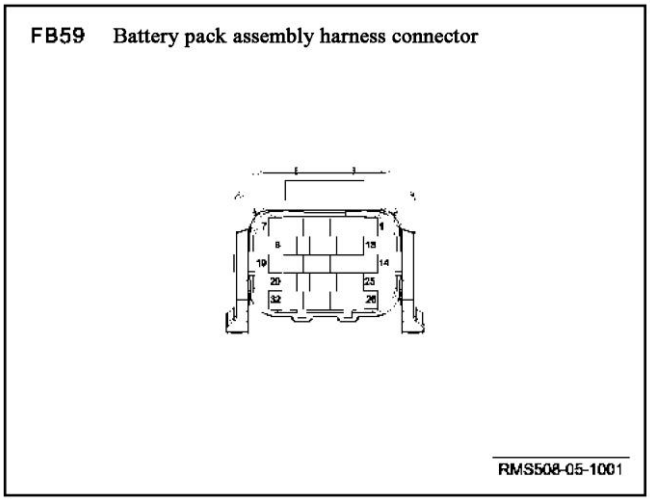
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

5.3.6.3 ECU terminals

Battery Pack Assembly Harness Connector (FB59)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.75/red	Battery power supply	The start switch is put to any position	Battery voltage
2	0.75/black	Ground	–	0V
3	0.5/blue-yellow	Collision signal	–	–

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
4	0.5/red-black	IG1 power	The start switch is in IG1 position.	Battery voltage
12	0.5/brown	BDCAN-H	–	–
13	0.5/brown-white	BDCAN-L	–	–

5.3.6.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	“1”	“X”	—
		Month	“1”	“C”	—
		Day	“1”	“Z”	—
		Supplier code	—	—	—
F184	Flash fingerprint information	Tool supplier identification	0	255	—
		Year of programming	0	255	—
		Month of programming	1	12	—
		Date of programming	1	31	—
		Equipment No.	—	—	—
A000	Flash attempt counter	-	0	65535	—
A001	Counter reloading succeeded	-	0	65535	—
0400	Maximum temperature	Maximum battery temperature of BMS	-40	205	℃
0401	Minimum temperature	Minimum cell temperature of BMS	-40	205	℃
0402	Maximum cell	Maximum battery voltage of BMS	0	5	mV
0403	Minimum cell	Minimum battery voltage of BMS	0	5	mV
0404	Current	Battery current of BMS	-500	500	A
0405	Lead-acid voltage	BMS 12V voltage	0	25.5	V
0406	State of positive contactor	BMS position relay	0	2	—
0407	Precharging contactor status	BMS pre-charge relay	0	2	—
0408	State of cathode contactor	BMS cathode relay	0	2	—
0409	BMS working state	BMS working state	0	7	—
040A	Maximum cell voltage position (serial number of battery with the maximum cell voltage)	Maximum cell voltage position of battery	1	250	—
040B	Minimum cell voltage position (serial number of battery with the minimum cell voltage)	Minimum cell voltage position of battery	1	250	—
040C	Maximum temperature sensing position (serial number of battery module with the maximum temperature)	Maximum temperature position of battery module	1	250	—
040D	Minimum temperature sensing position (serial number of battery	Minimum temperature position of battery module	1	250	—

	module with the minimum temperature)				
040E	Balance identification	Balance mark	0	1	—
040F	BMS fault level	BMS fault level	0	3	—
0410	Total voltage of battery pack	Battery voltage of BMS	0	1000	V
0411	Insulation resistance	Internal management system	0	60000	kΩ

5.3.6.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
P3A0027	Temperature difference alarm Level 1	MAP dropped by 20%	1. Abnormal resistance of NTC 2. Fault inside acquisition module	1. Replace the acquisition module 2. Replace the module
P3A0024	Battery high temperature alarm Level 1	Continuous use of the battery pack not affected	1. Abnormal resistance of NTC 2. Fault inside acquisition module	1. Replace the acquisition module 2. Replace the module
P3A0025	Battery high temperature alarm Level 2	Continuous use of the battery pack affected	1. Abnormal resistance of NTC 2. Fault inside acquisition module	1. Replace the acquisition module 2. Replace the module
P3A0028	Battery high temperature alarm Level 3	Continuous use of the battery pack affected	1. Abnormal resistance of NTC 2. Fault inside acquisition module	1. Replace the acquisition module 2. Replace the module
P3A0026	Temperature too low	As per MAP	1. Abnormal resistance of NTC 2. Fault in acquisition wiring harness 3. Fault inside the acquisition module	1. Replace the acquisition module 2. Replace the module 3. Replace the harness
P3A002C	On-board energy storage device overvoltage alarm Level 2	Failure to charge in case of discharge MAP dropped by 20%	Fault inside the acquisition module	Acquisition Module Replacement
P3A001D	On-board energy storage device overvoltage alarm Level 3	Charging failure	Fault inside the acquisition module	Acquisition Module Replacement
P3A0017	Battery cell overvoltage alarm Level 1	Failure to charge in case of discharge MAP dropped by 20%	1. Fault in cell 2. Fault inside acquisition module	1. Replace the acquisition module 2. Replace the module
P3A0018	Battery cell overvoltage alarm Level 2	Continuous use of the battery pack affected	1. Fault in cell 2. Fault inside acquisition module	1. Replace the acquisition module 2. Replace the module
P3A0019	Battery cell ultimate overvoltage alarm Level 3	Continuous use of the battery pack affected	1. Fault in cell 2. Fault inside acquisition module	1. Replace the acquisition module 2. Replace the module
P3A002D	On-board energy storage device undervoltage alarm Level 2	Discharge MAP dropped by 50%	1. Fault in acquisition wiring harness 2. Fault inside acquisition module 3. Ablative fuse in the battery pack 4. Loose copper plate bolts inside the battery pack	1. Replace the acquisition wiring harness 2. Replace the acquisition module 3. Replace the fuse in the battery pack 4. Check the copper plate bolts in the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				battery pack
P3A001E	On-board energy storage device undervoltage alarm Level 3	The limit of discharge MAP is 0	1. Fault in acquisition wiring harness 2. Fault inside acquisition module 3. Ablative fuse in the battery pack 4. Loose copper plate bolts inside the battery pack	1. Replace the acquisition wiring harness 2. Replace the acquisition module 3. Replace the fuse in the battery pack 4. Check the copper plate bolts in the battery pack
P3A000A	Battery cell undervoltage alarm Level 1	As per MAP	1. Fault in cell 2. Fault in acquisition wiring harness 3. Fault inside the acquisition module	1. Replace the acquisition module 2. Replace the harness 3. Replace the module
P3A001A	Battery cell undervoltage alarm Level 2	Discharge MAP dropped by 50%	1. Fault in cell 2. Fault in acquisition wiring harness 3. Fault inside the acquisition module	1. Replace the acquisition module 2. Replace the harness 3. Replace the module
P3A001B	Battery cell undervoltage alarm Level 3	The limit of discharge MAP is 0	1. Fault in cell 2. Fault in acquisition wiring harness	1. Replace the acquisition module 2. Replace the harness
P3A001C	Battery cell poor consistency alarm Level 2	Discharge MAP dropped by 50%	1. Fault in cell 2. Fault in acquisition wiring harness 3. Fault inside the acquisition module	1. Replace the acquisition module 2. Replace the harness 3. Replace the module
P3A0002	Insulation fault Level 1	As per MAP	1. Acquisition wiring harness in the battery pack short-circuited to the housing 2. Abnormal internal insulation of battery pack 3. Fault inside the control module	1. Replace the control module 2. Replace the harness
P3A0003	Insulation fault Level 2	As per MAP	1. Acquisition wiring harness in the battery pack short-circuited to the housing 2. Abnormal internal insulation of battery pack 3. Fault inside the acquisition module	1. Replace the control module 2. Replace the harness
P3A0000	Hardwire collision fault	Continuous use of the battery pack affected	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A002E	D-CAN collision signal	Continuous use of the battery pack affected	Fault inside the control module	Power supply fault, grounding fault, controller fault

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
P3A000F	Internal communication failure	Continuous use of the battery pack affected	1. Fault in the communication wiring harness 2. Internal fault of host 3. Internal fault of slave	1. Replace the harness 2. Replace the host 3. Replace the slave
P3A0006	Precharging failure	Continuous use of the battery pack affected	1. Acquisition wiring harness disconnected 2. Ablative fuse 3. Internal fault of host	1. Replace the acquisition wiring harness 2. Replace the fuse 3. Replace the host
P3A0005	Total voltage acquisition fault	Continuous use of the battery pack affected	1. Acquisition wiring harness disconnected 2. Loose copper plate bolts in the circuit 3. Fault inside the acquisition module	1. Replace the acquisition wiring harness 2. Replace the host 3. Check the copper plate bolts
P3A000C	Current acquisition fault	Continuous use of the battery pack affected	1. Disconnection of communication wiring harness and power supply wiring harness 2. Internal fault of host 3. Fault inside shunt 4. Abnormal CAN bus	1. Replace the acquisition wiring harness 2. Replace the host 3. Replace the shunt
P3A0011	General fault of cell temperature acquisition	Discharge MAP dropped by 50%	1. Abnormal resistance of NTC 2. Fault inside acquisition module	1. Replace the NTC 2. Replace the acquisition module
P3A0012	Serious fault of cell temperature acquisition	Discharge MAP dropped to 5 kW	1. Abnormal resistance of NTC 2. Fault inside acquisition module	1. Replace the NTC 2. Replace the acquisition module
P3A0009	Adhesion in anode contactor	Continuous use of the battery pack affected	1. Control fault inside main engine 2. Fault inside contactor	1. Replace the host 2. Replace the contactor.
P3A0008	Failure of engagement of positive contactor	Continuous use of the battery pack affected	1. Fault inside contactor 2. Harness disconnection 3. Control fault inside main engine	1. Replace the host 2. Replace the contactor. 3. Replace the harness
P3A002F	Adhesion in cathode contactor	Continuous use of the battery pack affected	1. Control fault inside main engine 2. Fault inside contactor	1. Replace the host 2. Replace the contactor.
P3A0030	Failure of engagement of negative contactor	Continuous use of the battery pack affected	1. Fault inside contactor 2. Harness disconnection 3. Control fault inside main engine	1. Replace the host 2. Replace the contactor. 3. Replace the harness
P3A0031	Locking fault of AC charging port	Charging failure	Message not sent by BCM	Check BCM power supply and CAN bus
P3A0010	Cell voltage acquisition fault	Continuous use of the battery pack affected	1. Disconnection of sampling wiring harness 2. Module FPC fault	1. Replace the harness 2. Replace the acquisition module

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
			3. Fault inside the acquisition module	3. Replace the module
P3A0044	Battery thermal runaway alarm	Continuous use of the battery pack affected	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0040	Discharge overcurrent Level 1	No treatment	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0032	Discharge overcurrent Level 2	Discharge MAP dropped by 20%	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0033	Discharge overcurrent Level 3	The limit of discharge MAP is 0	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0041	Feedback overcurrent Level 1	No treatment	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0034	Feedback overcurrent Level 2	Feedback MAP dropped by 20%	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0035	Feedback overcurrent Level 3	Limit of feedback MAP is 0	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0014	Slow charging OBC fault	Charging failure	1. BMU fault 2. Message not sent by OBC	CAN bus open circuit
P3A0036	BMS self-check fault	As per MAP	Fault inside the control module	Power supply fault, grounding fault, controller fault
P3A0037	Main fuse failure	Continuous use of the battery pack affected	1. Fault in acquisition wiring harness 2. Internal fault of host 3. Ablative fuse in the battery pack	1. Replace the harness 2. Replace the host 3. Replace the fuse
P3A0038	Abnormal heating of thermal management module	As per MAP	1. Message not sent by PTC 2. PTC fault	CAN bus open circuit
P3A0039	Abnormal refrigeration of thermal management module	As per MAP	1. Message not sent by CCU 2. CCU fault	CAN bus open circuit
P3A003A	Balance invalid	Slight decrease in battery pack performance	Fault inside the acquisition module	Power supply fault, grounding fault, controller fault
P3A003B	Equalizing resistor overtemperature	Continuous use of the battery pack not affected	Fault inside the acquisition module	Power supply fault, grounding fault, controller fault
B111716	12 V power supply voltage too low	Continuous use of the battery pack affected	1. Battery undervoltage 2. Fault inside acquisition module	1. Battery charging 2. Power supply fault, grounding fault,

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				controller fault
B111717	12 V power supply voltage too high	Continuous use of the battery pack affected	1. Battery overvoltage 2. Fault inside acquisition module	Power supply fault, grounding fault, controller fault
P3A003C	Battery cell undervoltage alarm Level 4	Continuous use of the battery pack affected	1. Fault inside cell 2. Fault in acquisition wiring harness 3. Fault inside the acquisition module	1. Replace the harness 2. Replace the module 3. Replace the acquisition module.
P3A003D	Current divider overtemperature	Continuous use of the battery pack not affected	1. Fault inside shunt 2. Internal fault of host	1. Replace the shunt 2. Replace the host
P3A0004	HV interlocking fault	As per MAP	1. Harness disconnection 2. Internal fault of host	1. Replace the harness 2.Host
U029387	VCU communication failed	Continuous use of the battery pack not affected	1. Message not sent by VCU 2. CAN bus fault 3. Interference with CAN bus 4. Internal fault of host	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
U007588	BUS-OFF	Continuous use of the battery pack not affected	1. CAN bus has physical fault 2. Bus is interfered	CAN bus is short-circuited to ground or power supply
U015187	Lost communication with ABM	Continuous use of the battery pack not affected	1. Message not sent by ABM 2. CAN bus fault 3. Interference with CAN bus 4. Internal fault of host	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
U045687	Lost communication with CCU	Continuous use of the battery pack not affected	1. Message not sent by CCU 2. CAN bus fault 3. Interference with CAN bus 4. Internal fault of host	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
U016587	Lost communication with PTC	Continuous use of the battery pack not affected	1. Message not sent by PTC 2. CAN bus fault 3. Interference with CAN bus 4. Internal fault of host	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
P3A0042	Lost communication with BDC	Continuous use of the battery pack not affected	1. Message not sent by BDC 2. CAN bus fault 3. Interference with CAN bus 4. Internal fault of host	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
U014087	Failure in communication with BCM	Continuous use of the battery pack not affected	1. Message not sent by BCM 2. CAN bus fault 3. Interference with CAN bus 4. Internal fault of host	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
U029287	Lost communication with MCU	Continuous use of the battery pack not	1. Message not sent by MCU	1. Open circuit of CAN bus

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
		affected	2. CAN bus fault 3. Interference with CAN bus 4. Internal fault of host	2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault

5.3.6.6 DTC: P3A0027, P3A0024.....

DTC	DTC definition
P3A0027	Temperature difference alarm Level 1
P3A0024	Battery high temperature alarm Level 1
P3A0025	Battery high temperature alarm Level 2
P3A0028	Battery high temperature alarm Level 3

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check battery coolant level.

A Check whether the battery coolant level is normal.

No → Add coolant or check and repair coolant leakage.

Yes

Step 3	Check the HVAC circulating three-way water valve assembly.

A Check whether the HVAC circulating three-way water valve assembly is stuck.

No → Replace the HVAC circulating three-way water valve assembly.

Yes

Step 4	Check the battery thermal management module.

A Check the battery thermal management module for normal operation.

No

Check and remove the circuit fault of battery thermal management module; replace the thermal management integrated module.

Yes

Step 5	Check whether the A/C system pressure is too low.

A Check whether the A/C system pressure is too low.

Yes

Add or replace refrigerant, and check leakage position of A/C system until the pressure is normal.

No

Step 6	Check the A/C condenser.

A Check whether the condenser is dirty or blocked.

Yes

Clean or replace the condenser or refill refrigerant.

No

Step 7	Check the compressor assembly.

A Check whether the compressor assembly works normally.

No

Check the compressor assembly for fault and replace it if necessary.

Yes

Step 8	Check the battery coolant pump.

A Check whether the battery coolant pump works normally.

No

Check and repair the circuit fault of battery coolant pump; replace the pump.

Yes

Step 9	Replace the thermal management integrated module.

A Replace the thermal management integrated module.

B Is the fault eliminated after replacing the thermal management integrated module?

Yes

The system works normally.

No

Step 10	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

5.3.6.7 DTC: P3A0026

DTC	DTC definition
P3A0026	Temperature too low

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery and engine coolant level.

A Check whether the battery and engine coolant level is normal.

No → Add coolant or check and repair coolant leakage.

Yes

Step 3	Check the HVAC circulating three-way water valve assembly.

A Check the HVAC circulating three-way water valve assembly for normal operation.

No → Check and repair the circuit fault of HVAC circulating three-way water valve assembly; replace the assembly.

Yes

Step 4	Check the battery thermal management module.

A Check the battery thermal management module for normal operation.

No → Check and remove the circuit fault of battery thermal management module; replace the thermal management integrated module.

Yes

Step 5	Check the PTC heater assembly.

A Check the PTC heater assembly for normal operation.

No → Repair the fault of PTC heater assembly.

No

Step 6	Check the heater water pump.

A Check whether the heater water pump works normally.

No → Check and repair the circuit fault of heater coolant pump; replace the pump.

Yes

Step 7	Check the battery coolant pump.

A Check whether the battery coolant pump works normally.

No → Check and repair the circuit fault of battery coolant pump; replace the pump.

Yes

Step 8	Replace the thermal management integrated module.

A Replace the thermal management integrated module.

B Is the fault eliminated after replacing the thermal management integrated module?

Yes → The system works normally.

No

Step 9	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

5.3.6.8 DTC: P3A002C, P3A001D.....

DTC	DTC definition
P3A002C	On-board energy storage device overvoltage alarm Level 2
P3A001D	On-board energy storage device overvoltage alarm Level 3
P3A002D	On-board energy storage device undervoltage alarm Level 2
P3A001E	On-board energy storage device undervoltage alarm Level 3

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on/off the vehicle.

A Power on/off the vehicle.

B Connect the diagnostic scanner, and read and record the DTC of battery pack assembly again.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed

No → The system works normally.

Yes

Step 3	Check the LV power supply ground circuit of the battery pack assembly.

A Check the LV power supply ground circuit of the battery pack assembly for normal operation.

No → Repair or replace the harness or connector.

No

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.9 DTC: P3A0017, P3A0018....

DTC	DTC definition
P3A0017	Battery cell overvoltage alarm Level 1
P3A0018	Battery cell overvoltage alarm Level 2
P3A0019	Battery cell ultimate overvoltage alarm Level 3

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on/off the vehicle.

A Power on/off the vehicle.

B Connect the diagnostic scanner, and read and record the DTC of battery pack assembly again.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the charger (HV electrical appliance two-in-one assembly).

A Check the charger (HV electrical appliance two-in-one assembly) for normal operation.

No → Replace the HV electrical appliance two-in-one assembly.

Yes

Step 4	Check the battery pack assembly cell voltage.

A Connect the diagnostic scanner to OBD interface and turn the start switch to "ON" position.

B Read the cell voltage data flow of battery pack assembly and check whether the voltage value is normal.

Yes → Recheck the power battery after charging and discharging.

No

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.3.6.10 DTC: P3A000A, P3A001A.....

DTC	DTC definition
P3A000A	Battery cell undervoltage alarm Level 1
P3A001A	Battery cell undervoltage alarm Level 2
P3A001B	Battery cell undervoltage alarm Level 3
P3A003C	Battery cell undervoltage alarm Level 4

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on/off the vehicle.

A Power on/off the vehicle.

B Connect the diagnostic scanner, and read and record the DTC of battery pack assembly again.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Recharge the battery pack assembly.

A Check whether the fault is eliminated after recharging the battery pack assembly.

Yes → The system is normal, and the fault is caused by overdischarge of the system.

No

Step 4	Check the battery pack assembly cell voltage.

A Connect the diagnostic scanner to OBD interface and turn the start switch to "ON" position.

B Read the cell voltage data flow of battery pack assembly and check whether the cell voltage value is normal.

Yes → Recheck the power battery after charging and discharging.

No

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.3.6.11 DTC: P3A0002, P3A0003

DTC	DTC definition
P3A0002	Insulation fault Level 1
P3A0003	Insulation fault Level 2

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the insulation resistance of battery.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, enter the battery pack assembly to read and record the battery insulation resistance data flow.

C Check whether the battery resistance is normal.

No → Replace the power battery assembly.

Yes

Step 3	Check the HV circuits of vehicle.

A Check the HV circuits of vehicle for damage or poor contact.

Yes → Repair or replace the high voltage harness.

No

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.12 DTC: P3A0000

DTC	DTC definition
P3A0000	Hardwire collision fault

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

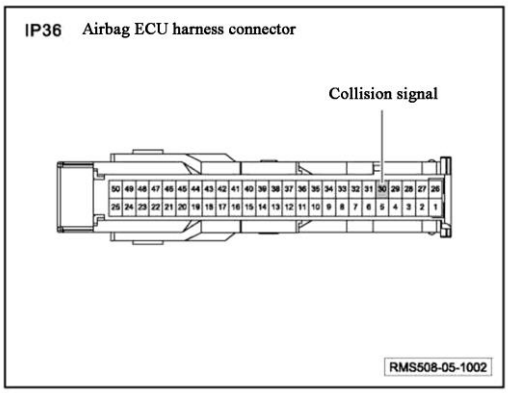
E Check whether the same DTC is displayed.

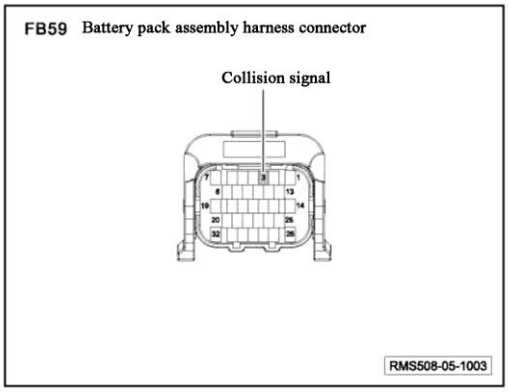
No

As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the collision signal line between airbag ECU and battery pack assembly harness connector for open-circuit.





A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect the battery pack assembly harness connector FB59.

D Measure the resistance between terminal 30 of the airbag ECU harness connector IP36 and terminal 3 of the battery pack assembly harness connector FB59.

Standard resistance value: lower than 1Ω

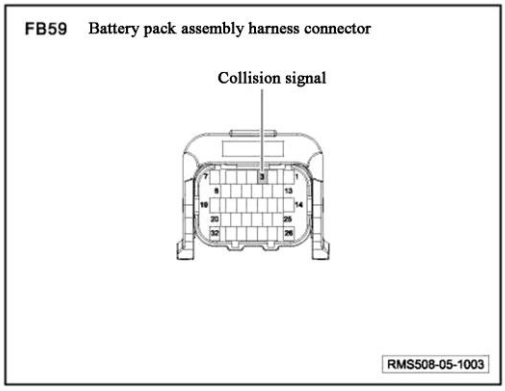
E Confirm whether the resistance conforms to the standard.

No

Repair or replace the harness.

Yes

Step 3	Check the collision signal line between airbag ECU and battery pack assembly harness connector for short-circuit to ground.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect the battery pack assembly harness connector FB59.

D Measure the resistance between terminal 3 of the battery pack assembly harness connector FB59 and the body ground.

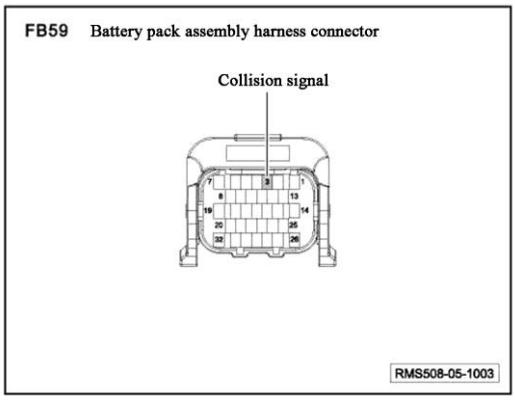
Standard resistance value: 10kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 4	Check the collision signal line between airbag ECU and battery pack assembly harness connector for short-circuit to power supply.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect the battery pack assembly harness connector FB59.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 3 of the battery pack assembly harness connector FB59 and the body ground.

Standard voltage value: 0V

F Confirm whether the voltage value conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the power supply ground circuit of the battery pack assembly.

A Check whether the power supply ground circuit of the battery pack assembly works normally.

No → Repair or replace the harness.

Yes

Step 6	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.3.6.13 DTC: P3A002E

DTC	DTC definition
P3A002E	D-CAN collision signal

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the airbag ECU.

A Connect the diagnostic scanner to OBD interface.

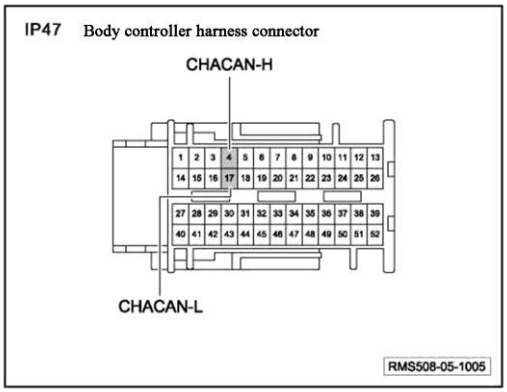
B Turn the start switch to the “ON” position, and read and record the DTC of airbag ECU.

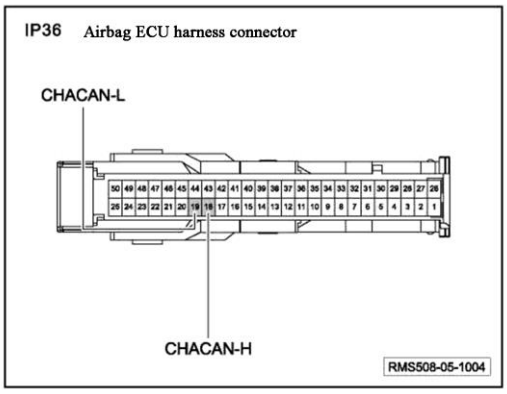
C Check whether the same DTC is displayed.

Yes — Give priority to repairing the fault of airbag ECU.

No

Step 3	Check the CAN data communication wire between the body domain controller and airbag ECU.





A Turn the start switch to "OFF" position.

B Disconnect the body domain controller harness connector IP47.

C Disconnect airbag ECU harness connector IP36.

D Measure the resistance between terminal 4 of body domain controller harness connector IP47 and terminal 18 of airbag ECU harness connector IP36.

E Measure the resistance between terminal 17 of body domain controller harness connector IP47 and terminal 19 of airbag ECU harness connector IP36.

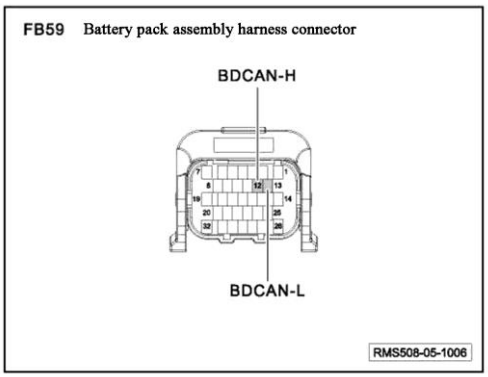
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the battery pack assembly and the body domain controller.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect the body domain controller harness connector IP47.

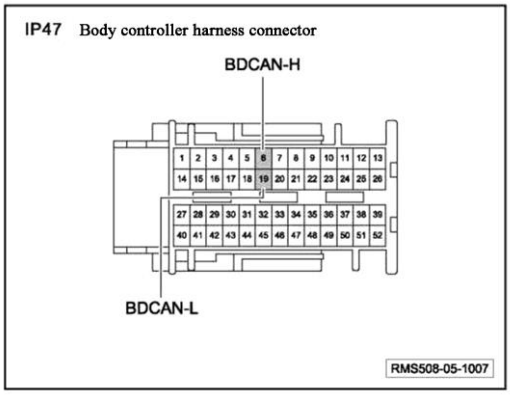
D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body domain controller harness connector IP47.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body domain controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 7	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

5.3.6.14 DTC: P3A000F, P3A0036.....

DTC	DTC definition
P3A000F	Internal communication failure
P3A0036	BMS self-check fault
P3A003A	Balance invalid
P3A003B	Equalizing resistor overtemperature
P3A001C	Battery cell poor consistency alarm Level 2
P3A0044	Battery thermal runaway alarm
P3A0037	Main fuse failure
P3A003D	Current divider overtemperature

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTC status.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on/off the vehicle.

A Power on/off the vehicle.

B Connect the diagnostic scanner, and read and record the DTC of battery pack assembly again

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the battery pack assembly.

A Check connecting harness of the battery pack assembly for open-circuit.

B Check the battery pack assembly harness connector for looseness, corrosion or poor contact.

Yes → Repair or replace the harness or connector.

No

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.15 DTC: P3A0006

DTC	DTC definition
P3A0006	Precharging failure

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on/off the vehicle.

A Power on/off the vehicle.

B Connect the diagnostic scanner, and read and record the DTC of battery pack assembly again

C Clear the DTC.

	D	Read the DTC again.
	E	Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the pre-charge relay.

A Check whether the pre-charge relay works normally.

No → Replace the pre-charge relay.

Yes

Step 4	Check the pre-charge relay control circuit.

A Check the pre-charge relay for short-circuit or open-circuit.

Yes → Repair or replace the harness.

No

Step 5	Check the HV load circuit for short-circuit or open-circuit.

A Check the HV load circuit for short-circuit or open-circuit

Yes → Replace or repair the harness.

No

Step 6	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.3.6.16 DTC: P3A0005, P3A0010

DTC	DTC definition
P3A0005	Total voltage acquisition fault
P3A0010	Cell voltage acquisition fault

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check connecting circuit of the battery pack assembly.

A Check connecting circuit of the battery pack assembly for looseness, corrosion or poor contact.

Yes → Repair or replace the harness or connector.

No

Step 3	Check the power supply ground circuit of the battery pack assembly.

A Check whether the power supply ground circuit of the battery pack assembly works normally.

No → Replace or repair the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.17 DTC: P3A000C

DTC	DTC definition
P3A000C	Current acquisition fault

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery pack assembly harness connector.

A Check the battery pack assembly harness connector terminal for looseness, corrosion or poor contact.

Yes — Repair or replace the harness connector.

No

Step 3	Check the current sensor.

A Connect the diagnostic scanner, turn the start switch to "ON" position, and read the value of current sensor in the battery pack assembly.

B Check whether the displayed value of the current sensor is normal.

Yes — Perform power-on/power-off test again.

No

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.18 DTC: P3A0011, P3A0012

DTC	DTC definition
P3A0011	General fault of cell temperature acquisition
P3A0012	Serious fault of cell temperature acquisition

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the ignition switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the temperature sampling data of battery pack assembly.

A Connect the diagnostic scanner to OBD interface and turn the ignition switch to "ON" position.

B Read the battery pack assembly cell temperature data flow, and check whether the displayed value of battery cell temperature is normal.

Yes → Go to step 4

No

Step 3	Check whether the ambient temperature is too high.

A Check whether the ambient temperature is too

high.

Yes → Recheck after the battery cools down.

No

Step 4	Perform the software update program for power battery pack assembly.

A Connect the diagnostic scanner to OBD interface and turn the ignition switch to "ON" position.

B Perform the software update program for power battery pack assembly according to the prompts given by the diagnostic scanner.

C Clear the DTC and check whether the same DTC still exists.

No → The system works normally.

Yes

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.3.6.19 DTC: P3A0009, P3A0008

DTC	DTC definition
P3A0009	Adhesion in anode contactor
P3A0008	Failure of engagement of positive contactor

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No

As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the main positive relay.

Check whether the main positive relay is normal.

Yes → Replace the main positive relay.

No

Step 3	Check the control circuit of main positive relay.

A Check whether the main positive relay control circuit is short-circuited or open-circuited.

Yes → Replace or repair the harness or connector.

No

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.20 DTC: P3A002F, P3A0030

DTC	DTC definition
P3A002F	Adhesion in cathode contactor
P3A0030	Failure of engagement of negative contactor

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the cathode relay inside the battery pack.

A Check whether the cathode relay inside the battery pack is stuck or damaged.

Yes → Replace the cathode relay.

No

Step 3	Check the control circuit of negative relay.

A Check control circuit of the cathode relay for short-circuit or open-circuit.

Yes → Replace or repair the harness or connector.

No

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.21 DTC: P3A0031

DTC	DTC definition
P3A0031	Locking fault of AC charging port

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the body domain controller.

A Connect the diagnostic scanner to OBD interface.

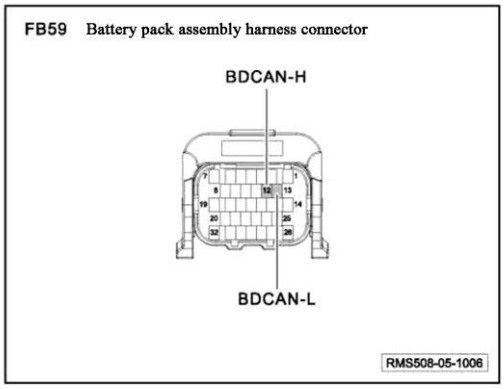
B Turn the start switch to the “ON” position, and read and record the DTC of body domain controller.

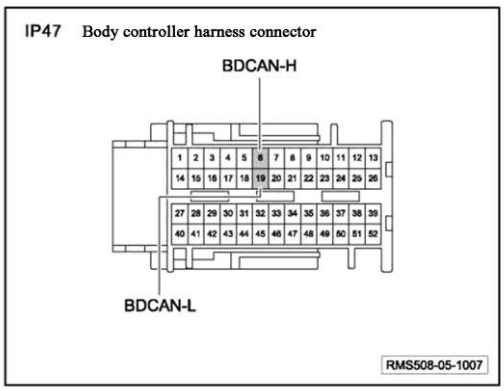
C Check whether the same DTC is displayed.

Yes — Give priority to repairing the faults of body domain controller.

No

Step 3	Check the CAN data communication wire between the battery pack assembly and the body domain controller.





A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect the body domain controller harness connector IP47.

D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body domain controller harness connector IP47.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body domain controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the body domain controller.

A Check whether the power supply and ground wires of the body domain controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the body domain controller.

A Replace the body domain controller.

B Is the fault eliminated after replacing the body domain controller?

Yes → The system works normally.

No

Step 6	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.3.6.22 DTC: P3A0040, P3A0032.....

DTC	DTC definition
P3A0040	Discharge overcurrent Level 1
P3A0032	Discharge overcurrent Level 2
P3A0033	Discharge overcurrent Level 3
P3A0041	Feedback overcurrent Level 1
P3A0034	Feedback overcurrent Level 2
P3A0035	Feedback overcurrent Level 3

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Power on/off the vehicle.

A Power on/off the vehicle.

B Connect the diagnostic scanner, and read and record the DTC of battery pack assembly again.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the drive motor.

A Check the drive motor for locked-rotor.

B Check the drive motor for overload operation.

Yes → Repair or replace the drive motor assembly; avoid the drive motor from being overloaded.

No

Step 4	Check other HV loads.

A Check other HV loads for short-circuit.

Yes → Replace the HV load.

No

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.3.6.23 DTC: P3A0014

DTC	DTC definition
P3A0014	Slow charging OBC fault

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the HV electrical appliance two-in-one assembly.

A Connect the diagnostic scanner to OBD interface.

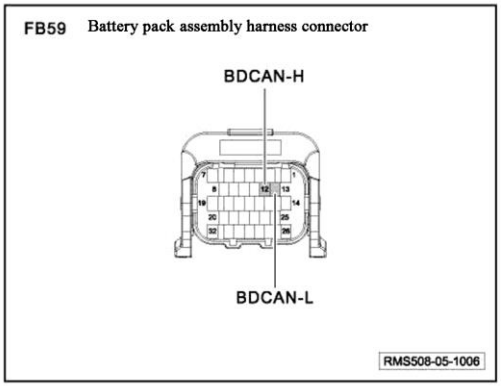
B Turn the start switch to "ON" position, and read and record the DTC of HV electrical appliance two-in-one assembly.

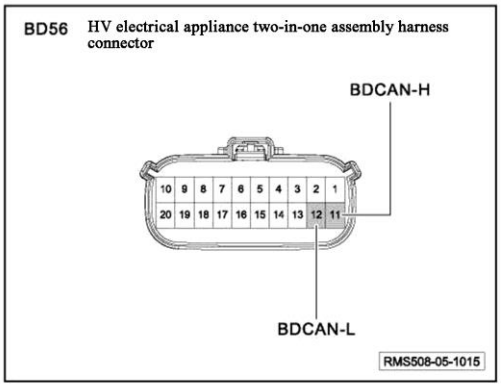
C Check whether the same DTC is displayed.

Yes → Give priority to repairing the fault of HV electrical appliance two-in-one assembly.

No

Step 3	Check the CAN data communication wire between the battery pack assembly and the HV electrical appliance two-in-one assembly.





A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 11 of the HV electrical appliance two-in-one assembly harness connector BD56.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 12 of the HV electrical appliance two-in-one assembly harness connector BD56.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the HV electrical appliance two-in-one assembly.

A Check whether the power supply ground wire of HV electrical appliance two-in-one assembly is normal.

No	Repair or replace the harness.

Yes

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes	The system works normally.

No

Step 6	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.3.6.24 DTC: P3A0038

DTC	DTC definition
P3A0038	Abnormal heating of thermal management module

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the PTC heater assembly.

A Connect the diagnostic scanner to OBD interface.

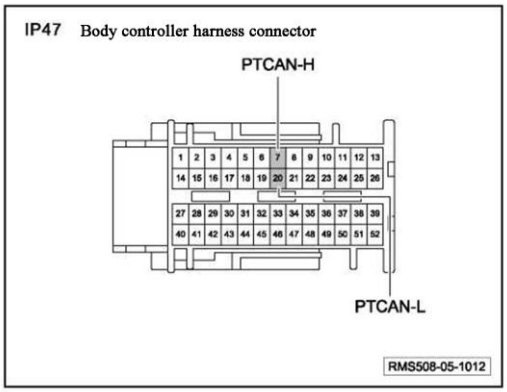
B Turn the start switch to "ON" position, read and record the DTC of the PTC heater assembly.

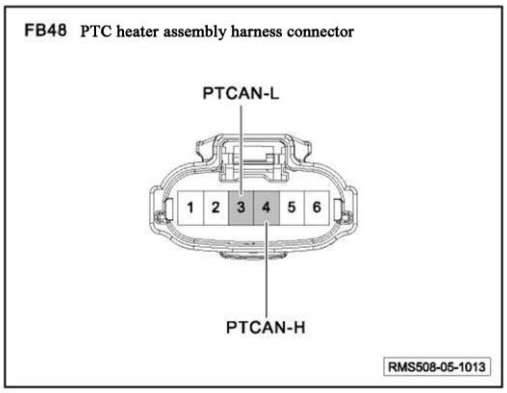
C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults related to the PTC heater assembly.

No

Step 3	Check the CAN data communication wire between the body controller and the PTC heater assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the PTC heater assembly harness connector FB48.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 4 of the PTC heater assembly harness connector FB48.

E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the PTC heater assembly harness connector FB48.

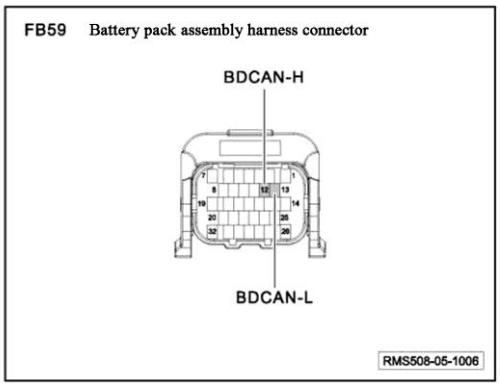
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the battery pack assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect body controller harness connector IP47

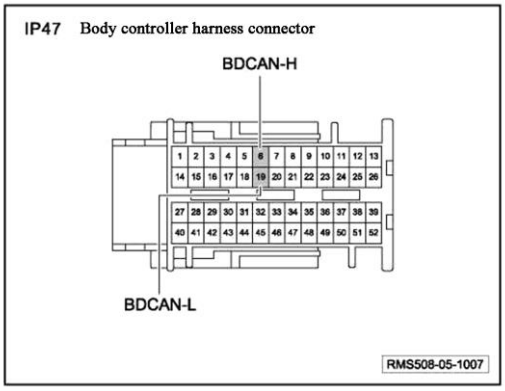
D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

No

Step 7	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

5.3.6.25 DTC: P3A0039

DTC	DTC definition
P3A0039	Abnormal refrigeration of thermal management module

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the compressor.

A Connect the diagnostic scanner to OBD interface.

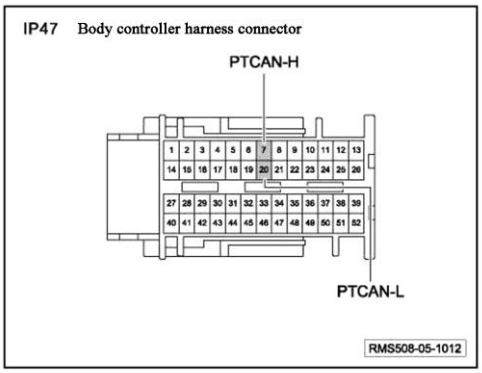
B Turn the start switch to "ON" position, read and record the compressor DTC.

C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults of compressor.

No

Step 3	Check the CAN data communication wire between the body controller and the compressor.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the compressor harness connector EN17.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 2 of the compressor harness connector EN17.

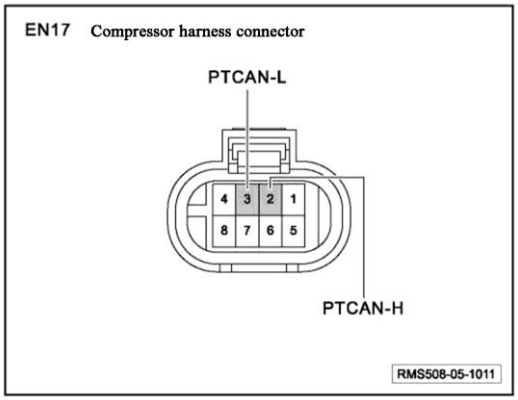
E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the compressor harness connector EN17.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

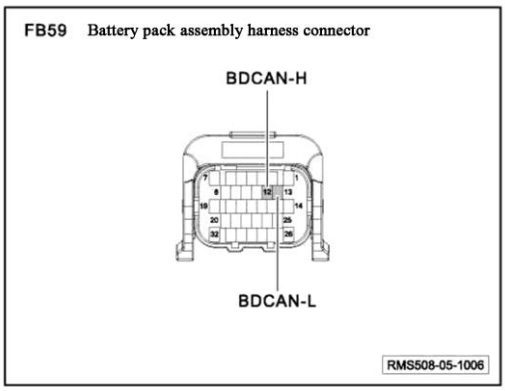
No → Check the CAN data communication wire

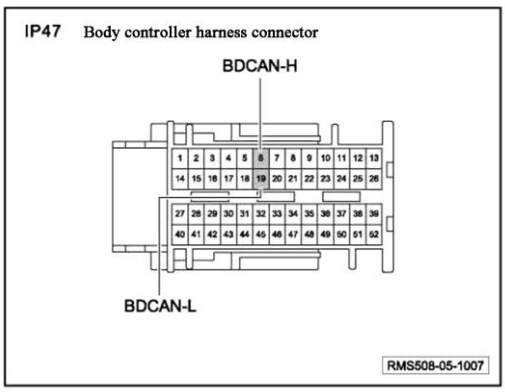
for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the CAN data communication wire between the battery pack assembly and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 5	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

No

Step 7	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

5.3.6.26 DTC: B111717, B111716

DTC	DTC definition
B111716	12 V power supply voltage too low
B111717	12 V power supply voltage too high

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: 11~14V

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses LF12 and LF32 of the battery pack assembly.

A Power off the vehicle.

B Check whether the fuses LF12 and LF32 are blown.

No → Go to Step 5.

Yes

Step 4	Check and repair fuses LF12 and LF32.

A Turn the start switch to "OFF" position.

B Check whether the fuses LF12 and LF32 are short-circuited.

C Repair the circuit and make sure there is no short circuit.

D Replace blown fuses with fuses of rated current.

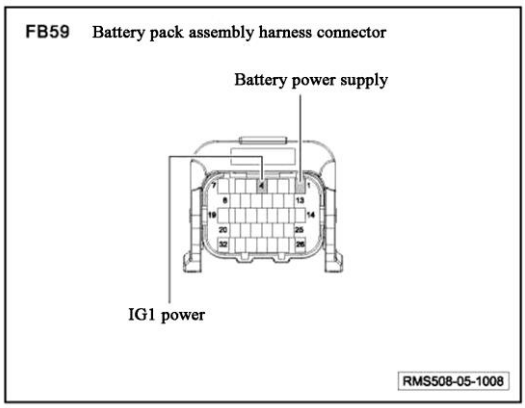
Rated value of fuse: LF12 10 A, LF32 5 A

E Check the battery pack assembly for normal operation.

Yes → The system works normally.

No

Step 5	Check power circuit of the battery pack assembly.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Put the Start switch to “ON” position.

D Measure the voltage of circuit between terminals 1 and 4 of the battery pack assembly harness connector FB59 and the body ground.

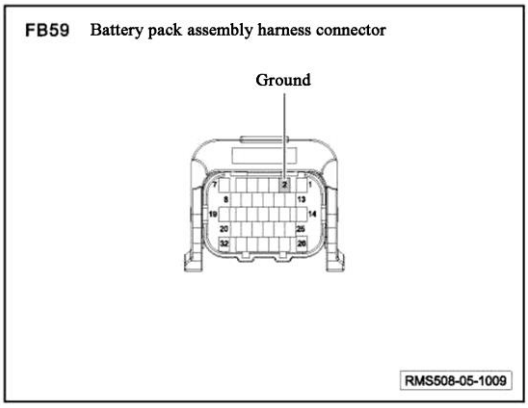
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

Yes

Step 6	Check ground circuit of the battery pack assembly.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Measure the resistance of circuit between terminal 2 of the battery pack assembly harness connector FB59 and the body ground.

Standard resistance value: <1Ω

D Confirm if the resistance conforms to the standard value

No	Repair or replace the harness.

Yes

Step 7	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

5.3.6.27 DTC: P3A0004

DTC	DTC definition
P3A0004	HV interlocking fault

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check (internal) HV interlocking circuit of the battery pack assembly.

A Check (internal) HV interlocking circuit of the battery pack assembly for short-circuit or open-circuit.

Yes → Replace or repair the harness.

No

Step 3	Check the power supply ground circuit of the battery pack assembly.

A Check whether the power supply ground circuit of the battery pack assembly works normally.

No → Replace or repair the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.28 DTC: U029387

DTC	DTC definition
U029387	VCU communication failed

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

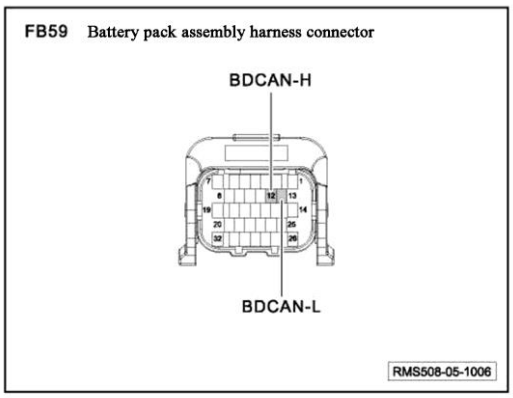
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between battery pack assembly and the VCU harness connector.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect the VCU harness connector FB49.

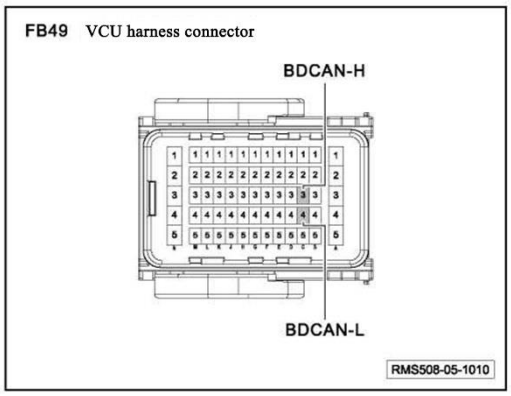
D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal C3 of the VCU harness connector FB49.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal C4 of the VCU harness connector FB49.

Standard resistance value: lower than 1Ω

F Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.



Yes

Step 3	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.3.6.29 DTC: U007588

DTC	DTC definition
U007588	BUS-OFF

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

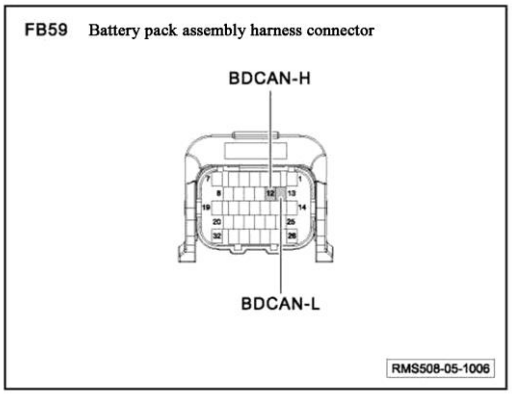
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check CAN data communication wire of the battery pack assembly.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Measure the resistance of circuit between terminals 12 and 13 of the battery pack assembly harness connector FB59.

D Standard resistance value: about 120Ω

E Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of the battery pack assembly.

A Check whether the power supply and ground wires of the battery pack assembly are normal.

No — Repair or replace the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes | The system works normally.

Next

Step 5	The diagnosis is over.

5.3.6.30 DTC: U015187

DTC	DTC definition
U015187	Lost communication with ABM

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

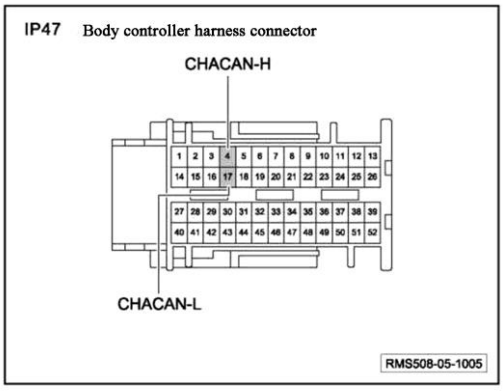
D Read the DTC again.

E Check whether the same DTC is displayed.

No | As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and airbag ECU.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect airbag ECU harness connector IP36.

D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 18 of the airbag ECU harness connector IP36.

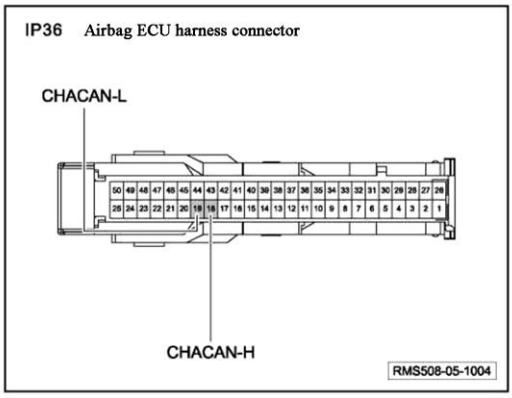
E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 19 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

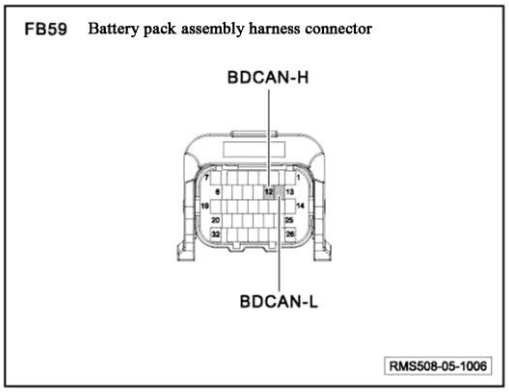
No | Check the CAN data communication wire

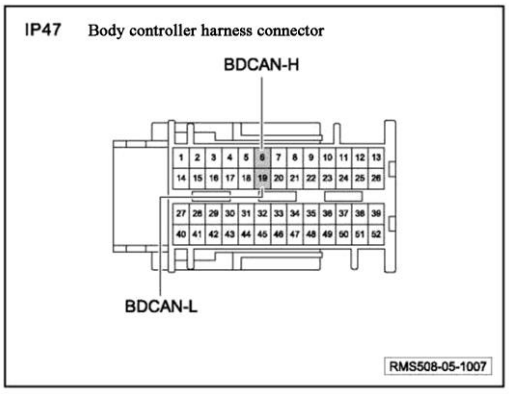
for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the battery pack assembly and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 6	Replace the battery pack assembly.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.3.6.31 DTC: U045687

DTC	DTC definition
U045687	Lost communication with CCU

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

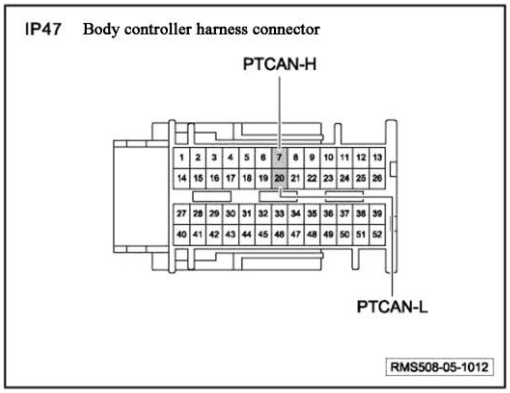
D Read the DTC again.

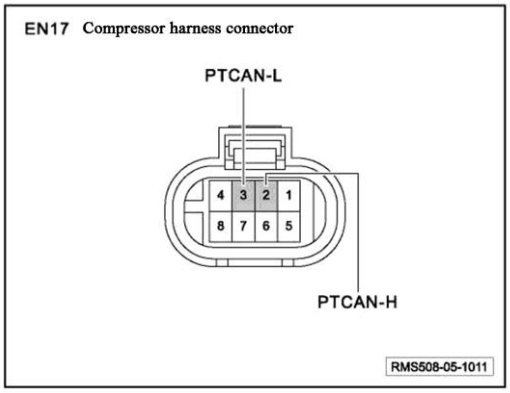
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the compressor.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the compressor harness connector EN17.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 2 of the compressor harness connector EN17.

E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the compressor harness connector EN17.

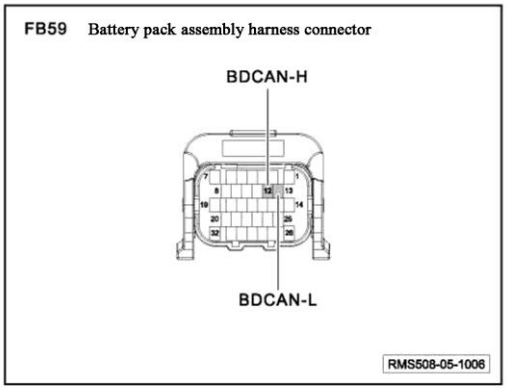
Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the battery pack assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.

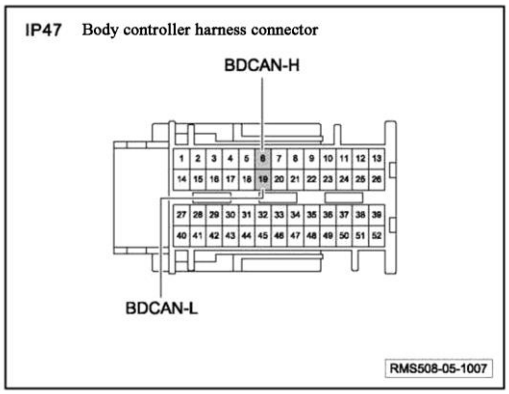
E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and

virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

No

Step 6	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.3.6.32 DTC: U016587

DTC	DTC definition
U016587	Lost communication with PTC

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

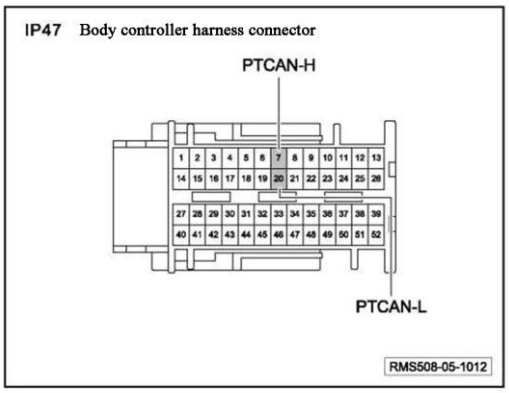
D Read the DTC again.

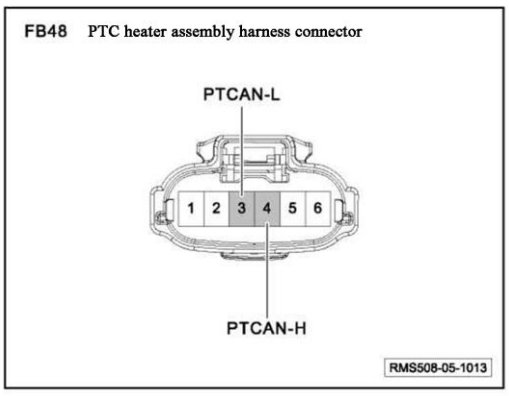
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the PTC heater assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the PTC heater assembly harness connector FB48.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 4 of the PTC heater assembly harness connector FB48.

E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the PTC heater assembly harness connector FB48.

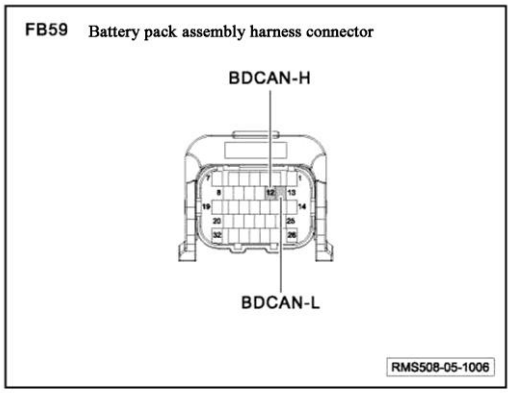
Standard resistance value: <1Ω

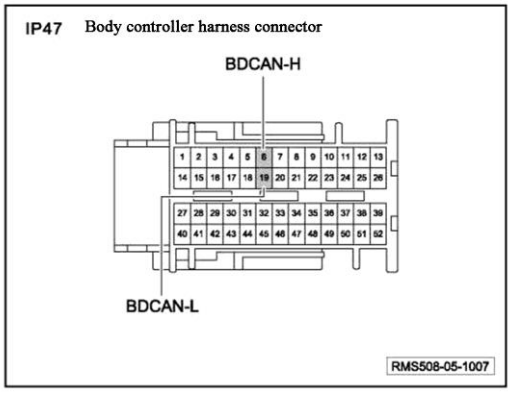
F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the battery pack assembly and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No	Repair or replace the harness.

Yes

Step 5	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes	The system works normally.

No

Step 6	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes — The system works normally.

Next

Step 7	The diagnosis is over.

5.3.6.33 DTC: P3A0042, U01408

DTC	DTC definition
P3A0042	Lost communication with BDC
U014087	Failure in communication with BCM

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

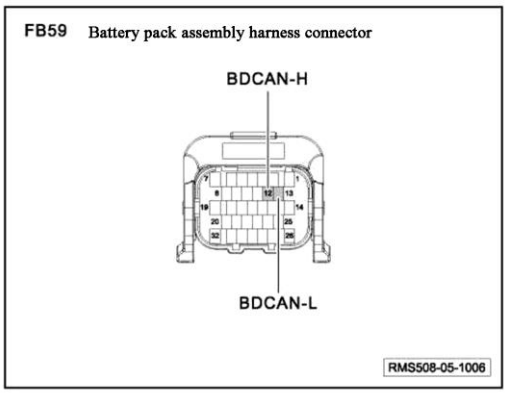
D Read the DTC again.

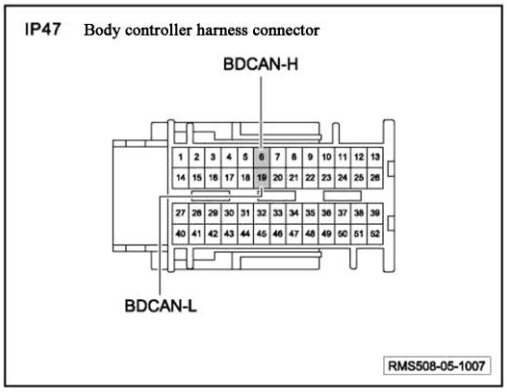
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the battery pack assembly and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground circuit of the body controller.

A Check whether the power supply ground circuit of the body controller is normal.

No	Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

No

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.3.6.34 DTC: U029287

DTC	DTC definition
U029287	Lost communication with MCU

1. Diagnosis steps

Notes

Check the data list of diagnostic instrument and analyze the accuracy of data before starting this diagnosis step for quick troubleshooting.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

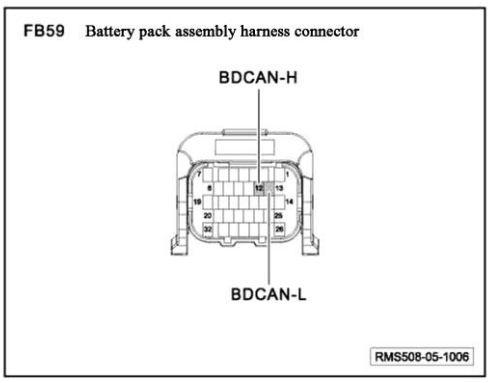
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the battery pack assembly and dual-motor controller.



A Turn the start switch to "OFF" position.

B Disconnect the battery pack assembly harness connector FB59.

C Disconnect dual-motor harness connector EN55.

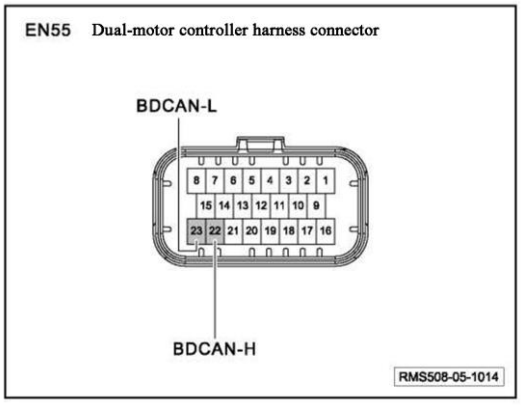
D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 22 of the dual-motor controller harness connector EN55.

E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 23 of the dual-motor controller harness connector EN55.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground circuit of the dual motor controller.

A Check whether the power supply ground circuit of the dual motor controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.3.7 Removal and installation

5.3.7.1 Removal and installation of battery pack assembly

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

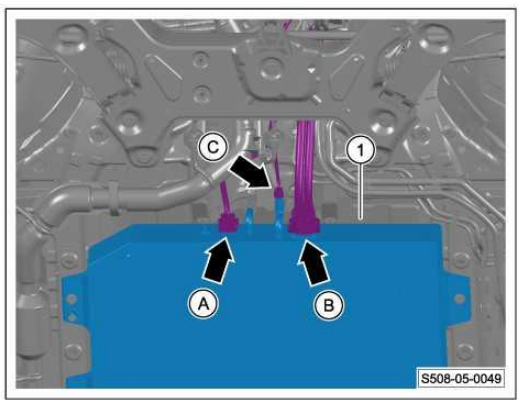
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 To discharge the battery system coolant, refer to 5.4.5.1 "Replacement of power battery coolant"

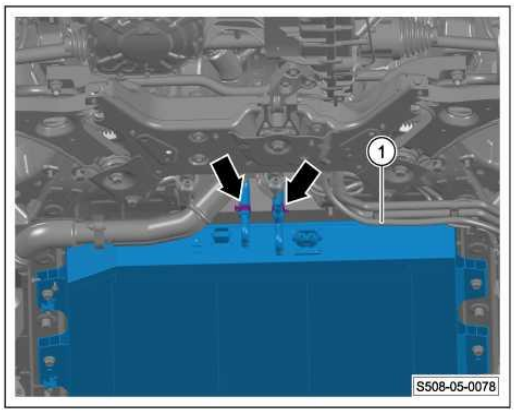
4 To remove the front section assembly of battery pack heat shield, refer to 9.15.2.6 "Removal and installation of the front section assembly of battery pack heat shield"

5 To remove the middle section assembly of battery pack heat shield, refer to 9.15.2.7 "Removal and installation of the middle section assembly of battery pack heat shield"

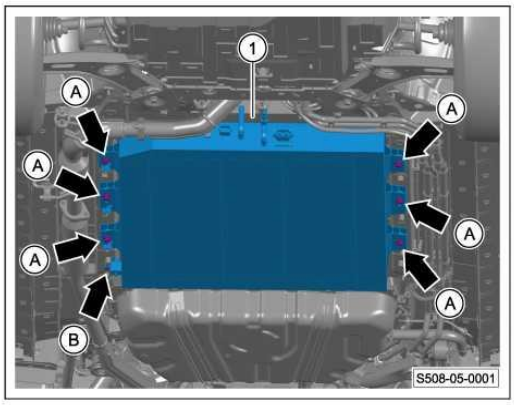


6 Remove the battery pack assembly

a. Disconnect the connectors (see arrows A, B and C) of power battery pack assembly ①.



b. Disengage the fixing clamp (see the arrow), and disengage the battery pack assembly ① from the battery pack connecting tube assembly.



c. Support the battery pack assembly ① with a power battery lifting frame.

d. Unscrew the fixing bolt (see arrow A) of battery pack assembly and the fixing bolt (see arrow B) of ground.

e. Adjust the power battery lifting frame to lower the battery pack assembly ① slowly and remove it from the bottom of the vehicle.

- Tightening torque of bolt (see arrow A): 110±6 N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m

Tip:

Do not bump or drop the battery pack assembly.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

To add battery system coolant after installation, refer to 5.4.5.1 "Replacement of power battery coolant"

5.4 Battery thermal management system

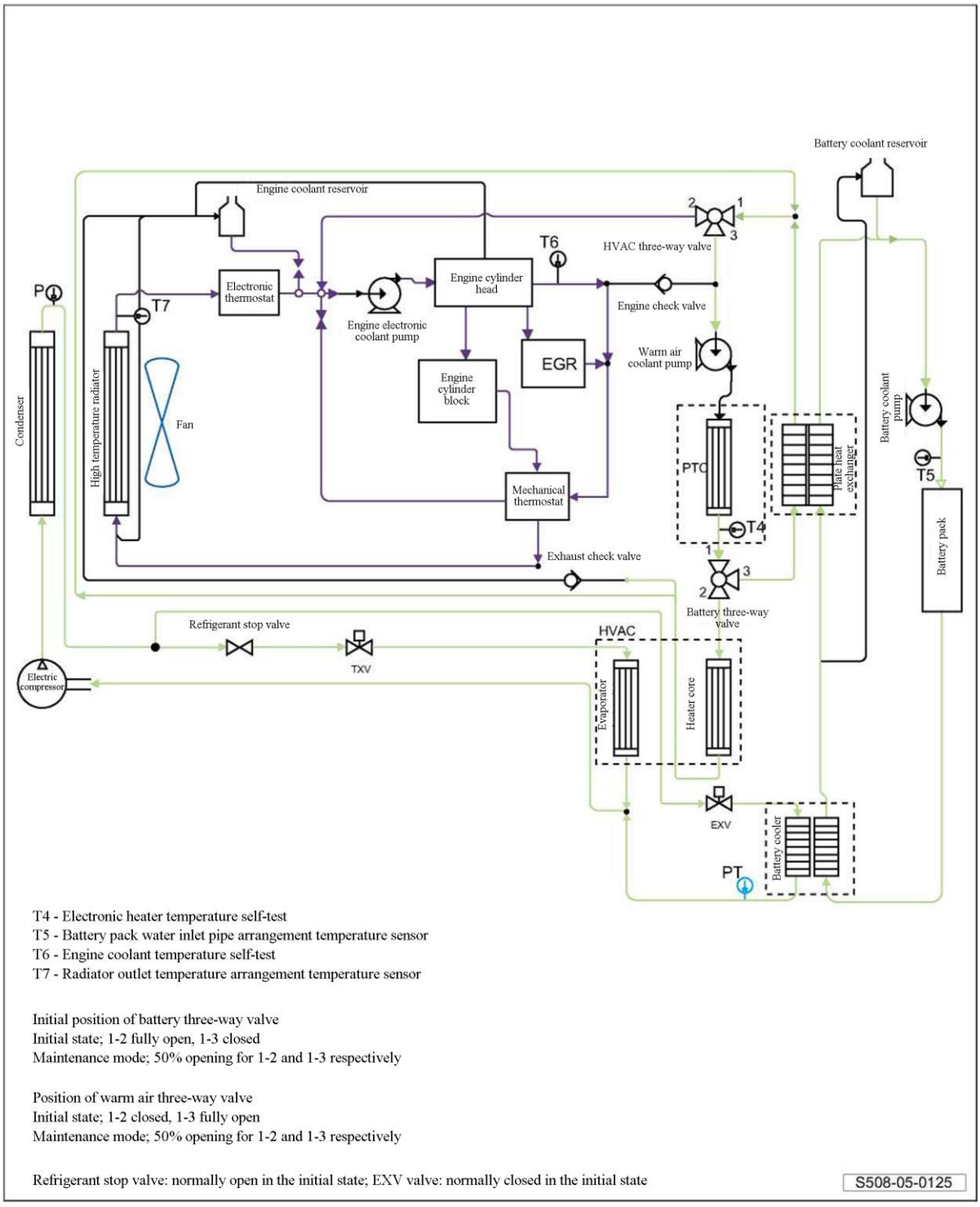
5.4.1 Specification

5.4.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between battery coolant pump and right longitudinal beam of vehicle body	Hexagon flange nut M6	10±1
Connection between water inlet and outlet pipes of battery pack and front wall	Cross hexagon head flange screw M6×1.0×12	10±1
	Hexagon flange nut M6	

5.4.2 System description

5.4.2.1 Overview of battery thermal management system



Composition of battery heating circuit:

Plate heat exchanger, HVAC three-way valve, battery three-way valve, battery coolant pump, battery water-cooled plate, inlet temperature sensor, pipeline, etc. The main heat sources include PTC and engine waste heat.

Composition of battery cooling system:

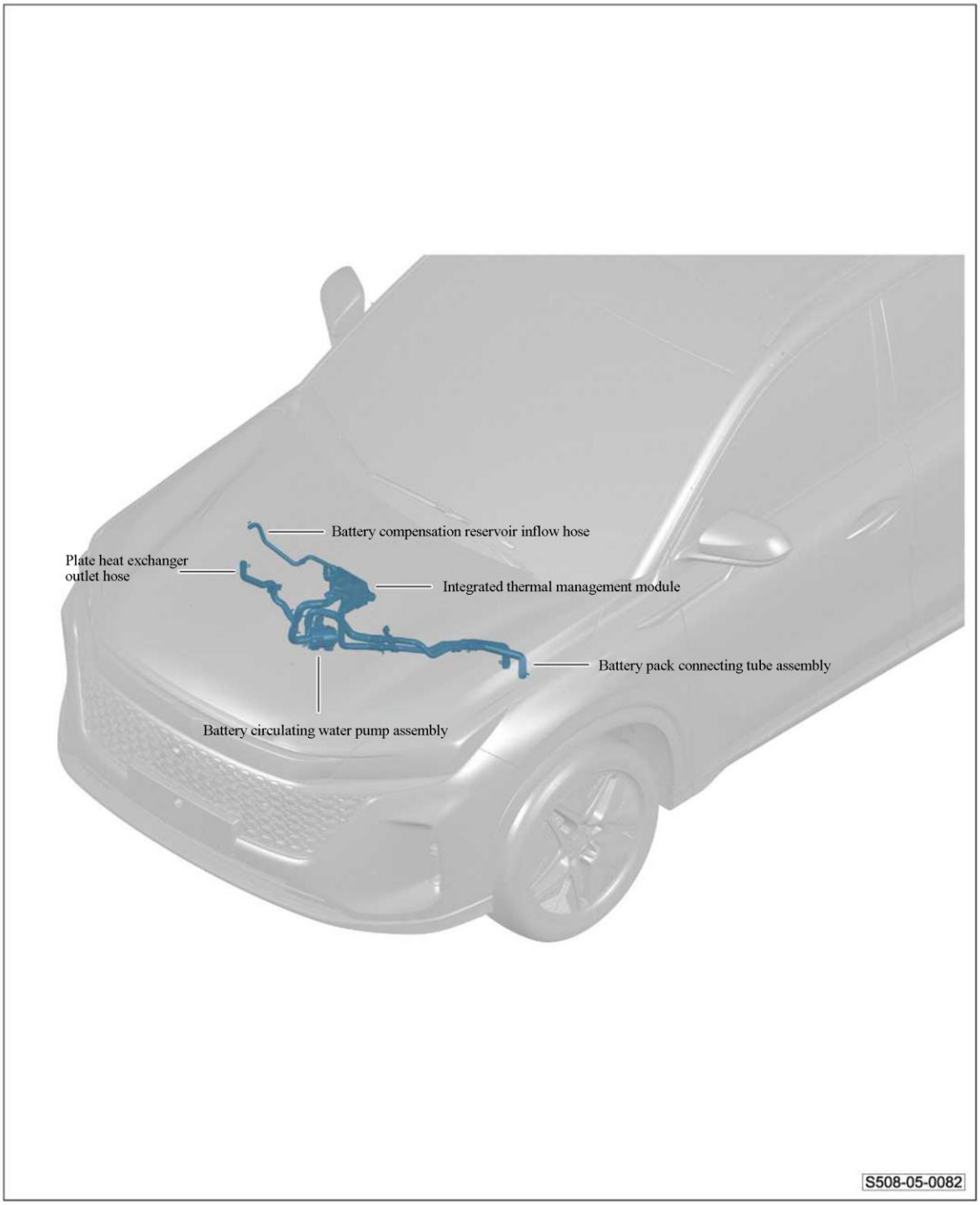
Compressor, heat exchanger, Exv valve body, refrigerant stop valve, coolant pump, temperature sensor,

battery water-cooled plate, pipeline, fan, etc.

5.4.3 Component position

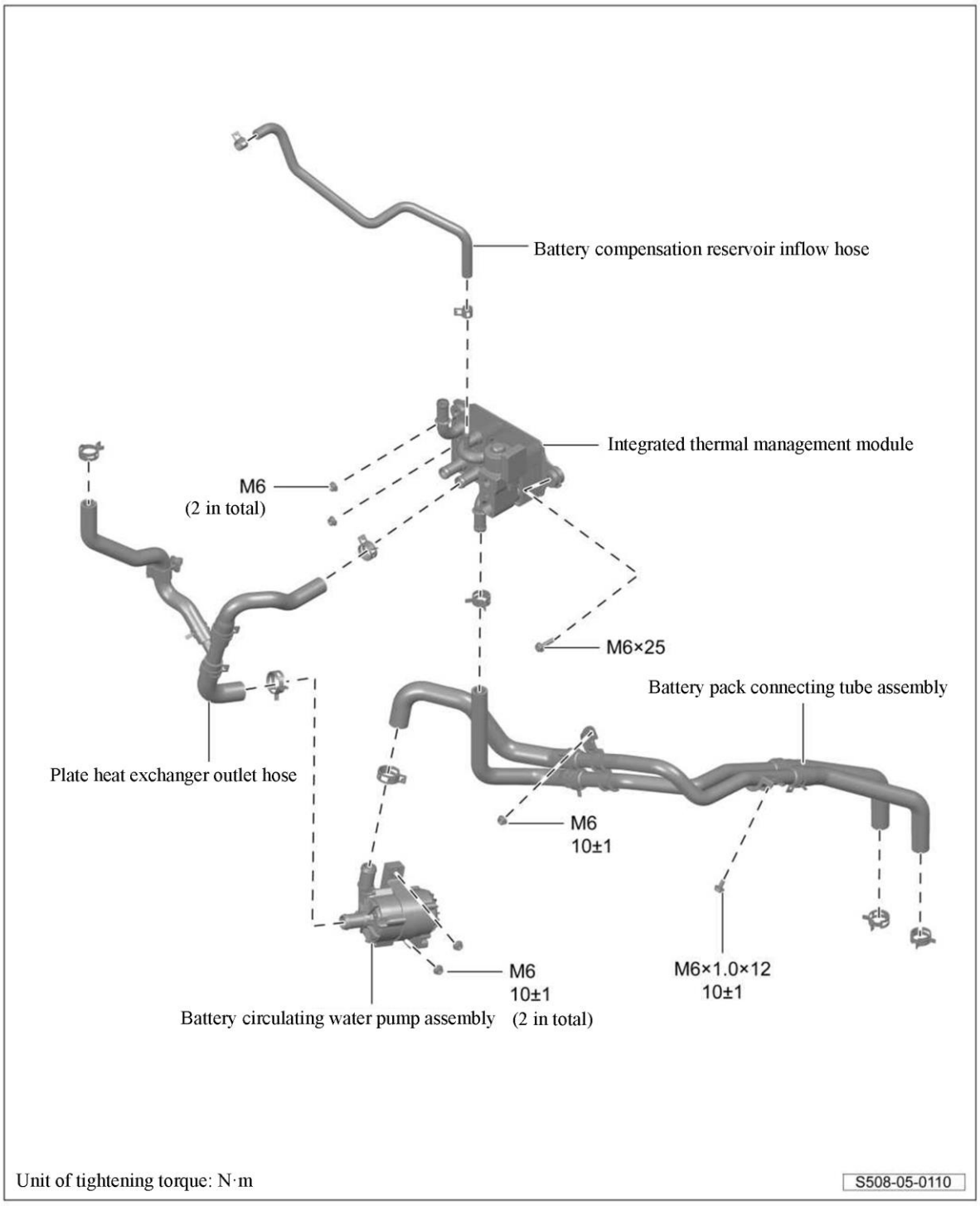
5.4.3.1 Component position

Location diagram



5.4.4 Exploded view

5.4.4.1 Exploded view



5.4.5 Removal and installation

5.4.5.1 Replacement of power battery coolant

Discharging procedures

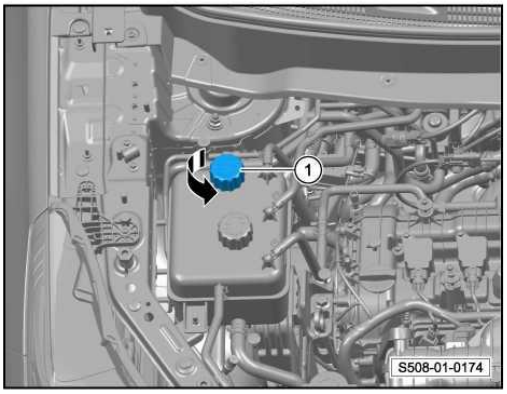
Tip:

Wait until the coolant completely cools down. Then discharge the coolant.

When the cover of expansion tank is opened, there will be hot steam flowing out. Take protective measures to avoid eye harm and skin scald. Cover the expansion tank cover with a piece of rag before open it, and then unscrew it carefully.

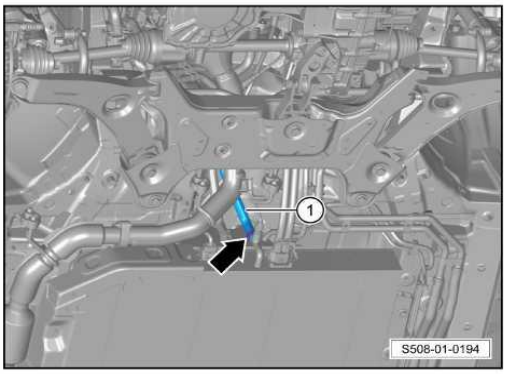
1 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

2 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).



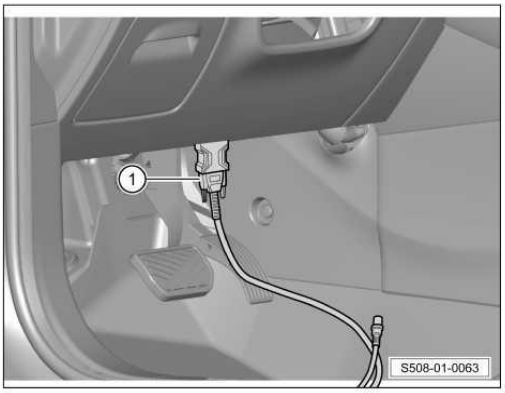
3 Drain the traction battery coolant

a. Unscrew the water reservoir water filling cover ① in the direction of (the arrow).



b. Place the coolant collection container at the bottom of the car.

c. Loosen the fixing clamp from battery pack connecting tube assembly ① to the battery pack assembly (see the arrow), and discharge coolant.



d. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

e. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

f. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.

g. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.

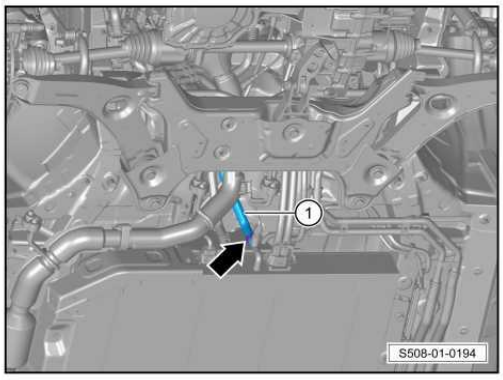
h. Select "body domain controller (BDC)" on the "System Selection" sub-function interface and click to enter.

i. Select "After-sales Function" on the "body domain controller (BDC)" sub-function interface and click to enter.

j. Select "Battery Water Pump Control" on the "After-sales Function" sub-function interface and click to enter.

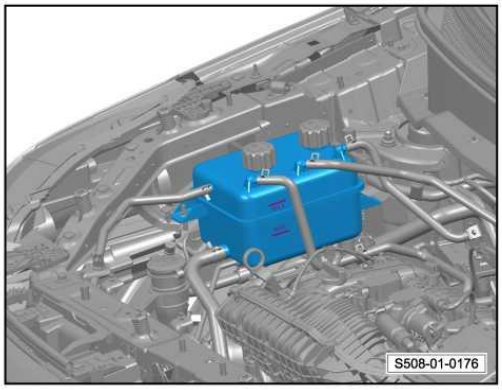
k. Select “PWM 60%” on the "Battery Pump Control" sub-function interface to run the battery pump.

l. After the battery coolant is discharged, select "Off" on the "Battery Pump Control" sub-function interface to put the battery pump out of operation.



m. Connect the battery pack connecting tube assembly ① to the battery pack assembly, and install the fixing clamp to the original position.

Filling procedure



4 Coolant filling

a. Slowly fill the coolant until it reaches the "MAX" mark on the water reservoir .

b. Install water filling cover.

c. Connect the diagnostic scanner, select “PWM 60%” on the "Battery Pump Control" sub-function interface to run the battery pump.

d. Observe the coolant level, and fill coolant if necessary to between the -MAX- and -MIN-.

e. Observe the reflux pipe of the water reservoir, when there are no bubbles in the coolant from the reflux pipe, select "Off" on the "Battery Pump Control" sub-function interface to put the Battery pump out of operation.

Description

– Do not dilute the coolant at will.

– The coolant cannot be reused or mixed with other types of coolant. Also, it cannot be substituted with different colors of coolant.

– Coolant: FD-40 Filling amount: Vision (6.8L); Gotion (3.2L).

– The coolant can prevent frost, corrosion and scaling, as well as raising the boiling point. Therefore, the coolant must be refilled according to the standards.

– It is prohibited to use the coolant with phosphates or nitrates as preservative.

– In southern places with tropical climate, use the coolants of high boiling point.

– The proportion of additive and water in the coolant should be at least 50%. Under the standard atmospheric pressure (101 kPa), the coolant

boiling point is no less than 107°Cand the freezing point is no more than -35°C.

– The coolant must be recycled according to related national regulations.

5.4.5.2 Removal and installation of thermal management integrated module

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

4 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

7 To remove the engine compartment fully-wrapped cover support plate component (right), refer to 9.2.3.17 "Removal and installation of engine compartment fully-wrapped cover support plate component"

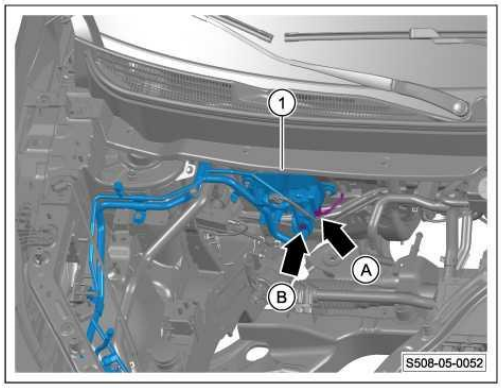
8 To discharge the battery system coolant, refer to 5.4.5.1 "Replacement of power battery coolant"

9 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

10 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

11 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

12 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

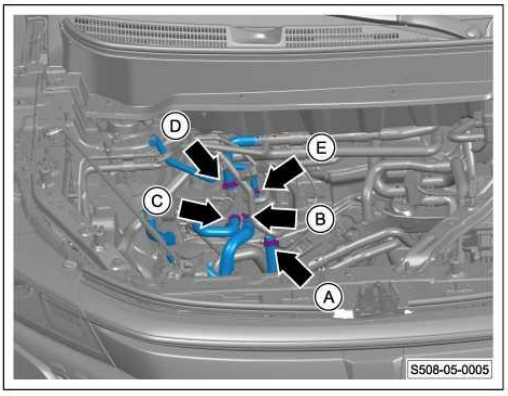


13 Remove the integrated thermal management module

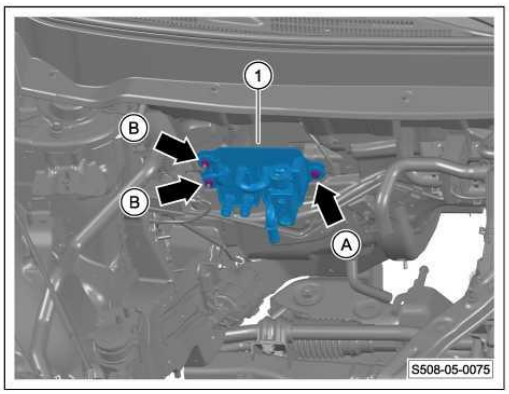
a. Disconnect the connector of thermal management integrated module (see arrow A).

b. Unscrew the fixing bolt (see arrow B) and disengage the front evaporator pipe assembly from the thermal management integrated module ①.

- Tightening torque of bolt: 8±1 N·m



c. Disengage the fixing clamps (see arrows A, B, C, D and E), and disengage each pipe from the thermal management integrated module.



d. Unscrew the fixing bolt (see arrow A) and nut (see arrow B), and remove the thermal management integrated module ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– To add battery system coolant after installation, refer to 5.4.5.1 "Replacement of power battery coolant"

– To add engine coolant after installation, refer to 1.4.3.40 "Replacement of engine coolant"

– To fill the refrigerant after installation, refer to 6.2.6.12 "Recycling/filling refrigerant"

5.4.5.3 Removal and installation of battery pack connecting tube assembly

Disassembly procedures

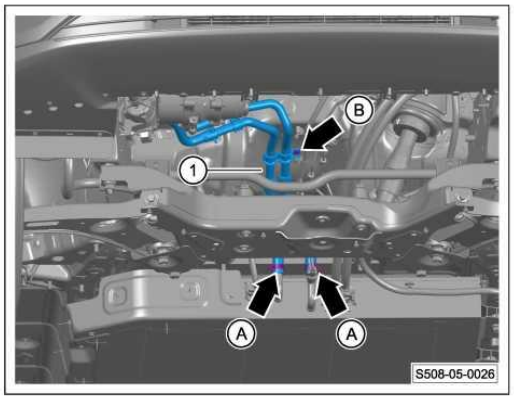
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 To discharge the battery system coolant, refer to 5.4.5.1 "Replacement of power battery coolant"

4 Lift the vehicle.

5 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

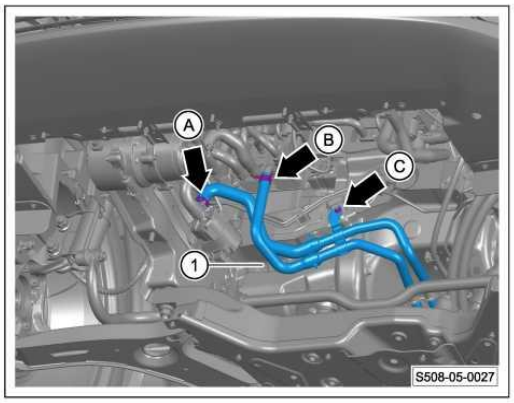


6 Remove the battery pack connecting tube assembly

a. Loosen the fixing clamp (see arrow A) and disengage the battery pack connecting tube assembly ① from the battery pack assembly.

b. Unscrew the fixing bolt (see arrow B) of the battery pack connecting tube assembly bracket.

- Tightening torque of bolt: 10±1 N·m



c. Loosen the fixing clamp (see arrow A) and disengage the battery pack connecting tube assembly ① from the battery circulating coolant pump assembly.

d. Loosen the fixing clamp (see arrow B) and disengage the battery pack connecting tube assembly ① from the thermal management integrated module.

e. Unscrew the fixing nut (see arrow C) of the battery pack connecting tube assembly bracket, and remove the battery pack connecting tube assembly ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– To add battery coolant after installation, refer to 5.4.5.1 "Replacement of power battery coolant"

5.4.5.4 Removal and installation of plate heat exchanger outlet hose

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

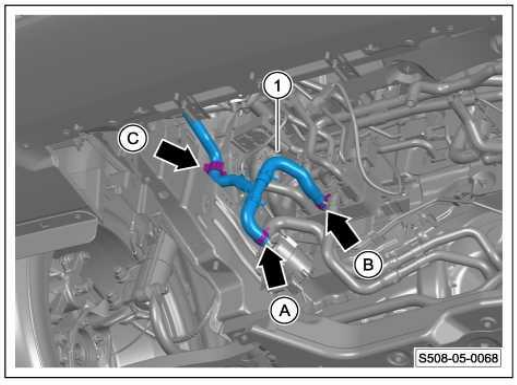
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the auxiliary water reservoir assembly. Refer to 5.7.5.6 Removal and installation of auxiliary water reservoir assembly

4 To discharge the battery system coolant, refer to 5.4.5.1 "Replacement of power battery coolant"

5 Lift the vehicle.

6 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



7 Remove the outlet hose of plate heat exchanger

a. Loosen the fixing clamp (see arrow A) and disengage the plate heat exchanger outlet hose ① from the battery circulating coolant pump assembly.

b. Loosen the fixing clamp (see arrow B) and disengage the plate heat exchanger outlet hose ① from the thermal management integrated module.

c. Disengage the fixing clamp (see arrow C) of plate heat exchanger outlet hose ① and remove the hose.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– To add power battery coolant after installation, refer to 5.4.5.1 "Replacement of power battery coolant"

5.4.5.5 Removal and installation of battery circulating coolant pump assembly

Disassembly procedures

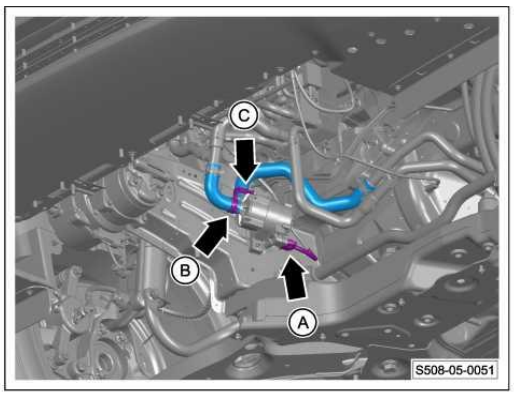
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 To discharge the battery system coolant, refer to 5.4.5.1 "Replacement of power battery coolant"

4 Lift the vehicle.

5 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

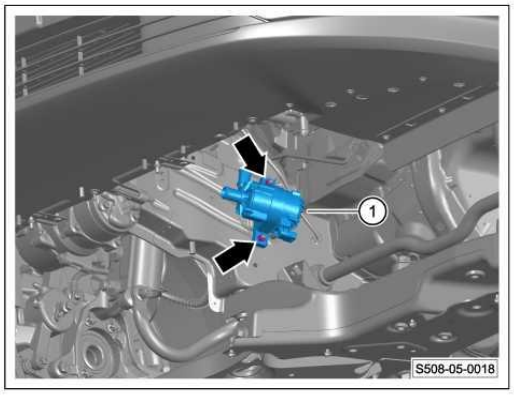


6 Remove the battery circulating water pump assembly

a. Disconnect the connector (see arrow A) of battery circulating coolant pump assembly.

b. Loosen the fixing clamp (see arrow B) and disengage the plate heat exchanger outlet hose from the battery circulating coolant pump assembly.

c. Loosen the fixing clamp (see arrow C) and disengage the battery pack connecting tube assembly from the battery circulating coolant pump assembly.



d. Unscrew the fixing nut (see the arrow), and remove the battery circulating coolant pump assembly ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– To add power battery coolant after installation, refer to 5.4.5.1 "Replacement of power battery coolant"

5.4.5.6 Removal and installation of battery compensation reservoir inlet hose

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 To discharge the battery system coolant, refer to 5.4.5.1 "Replacement of power battery coolant"

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

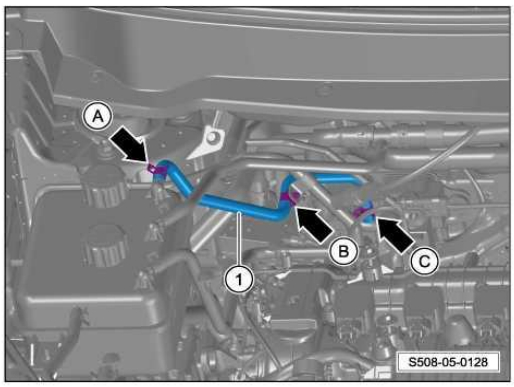
5 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

6 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

7 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

8 To remove the engine compartment fully-wrapped cover support plate component (right), refer to 9.2.3.17 "Removal and installation of engine compartment fully-wrapped cover support plate component"

9 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element



10 Remove the battery compensation reservoir inlet hose

a. Disengage the fixing clamp (see arrow A) and disengage the battery compensation reservoir inlet hose ① from the water reservoir assembly.

b. Disengage the fixing clamp (see arrow B), and disengage the battery compensation reservoir inlet hose ① from the thermal management integrated module.

c. Disengage the fixing clamp (see arrow C) and remove the battery compensation reservoir inlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– To add power battery coolant after installation, refer to 5.4.5.1 "Replacement of power battery coolant"

5.5 Charging system

5.5.1 Specification

5.5.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between HV electrical appliance two-in-one assembly and rear floor	Hexagon flange bolt M8×25	25±2
Connection between slow charging socket assembly and rear side wall	Hexagon flange nut M5	6±1
Connection between slow charging socket assembly and charging port box	Hexagon flange bolt M6×25	8±1
Connection between HV electrical appliance two-in-one assembly and chassis harness assembly	Nut	12±1

5.5.2 System description

5.5.2.1 System overview

Components of charging system

The charging system is mainly composed of slow charging socket assembly, HV electrical appliance two-in-one assembly and HV wire.

Charging Mode

1. When a portable AC charging gun is used for charging, it shall be connected to an AC socket of not less than 10A/220V through slow charging socket.

2. Charging with AC charging pile: It is a slow charging mode, which can be realized by installing high-power wall-mounted charging piles connected to the slow charging port, and is applicable to home or personal parking spaces, or to public places such as public parking lots, hypermarkets and charging stations.

Scheduled charging

The preset charging function can help you use electricity reasonably, i.e. you can make an appointment for vehicle charging in the period with low electric charge.

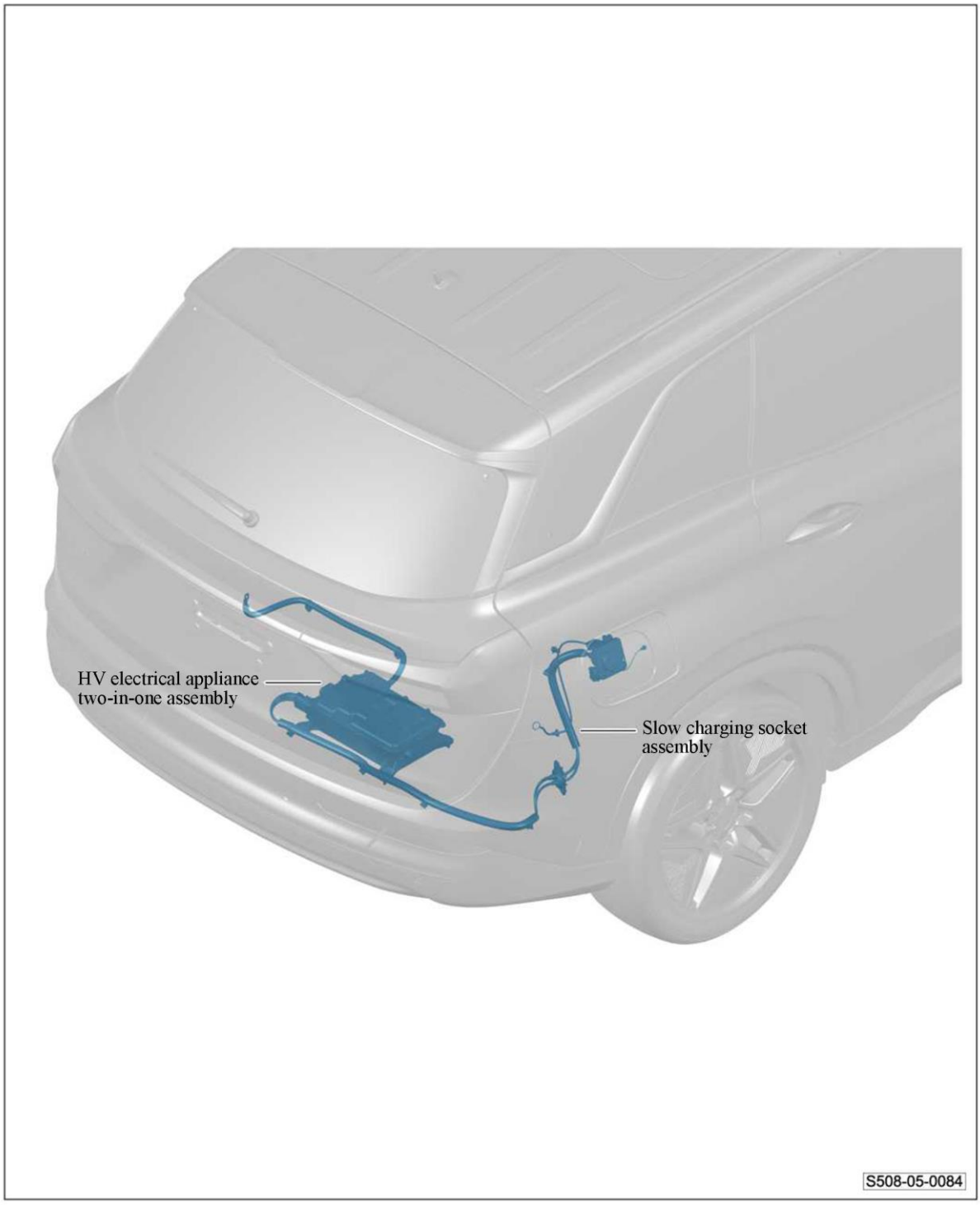
The scheduled charging time is set on the central control panel. You can set the scheduled charging time after enabling this function.

Vehicle-to-load power supply

220V AC output can be realized through the slow charging port and V2L discharge gun, which is used as a power supply to household appliances such as lighting, low-power oven and microwave oven, with the maximum power up to 3.3 kW.

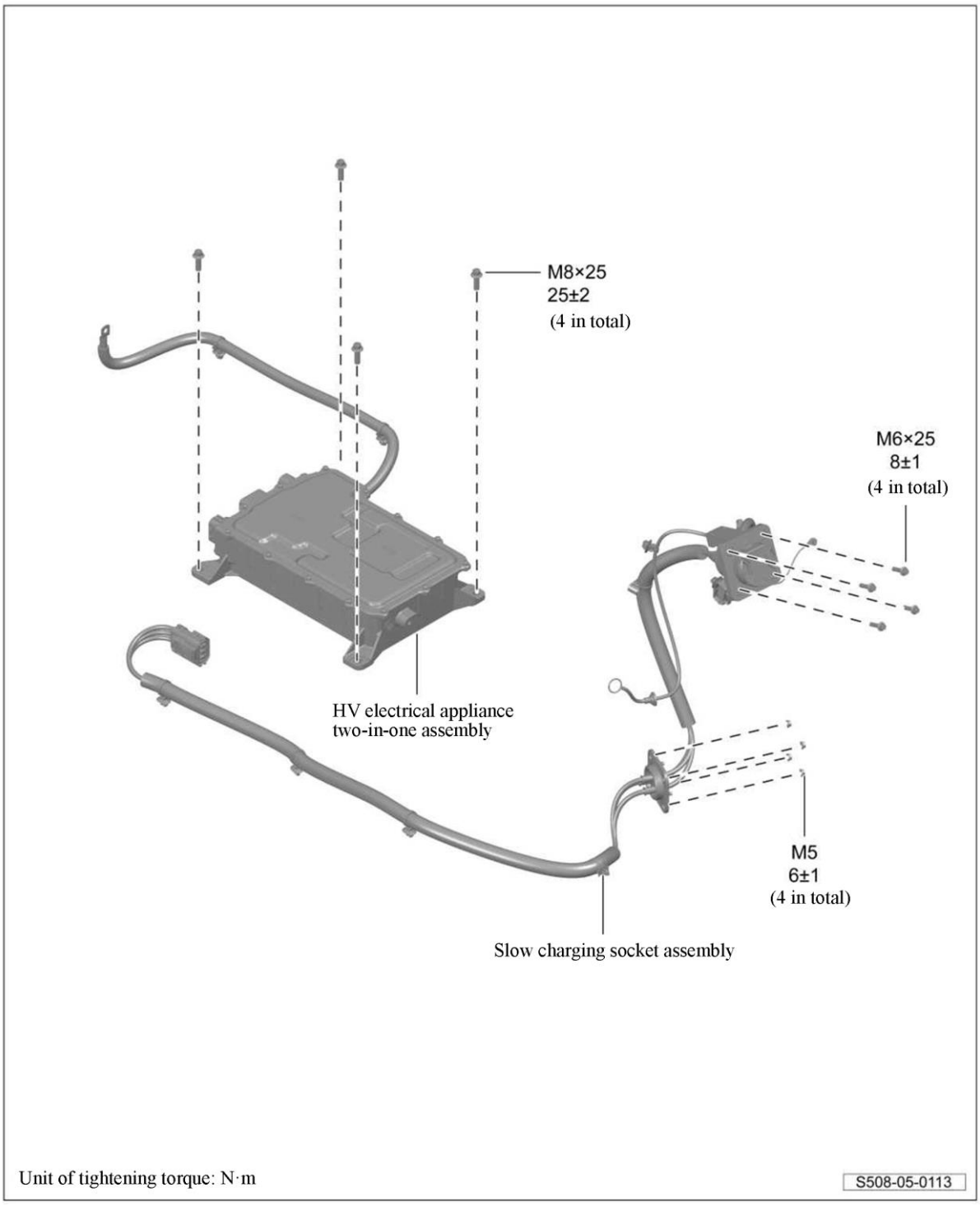
5.5.3 Component position

5.5.3.1 Component position



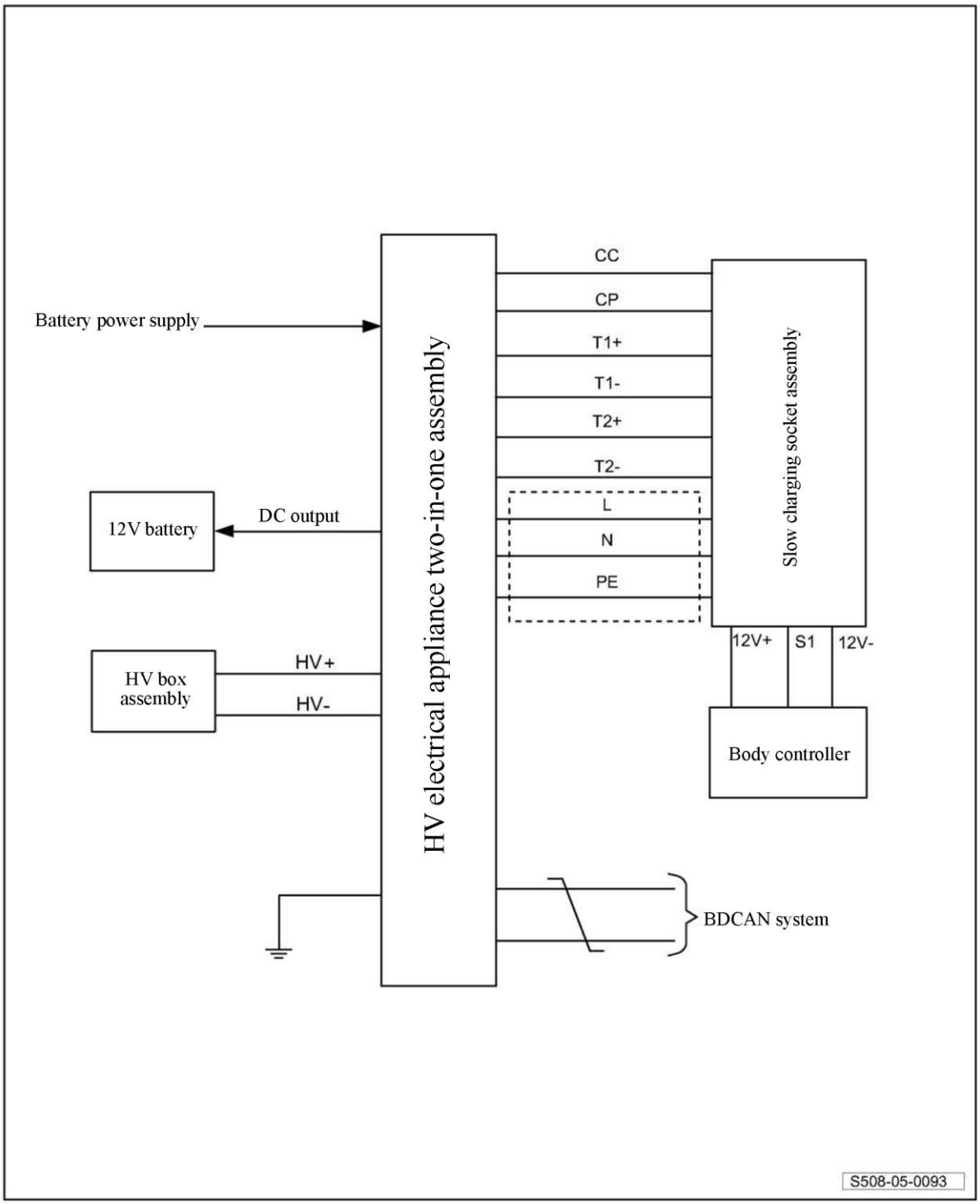
5.5.4 Exploded view

5.5.4.1 Exploded view



5.5.5 Electrical schematic diagram

5.5.5.1 Electrical schematic diagram



5.5.6 Diagnosis information and steps

5.5.6.1 Diagnostic instructions

With a diagnosis scanner, the DTCs can be read via the OBD diagnosis interface of the vehicle. Based on the OBC/DCDC data sheet, the switch and sensor values can be obtained by reading the data sheet displayed on the diagnostic scanner, without removing any parts. Reading the data list is the first step in troubleshooting, and one of the methods to reduce the diagnosis time.

5.5.6.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.

- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

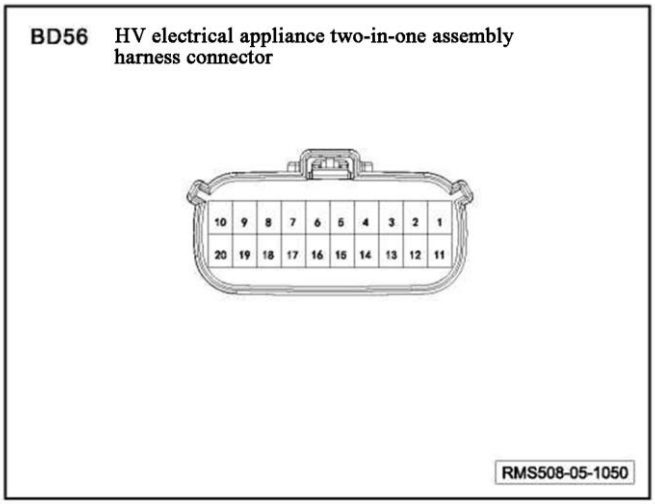
A Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

B Gently shake the connector in the vertical and horizontal directions.

C Gently shake the harness in the vertical and horizontal directions.

5.5.6.3 ECU terminals

HV Electrical Appliance Two-in-one Assembly Harness Connector (BD56)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/Blue	T1+	–	–
2	0.35/Orange	T1-	–	–
3	0.35/Yellow	T2+	–	–
4	0.35/pink	T2-	–	–
5	0.35/white-green	CC	–	–

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
6	0.35/white	CP	–	–
7	0.5/purple-red	Battery power supply	The start switch is put to any position	Battery voltage
11	0.35/brown	Body (Body)CAN-H	–	–
12	0.35/brown-white	Body (Body)CAN-L	–	–
17	0.5/black	Ground	–	0V

5.5.6.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F180	Version No	Year	2000	2099	-
		Month	January	December	-
		Day	1	31	-
F190	VIN	-	-	-	-
F010	Logoff configuration	-	-	-	-
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	January 0, 1900	255	-
		Year of programming	January 0, 1900	255	-
		Month of programming	1	13	-
		Date of programming	2	32	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
OD08	DCDC output voltage	-	0	18.0	V
OD09	DCDC output current	-	0	220.0	A
OD0A	DCDC temperature	-	0	85	℃

5.5.6.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
U007388	BUS-OFF	Vehicle fault Level 3 reported by the HV electrical appliance two-in-one assembly	Interference with CAN bus	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
U029387	VCU communication failed	DCDC outputs normally and reports fault Level 1	1. VCU controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered 4. Internal fault of control unit	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
P0A0A01	HV interlocking fault	OBC or DCDC turns off the output and reports fault Level 3	1. Poor contact of HV connector 2. Interlocking circuit fault detected inside OBC	Check the connector connection.
P3C0016	AC input undervoltage (OBC)	The charger turns off the output and reports fault Level 3	1. AC undervoltage 2. AC power failure	1. Check the connector 2. Check whether the charging pile is abnormal 3. Troubleshoot the OBC if 1 and 2 are normal
P3C0117	AC input overvoltage (OBC)	The charger turns off the output and reports fault Level 3	AC power supply overvoltage	1. Check the connector 2. Check whether the charging pile is abnormal 3. Troubleshoot the OBC if 1 and 2 are normal
P3C0211	DC output short-circuit	The charger turns off the output and reports fault Level 3	1. Short-circuit at positive and negative poles of DC output terminal; or 2. Overload in heating mode	1. Check whether positive and negative poles of the output terminal are connected reversely Reverse 2. Check whether the positive and negative poles of the complete vehicle connector are

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				reversed 3. Check whether the high voltage side of OBC output is actually short-circuited. If only the OBC itself is short-circuited internally, it is recommended to return to the factory
P3C0300	DC output undervoltage fault	The charger turns off the output and reports fault Level 3	1. Abnormal OBC output voltage 2. Battery not connected	1. Check the voltage connection of power battery 2. Check and measure whether the fuse is open-circuited 3. If 1 and 2 are normal, troubleshoot the OBC
P3C0400	DC output overvoltage fault	The charger turns off the output and reports fault Level 3	1. Abnormal OBC output voltage 2.Shifting load	1. Check whether the high-voltage relay has flashover during operation 2. If 1 is normal and the battery voltage is normal, it is recommended to return to the factory
P3C0500	Abnormal AC input	The charger turns off the output and reports fault level 1	1. Abnormal CC, CP and S2 switches 2. Charging pile fault	1. Check whether the charging pile is faulty 2. Whether the cable is damaged 3. Connection of charging gun
P3C0600	S2 switch fault	The charger turns off the output and reports fault Level 3	1. CC and CP abnormality 2. Charging pile fault	1. Check whether the CP voltage is 12V when the charging gun is not plugged into the charging pile. If not, it is recommended to troubleshoot the charging pile 2. Troubleshoot the internal cause of OBC
P3C084B	OBC over-temperature fault Level 1	The charger reduces power output and reports fault level 2	1. Excessive load in OBC working mode or abnormal temperature sampling point 2. Water cooling abnormality	1. Check whether the coolant needs to be replenished 2. Check whether the water cooling system of the complete vehicle is blocked 3. Whether the working environment is harsh 4. Troubleshoot the OBC

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				if the above is normal
P3C094B	OBC over-temperature fault Level 2	The charger turns off the output and reports fault Level 3	1. Excessive load in OBC working mode or abnormal temperature sampling point 2. Water cooling abnormality	1. Check whether the coolant needs to be replenished 2. Check whether the water cooling system of the complete vehicle is blocked 3. Whether the working environment is harsh 4. Troubleshoot the OBC if the above is normal
P3C1311	AC output short-circuit fault (inverter)	The charger turns off the output and reports fault Level 3	Output terminal short-circuited	1. Check whether the load on AC side is actually short-circuited 2. Troubleshoot OBC if there is no external short circuit
P3C1400	AC output overcurrent fault (inverter)	The charger turns off the output and reports fault Level 3	Overload	1. Check whether the load on AC side is actually short-circuited 2. Check whether the external load is overloaded 3. Troubleshoot OBC if there is no external short circuit
P3C1500	BMS CAN communication fault	The charger stops outputting and reports fault level 3	1. VCU controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered 4. Internal fault of control unit	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
P3C1617	DC input overvoltage fault (inverter)	The charger turns off the output and reports fault level 3	Excessive voltage of external high-voltage busbar	Check the HV bus
P3C1716	DC input undervoltage fault (inverter)	The charger turns off the output and reports fault Level 3	Power battery pack SOC too low	1. Check the voltage connection of power battery 2. Check and measure whether the fuse is open-circuited
P3C1817	DCDC output overvoltage	DCDC closes the output and reports fault level 2	1. Abnormal DCDC output voltage 2. Load dump	1. Check whether the DCDC load causes load dump 2. Troubleshoot the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				internal cause of DCDC
P3C1917	DCDC output hardware overvoltage	DCDC closes the output and reports fault level 3	1. Abnormal DCDC output voltage 2. Load dump	1. Check whether the DCDC load causes load dump 2. Troubleshoot the internal cause of DCDC
P3C2016	DCDC output undervoltage	DCDC closes the output and reports fault level 3	Abnormal DCDC output voltage	1. Check whether the small battery is fed 2. Check whether DCDC can work normally after charging 3. Check whether the static current exceeds the standard after the complete vehicle is powered off
P3C2111	DCDC output short circuit fault	DCDC closes the output and reports fault level 3	DCDC output terminal short-circuited	1. Check whether positive and negative poles are connected reversely 2. Check whether the positive and negative poles of the complete vehicle connector are reversed 3. Troubleshoot the internal cause of DCDC
P3C2217	DCDC input overvoltage	DCDC closes the output and reports fault level 3	1. Abnormal power battery voltage 2. Abnormal internal sampling	1. Check the power voltage battery pack 2. If the power battery is normal, troubleshoot DCDC
P3C2316	DCDC input undervoltage	DCDC closes the output and reports fault level 3	1. The power battery is not connected 2. The power battery voltage is too low	1. Check the power voltage battery pack 2. Check whether there are loopholes in the main relay control sequence of the complete vehicle and whether it is cut off abnormally 3. Or if the product has an internal fault, it is recommended to return it to the factory for maintenance
P3C2419	DCDC output overcurrent	DCDC closes the output and reports fault level 3	The DCDC load is too large and the output voltage is small	1. Check whether the DCDC output load is overloaded 2. Check whether the output current is consistent with the actual situation. If not, it is

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				recommended to return it to the factory
P3C254B	DCDC overtemperature Level 1	DCDC reduces power output and reports fault level 2	1. DCDC overload 2. Abnormal temperature sampling point 3. Water cooling abnormality	1. Check whether the coolant needs to be replenished 2. Check whether the water cooling system of the complete vehicle is blocked 3. Whether the working environment is harsh 4. Troubleshoot the DCDC if the above is normal
P3C264B	DCDC overtemperature Level 2	DCDC closes the output and reports fault level 3	1. DCDC overload 2. Abnormal temperature sampling point 3. Water cooling abnormality	1. Check whether the coolant needs to be replenished 2. Check whether the water cooling system of the complete vehicle is blocked 3. Whether the working environment is harsh 4. Troubleshoot the DCDC if the above is normal
P3C2713	Open circuit at DCDC output side	DCDC outputs normally and reports fault Level 1	1. No-load startup of DCDC 2. Abnormal connection with small battery	1. Check whether the fuse on the small battery side is blown 2. Check whether the voltage on DCDC output side is the actual output voltage. If not, it is recommended to return it to the factory for analysis
P3C281C	DCDC internal temperature sensor fault (DCDCNTC fault)	DCDC reduces power output and reports fault level 2	Damaged thermal resistor	Check the thermistor
P3C2900	DCAC output overload protection	The charger stops outputting and reports fault level 3	1. Overload 2. Too many electrical appliances are connected	1. Check whether the load on AC side is actually short-circuited 2. Check whether the external load is overloaded 3. Troubleshoot OBC if there is no external short circuit
P3C3000	DCAC inverter insulation detection fault	The charger stops outputting and reports fault level 4	Reserved	Reserved

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
	(reserved)			
P3C3117	AC output overvoltage fault (inverter)	The charger stops outputting and reports fault level 3	Internal fault	The product has an internal fault. It is recommended to return it to the factory for maintenance
P3C3216	AC output undervoltage fault (inverter)	The charger stops outputting and reports fault level 3	Power battery voltage too low	1. Check the connection of power battery 2. Or if the product has an internal fault, it is recommended to return it to the factory for maintenance
P3C3319	AC input overcurrent fault	The charger turns off the output and reports fault Level 3	Abnormal CC, CP sampling	1. Check whether the charging pile is faulty 2. Whether the cable is damaged 3. Connection of charging gun
P3C3400	DCAC inverter output residual voltage protection	The charger stops outputting and reports fault level 3	Internal fault	Check whether the power-off reset is restored. If the current fault still exists, it is recommended to return it to the factory
P3C3500	OBC internal hardware fault	The charger stops outputting and reports fault level 4	Various internal fault flags reported by DSP are set to 1	Check whether the power-off reset is restored. If the current fault still exists, it is recommended to return it to the factory
P3C3900	Abnormal DCAC inverter soft start	The charger stops outputting and reports fault level 3	Internal fault	Check whether the power-off reset is restored. If the current fault still exists, it is recommended to return it to the factory
P3C4019	HV_DCDC resonant cavity hardware overcurrent (DC side hardware output overcurrent)	DCDC stops outputting and reports fault level 3	Internal fault	Check whether the power-off reset is restored. If the current fault still exists, it is recommended to return it to the factory
P3C4198	AC charging port derating protection	The charger derates output and reports fault level 2	The charging gun interface temperature is too high or the temperature sampling is abnormal	1. Check whether the charging gun is damaged 2. Check whether the charging gun is in poor contact with the charging socket 3. Check whether the socket temperature

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				sensor is abnormal 4. Or if the product has an internal fault, it is recommended to return it to the factory for maintenance
P3C4298	AC charging port over-temperature fault	The charger stops outputting and reports fault level 3	The charging gun interface temperature is too high or the temperature sampling is abnormal	1. Check whether the charging gun is damaged 2. Check whether the charging gun is in poor contact with the charging socket 3. Check whether the socket temperature sensor is abnormal 4. Or if the product has an internal fault, it is recommended to return it to the factory for maintenance

5.5.6.6 DTC: U007388

DTC	DTC definition
U007388	BUS-OFF

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

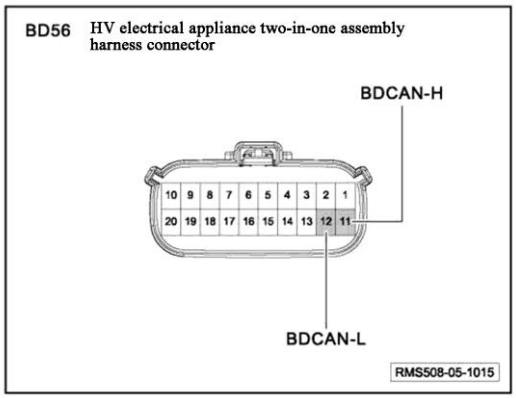
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire of HV electrical appliance two-in-one assembly



A Turn the start switch to "OFF" position.

B Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

C Measure the resistance of circuit between terminals 11 and 12 of the HV electrical appliance two-in-one assembly harness connector BD56.

Standard resistance value: about 120Ω

D Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of the HV electrical appliance two-in-one assembly.

A Check whether the power supply ground wire of HV electrical appliance two-in-one assembly is normal.

No — Repair or replace the harness.

Yes

Step 4	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one

assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.5.6.7 DTC: U029387

DTC	DTC definition
U029387	VCU communication failed

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

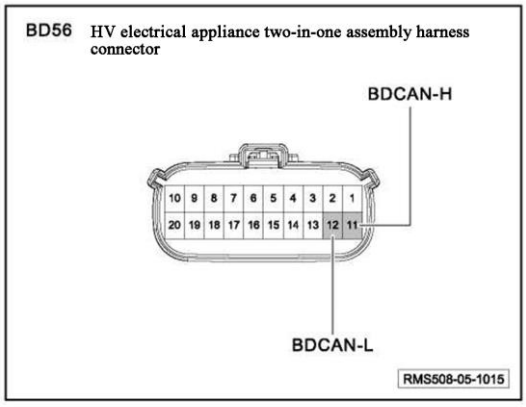
D Read the DTC again.

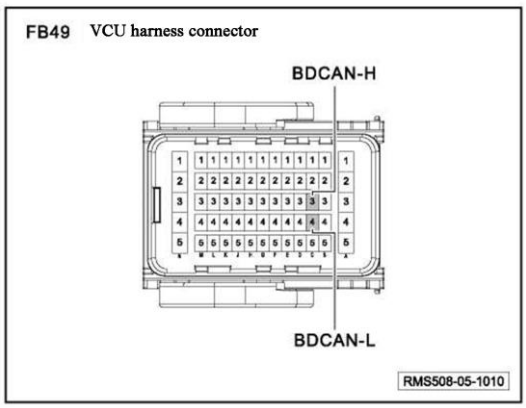
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between HV electrical appliance two-in-one assembly and VCU harness connector.





A Turn the start switch to "OFF" position.

B Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

C Disconnect the VCU harness connector FB49.

D Measure the resistance between terminal 11 of the HV electrical appliance two-in-one assembly harness connector BD56 and terminal C3 of the VCU harness connector FB49.

E Measure the resistance between terminal 12 of the HV electrical appliance two-in-one assembly harness connector BD56 and terminal C4 of the VCU harness connector FB49.

Standard resistance value: lower than 1Ω

F Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 3	Check the power supply ground circuit of VCU.

A Check whether the power supply ground circuit of VCU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.5.6.8 DTC: P0A0A01

DTC	DTC definition
P0A0A01	HV interlocking fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the HV wiring harness.

A Check the connector of charger HV harness assembly for looseness or poor contact.

B Check whether the connector between the slow charging socket assembly and the HV electrical appliance two-in-one assembly is loose or in poor contact.

Yes → Repair or replace the harness.

No

Step 4	Check the power supply grounding of HV electrical appliance two-in-one assembly.

A Check whether the power supply grounding of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly and performing configuration writing and calibration operations?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.5.6.9 DTC: P3C0016, P3C0117.....

DTC	DTC definition
P3C0016	AC input undervoltage (OBC)
P3C0117	AC input overvoltage (OBC)
P3C0500	Abnormal AC input
P3C3319	AC input overcurrent fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Perform power-on/power-off test again.

A Re-power on and off to check whether the fault is eliminated.

Yes → The system works normally.

No

Step 3	Check the grid voltage.

A Check whether the power grid voltage is normal.

No → Contact the grid personnel for

maintenance.

Yes

Step 4	Check the power grounding of HV electrical appliance two-in-one assembly.

A Check whether the power supply grounding of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.5.6.10 DTC: P3C0211, P3C0300.....

DTC	DTC definition
P3C0211	DC output short-circuit
P3C0300	DC output undervoltage fault
P3C0400	DC output overvoltage fault
P3C1817	DCDC output overvoltage
P3C1917	DCDC output hardware overvoltage
P3C2016	DCDC output undervoltage
P3C2111	DCDC output short circuit fault
P3C2419	DCDC output overcurrent
P3C2713	Open circuit at DCDC output side

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the DC output circuit of HV electrical appliance two-in-one assembly.

A Check whether the DC output circuit of HV electrical appliance two-in-one assembly is short-circuited or open-circuited.

Yes → Replace the HV electrical appliance two-in-one assembly.

No

Step 3	Check the power grounding of HV electrical appliance two-in-one assembly.

A Check whether the power supply grounding of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.5.6.11 DTC: P3C0600

DTC	DTC definition
P3C0600	S2 switch fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

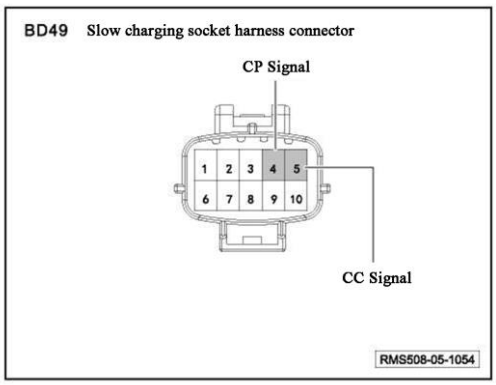
Step 2	Check the slow charging socket.

A Check the slow charging socket for foreign matters or corrosion.

Yes — Repair or replace the slow charging socket assembly.

No

Step 3	Check whether the CC and CP signals at the charging port are open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the slow charging socket harness connector BD49.

C Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

D Measure the resistance between terminal 4 of the slow charging socket harness connector BD49 and terminal 5 of the HV electrical appliance two-in-one assembly harness connector BD56.

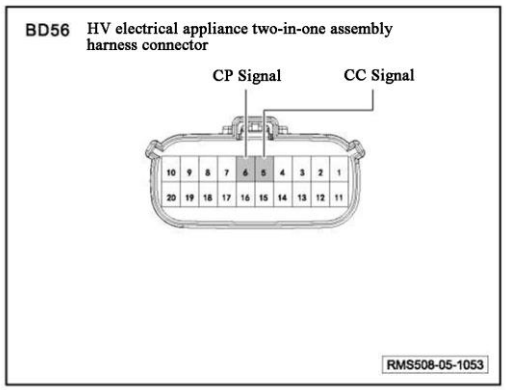
E Measure the resistance between terminal 5 of the slow charging socket harness connector BD49 and terminal 6 of the HV electrical appliance two-in-one assembly harness connector BD56.

Standard resistance value: lower than 1Ω

F Confirm whether the resistance conforms to the

standard.

No	Repair or replace the harness.



Yes

Step 4	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes	The system works normally.

Next

Step 5	The diagnosis is over.

5.5.6.12 DTC: P3C084B, P3C094B.....

DTC	DTC definition
P3C084B	OBC over-temperature fault Level 1
P3C094B	OBC over-temperature fault Level 2
P3C254B	DCDC overtemperature Level 1
P3C264B	DCDC overtemperature Level 2

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the coolant level of electric drive system.

A Check whether the coolant level of electric drive system is too low.

Yes → Check the pipe leakage and add or replace coolant.

No

Step 3	Check the water pump of motor.

A Check whether the motor water pump works normally.

No → Repair or replace the motor water pump.

Yes

Step 4	Check the power grounding of HV electrical appliance two-in-one assembly.

A Check whether the power supply grounding of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.5.6.13 DTC: P3C1311, P3C1400.....

DTC	DTC definition
P3C1311	AC output short-circuit fault (inverter)
P3C1400	AC output overcurrent fault (inverter)
P3C3117	AC output overvoltage fault (inverter)
P3C3216	AC output undervoltage fault (inverter)
P3C2900	DCAC output overload protection

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the charger HV harness assembly.

A Check whether the charger HV harness assembly is short-circuited or open-circuited.

Yes → Repair or replace the high voltage harness.

No

Step 3	Check the power grounding of HV electrical appliance two-in-one assembly.

A Check whether the power supply grounding of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

5.5.6.14 DTC: P3C1500

DTC	DTC definition
P3C1500	BMS CAN communication fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

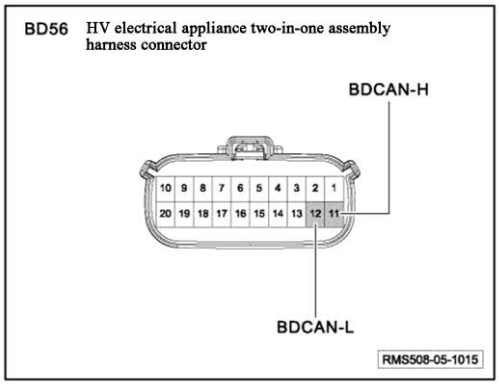
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between harness connectors of HV electrical appliance two-in-one assembly and battery pack assembly.



A Turn the start switch to "OFF" position.

B Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

C Disconnect the battery pack assembly harness connector FB59.

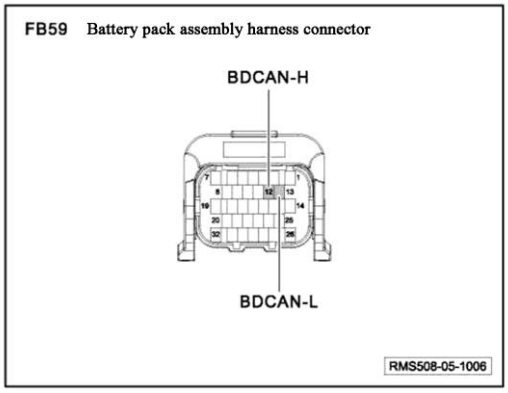
D Measure the resistance between terminal 11 of the HV electrical appliance two-in-one assembly harness connector BD56 and terminal 12 of the battery pack assembly harness connector FB59.

E Measure the resistance between terminal 12 of the HV electrical appliance two-in-one assembly harness connector BD56 and terminal 13 of the battery pack assembly harness connector FB59.

Standard resistance value: lower than 1Ω

F Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.



Yes

Step 3	Check the power supply ground circuit of the battery pack assembly.

A Check whether the power supply ground circuit of the battery pack assembly works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

5.5.6.15 DTC: P3C1617, P3C1716.....

DTC	DTC definition
P3C1617	DC input overvoltage fault (inverter)
P3C1716	DC input undervoltage fault (inverter)
P3C2217	DCDC input overvoltage
P3C2316	DCDC input undervoltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery management system.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to “ON” position, and read and record the battery management system DTC.

C Check whether the same DTC is displayed.

Yes → Maintain faults related to the battery management system preferentially.

No

Step 3	Check the charger HV harness assembly.

A Check whether the charger HV harness assembly is short-circuited or open-circuited.

Yes → Repair or replace the high voltage harness.

No

Step 4	Check the power grounding of HV electrical appliance two-in-one assembly.

A Check whether the power supply grounding of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes — The system works normally.

Next

Step 6	The diagnosis is over.

5.5.6.16 DTC: P3C281C, P3C3400.....

DTC	DTC definition
P3C281C	DCDC internal temperature sensor fault (DCDC NTC fault)
P3C3400	DCAC inverter output residual voltage protection
P3C3500	OBC internal hardware fault
P3C3900	Abnormal DCAC inverter soft start
P3C4019	HV_DCDC resonant cavity hardware overcurrent (DC side hardware output overcurrent)

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power grounding of HV electrical appliance two-in-one assembly.

A Check whether the power supply grounding of HV electrical appliance two-in-one assembly is normal.

No — Repair or replace the harness.

Yes

Step 3	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

5.5.6.17 DTC: P3C4198, P3C4298

DTC	DTC definition
P3C4198	AC charging port derating protection
P3C4298	AC charging port over-temperature fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

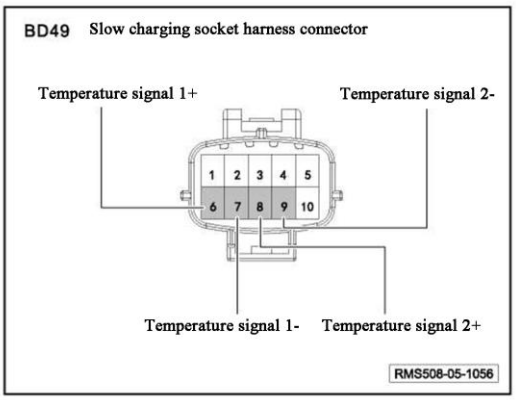
Step 2	Check the slow charging socket.

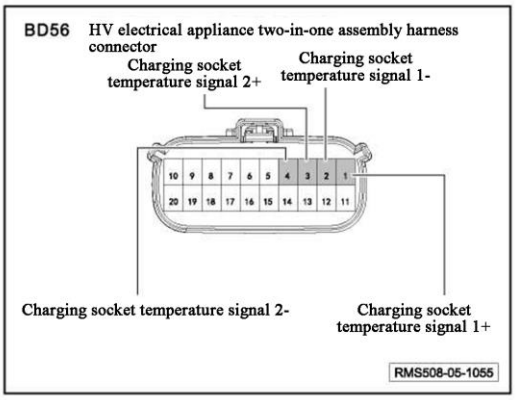
A Check the slow charging socket for foreign matters or corrosion.

Yes → Repair or replace the slow charging socket assembly.

No

Step 3	Check whether the charging interface temperature signal is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the slow charging socket harness connector BD49.

C Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

D Measure the resistance between terminal 6 of the slow charging socket harness connector BD49 and terminal 1 of the HV electrical appliance two-in-one assembly harness connector BD56.

E Measure the resistance between terminal 7 of the slow charging socket harness connector BD49 and terminal 2 of the HV electrical appliance two-in-one assembly harness connector BD56.

F Measure the resistance between terminal 8 of the slow charging socket harness connector BD49 and terminal 3 of the HV electrical appliance two-in-one assembly harness connector BD56.

G Measure the resistance between terminal 9 of the slow charging socket harness connector BD49 and terminal 4 of the HV electrical appliance two-in-one assembly harness connector BD56.

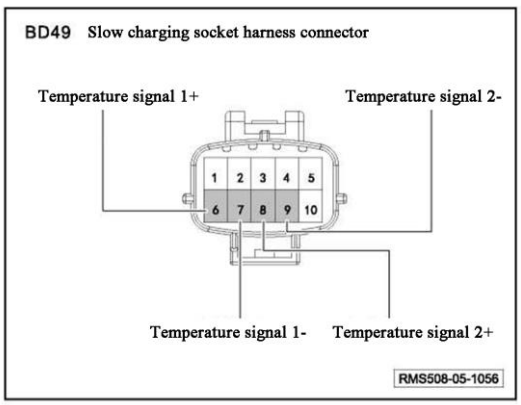
Standard resistance value: <1Ω

H Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 4 Check whether the charging interface temperature signal is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the slow charging socket harness connector BD49.

C Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

D Put the Start switch to “ON” position.

E Measure the voltage between terminals 6, 7, 8 and 9 of the slow charging socket harness connector BD49 and the body ground.

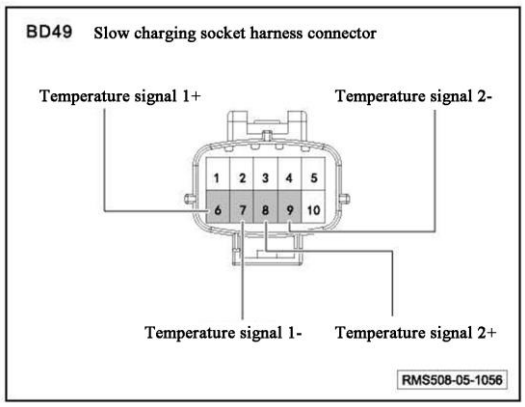
Standard voltage value: 0V

F Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

Yes

Step 5	Check whether the charging interface temperature signal is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the slow charging socket harness connector BD49.

C Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.

D Measure the resistance between terminals 6, 7, 8 and 9 of the slow charging socket harness connector BD49 and the body ground.

Standard resistance value: 10kΩ or higher

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

5.5.7 Removal and installation

5.5.7.1 Removal and installation of HV electrical appliance two-in-one assembly

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

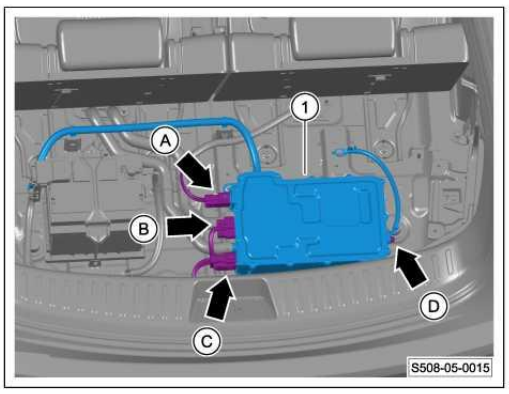
1 Turn off all electrical appliances and cut off the HV power supply of the vehicle.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

4 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

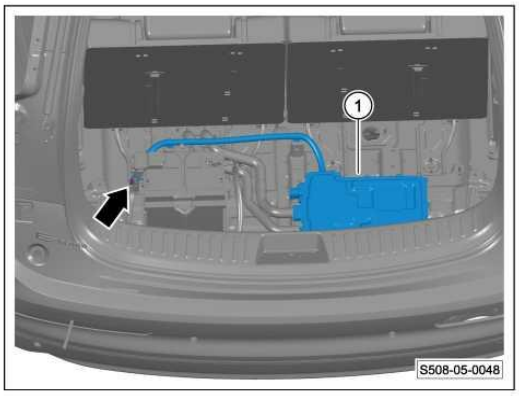
5 Remove the driver's tool box. Refer to 9.14.2.26 Removal and installation of driver's tool box



6 Removal of HV electrical appliance two-in-one assembly

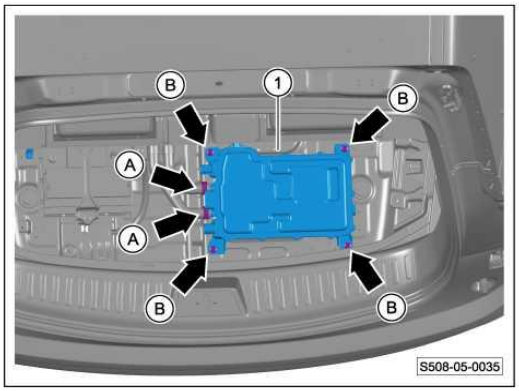
a. Disconnect the connectors (see arrows A, B, and C) of HV electrical appliance two-in-one assembly ①.

b. Unscrew the fixing bolt (see arrow D) between the DC negative wire and the HV electrical appliance two-in-one assembly ①.



c. Unscrew the connecting nut (see arrow) between the battery positive harness and HV electrical appliance two-in-one assembly ①.

- Tightening torque of nut: 12±1 N·m



d. Loosen the fixing clamp (see arrow A), and disengage the charger water pipe assembly from the HV electrical appliance two-in-one assembly ①.

e. Unscrew the fixing bolt (see arrow B), and remove the HV electrical appliance two-in-one assembly ①.

- Tightening torque of bolt: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

– Check whether relevant electrical components work normally.

5.5.7.2 Removal and installation of slow charging socket assembly

Disassembly procedures

Notes:
When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.
After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.
If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery

pack box again!
Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

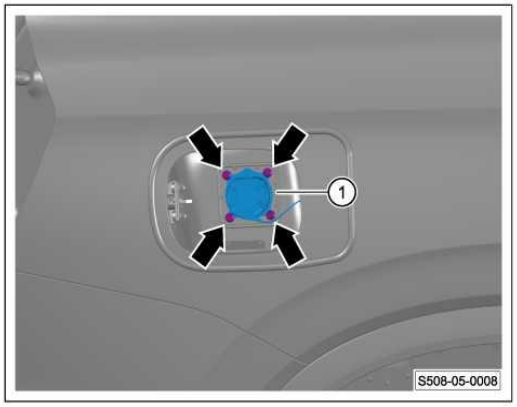
3 Remove the rear right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

4 Remove the rear wheel hub trim (right). Refer to 9.15.2.4 Removal and installation of rear wheel hub trim

5 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

6 Remove the driver's tool box. Refer to 9.14.2.26 Removal and installation of driver's tool box

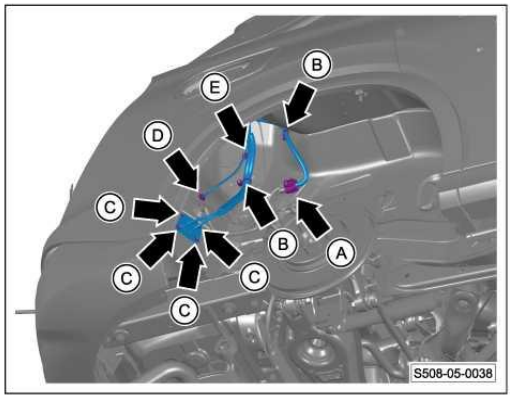
7 Remove the rear side wall lower trim panel assembly (right). Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly



8 Remove the slow charging socket assembly

a. Unscrew the fixing bolt (see arrow) between the slow charging socket assembly ① and charging port box.

- Tightening torque of bolt: 8±1 N·m



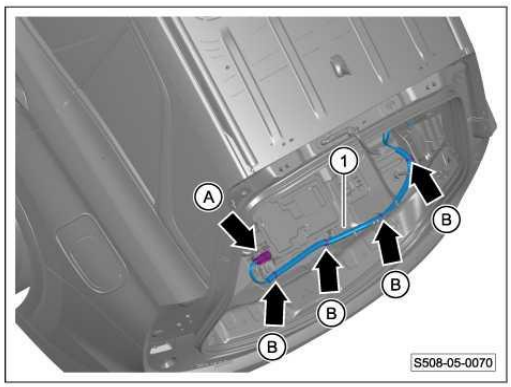
b. Disconnect the connector (see arrow A) between the chassis harness and slow charging socket assembly.

c. Disengage the fixing clips (see arrows B and E) of the slow charging socket assembly.

d. Unscrew the fixing nut (see arrow C) of the slow charging socket assembly.

e. Disengage the emergency cable blank cover (see arrow D) of the charging port cap.

• Tightening torque of nut (see arrow C): 6±1 N·m



f. Disconnect the connector (see arrow A) between slow charging socket assembly ① and HV electrical appliance two-in-one assembly.

g. Disengage the fixing clip (see arrow B), and remove slow charging socket assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check whether the slow charging function works normally.

5.6 HV distribution system

5.6.1 Specification

5.6.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
HV box fixing bolt	Hexagon flange bolt M6×25	8±1
Connection between charger HV harness and vehicle body	Hexagon flange nut M6	10±1
Fixing the battery pack HV harness and connecting it to the body bracket	Cross recessed hexagon flange screw M6×12	10±1
Connection of HV box mounting bracket and hybrid transmission assembly	Hexagon head flange bolt M6×20	8±1
Connection of battery pack HV harness and HV box mounting bracket	Cross recessed hexagon flange screw M6×12	10±1

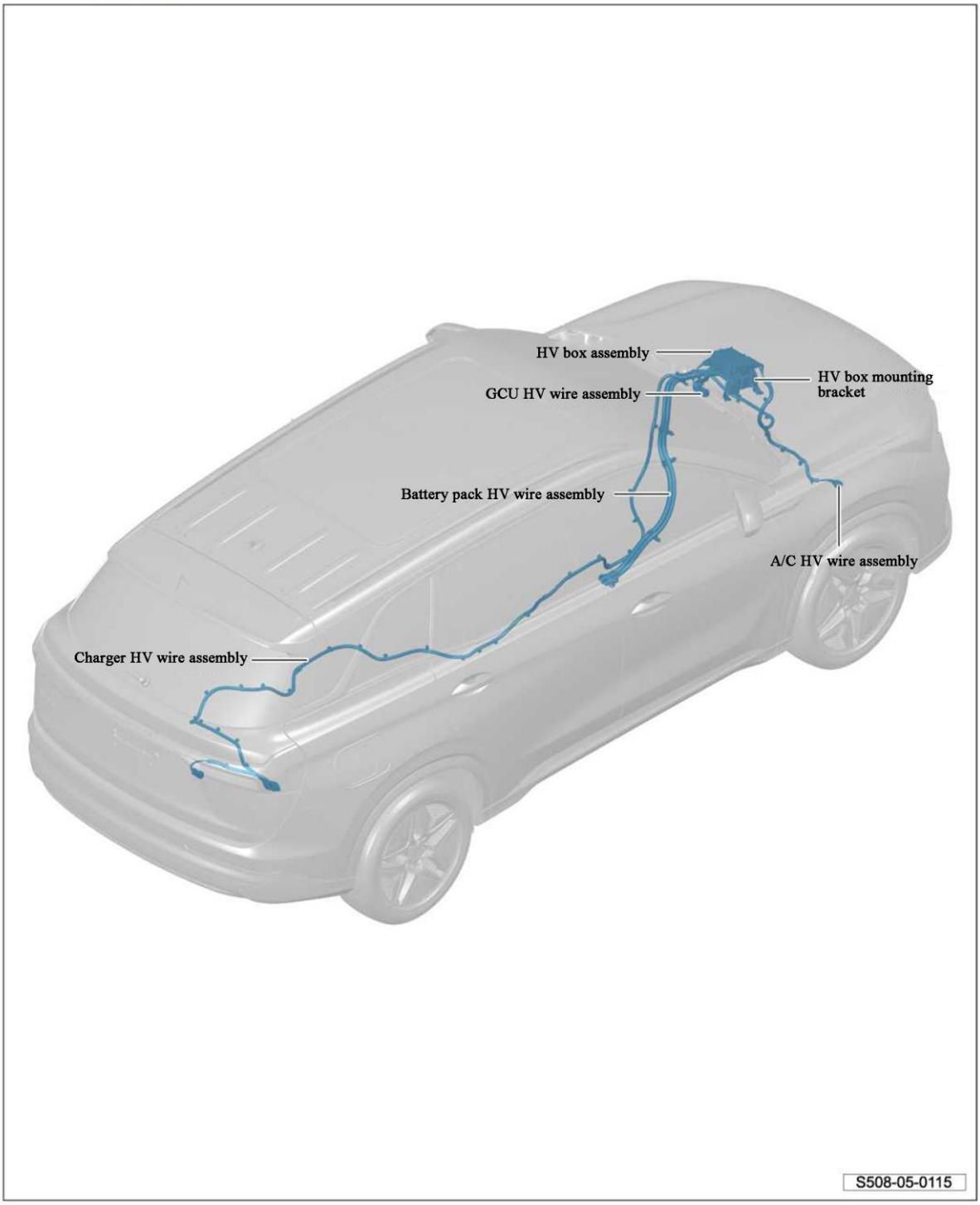
5.6.2 System description

5.6.2.1 System overview

In the HV distribution system, an HV box divides the high-voltage direct current of the power battery into the compressor assembly, PTC heater assembly, and the HV electrical appliance two-in-one assembly. Fuses are installed on the relevant circuits to prevent a single HV component fault from causing damage to other components of the HV loop circuit while ensuring the safety of the power battery.

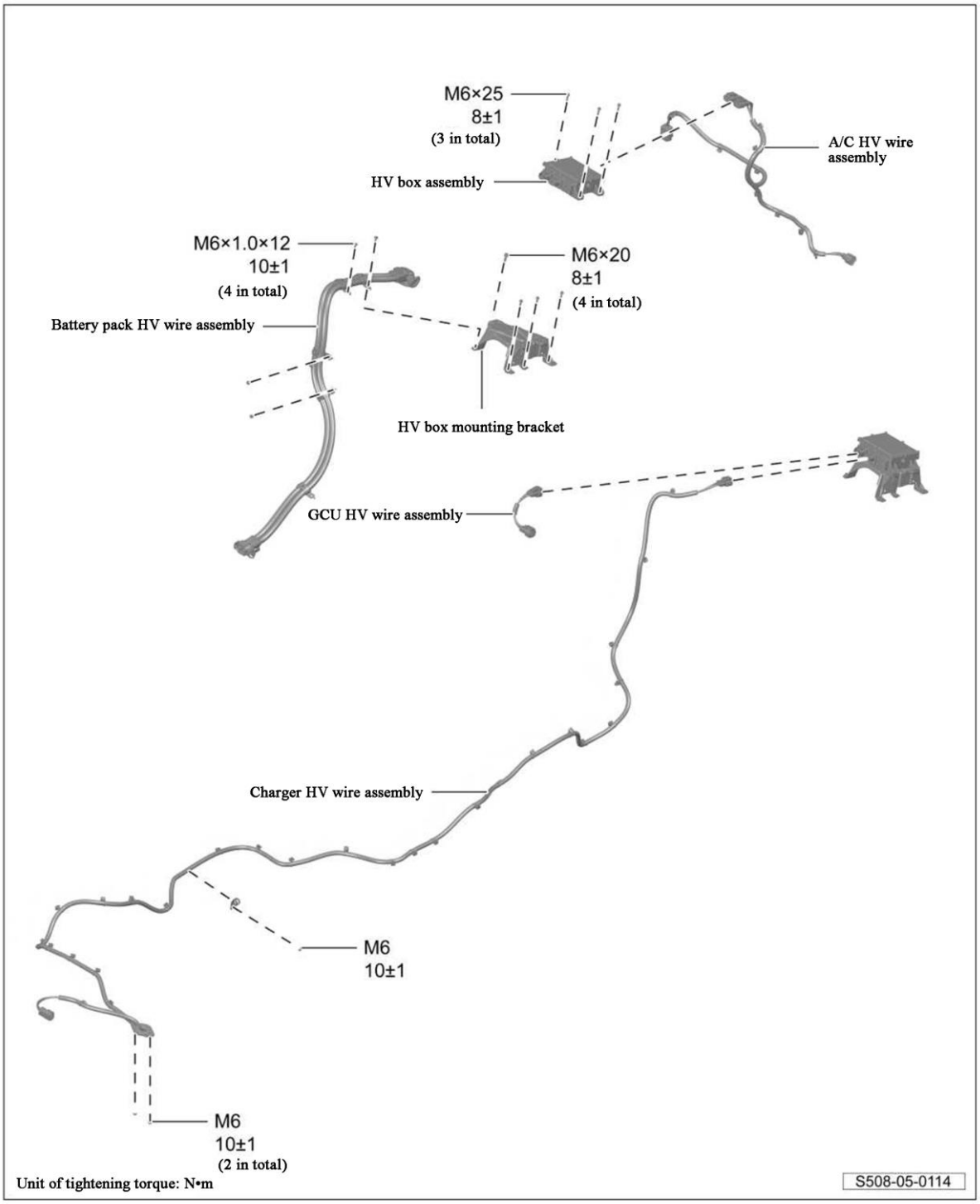
5.6.3 Component position

5.6.3.1 Component position



5.6.4 Exploded view

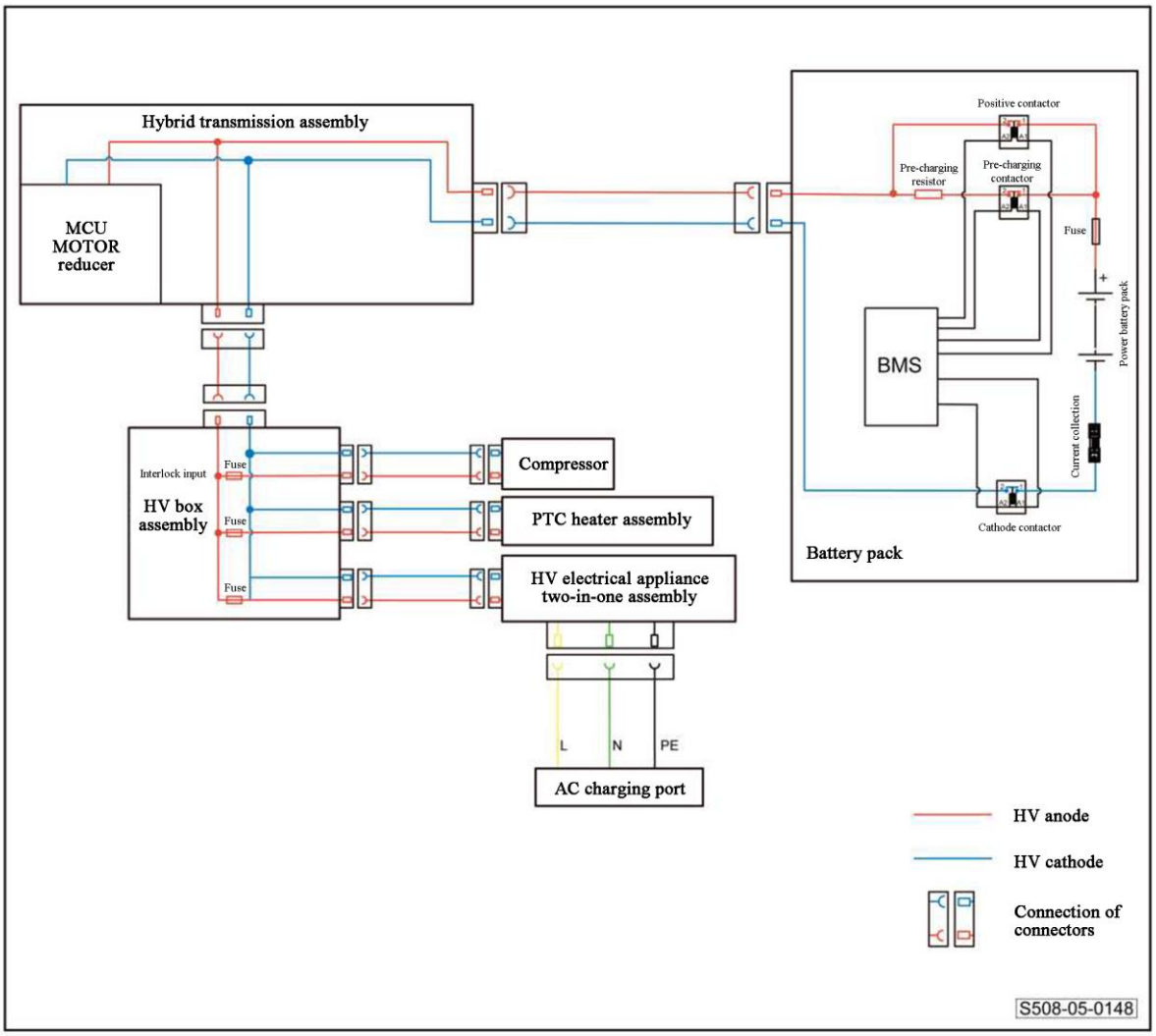
5.6.4.1 Exploded view



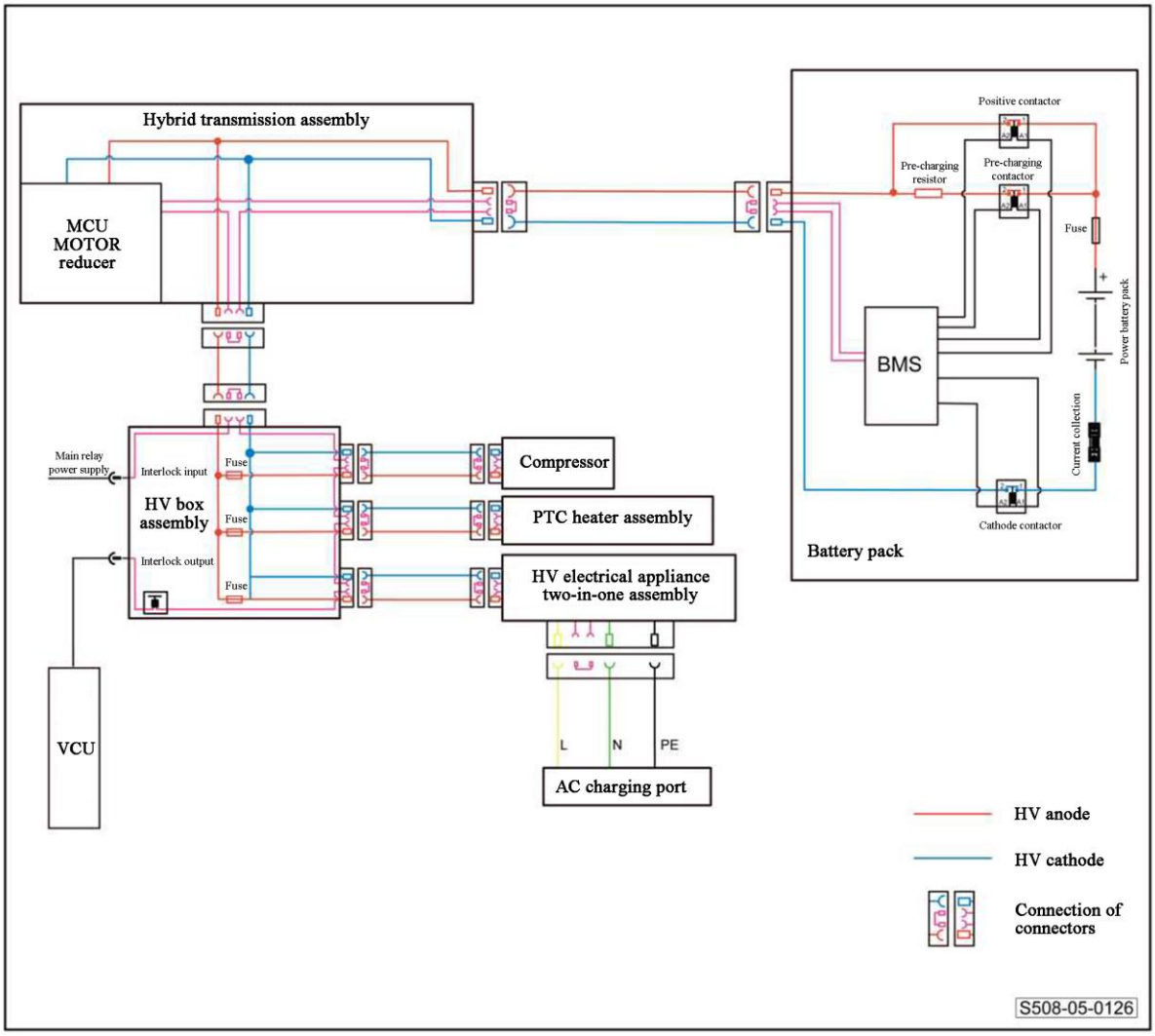
5.6.5 Electrical schematic diagram

5.6.5.1 Electrical schematic diagram

I. Schematic Diagram of HV Distribution



II. Schematic diagram of HV interlocking



5.6.6 Removal and installation

5.6.6.1 Removal and installation of HV box assembly

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

1 Turn off all the electrical appliances and turn off the start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

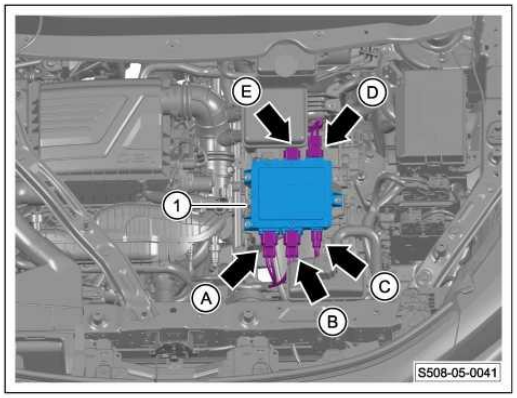
3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

4 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

7 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component.



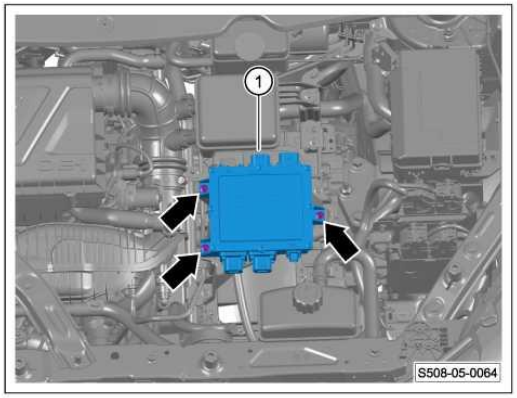
8 Remove the HV box assembly.

a. Disconnect the connectors (see arrows A and B) and disengage the HV box assembly ① from the A/C HV harness.

b. Disconnect the connector (see arrow C) and disengage the HV box assembly ① from the engine harness.

c. Disconnect the connector (see arrow D) and disengage the HV box assembly ① from GCU HV harness.

d. Disconnect the connector (see arrow E) and disengage the HV box assembly ① from the charger HV harness.



e. Unscrew the fixing bolts (see arrows) and remove the HV box assembly ①.

- Tightening torque of bolt: 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check whether relevant electrical components work normally.

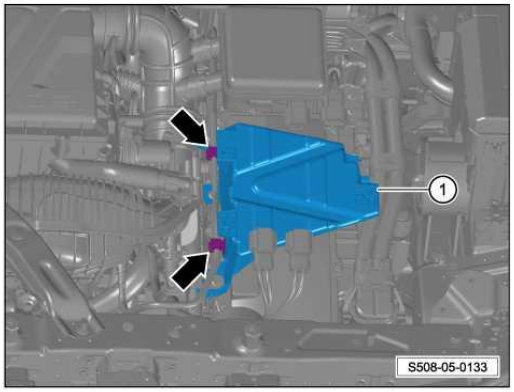
5.6.6.2 Removal and installation of HV box mounting bracket

Disassembly procedures

1 Turn off all the electrical appliances and turn off the start switch.

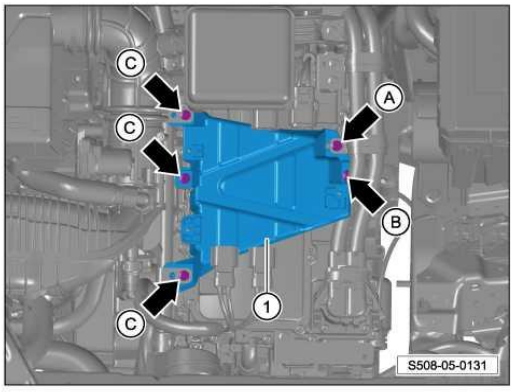
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the HV box assembly. Refer to 5.6.6.1 Removal and installation of HV box assembly.



4 Remove the HV box mounting bracket.

a. Disengage the fixing clamp (see the arrow) connecting the HV box mounting bracket ① and oil inlet pipe 3.



b. Unscrew the fixing bolt (see arrow A), and disengage the HV box mounting bracket ① from the battery pack HV harness assembly.

c. Unscrew the fixing bolts (see arrows B and C), and remove the HV box mounting bracket ①.

- Tightening torque of bolt (see arrow A): 10±1 N·m
- Tightening torque of bolt (see arrow B): 8±1 N·m
- Tightening torque of bolt (see arrow C): 8±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

5.6.6.3 Removal and installation of charger HV harness assembly

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

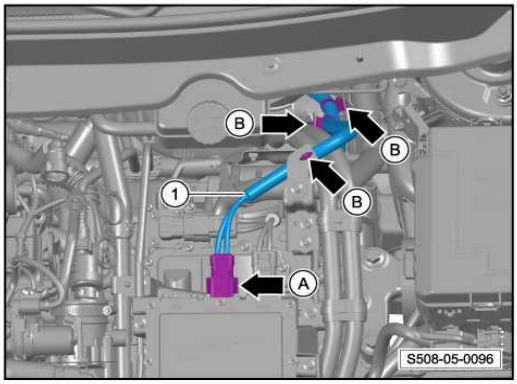
4 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

7 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

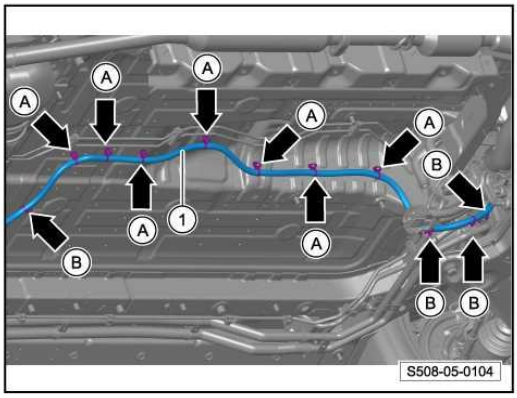
8 Remove the battery package assembly. Refer to 5.3.7.1 Removal and installation of battery package assembly.



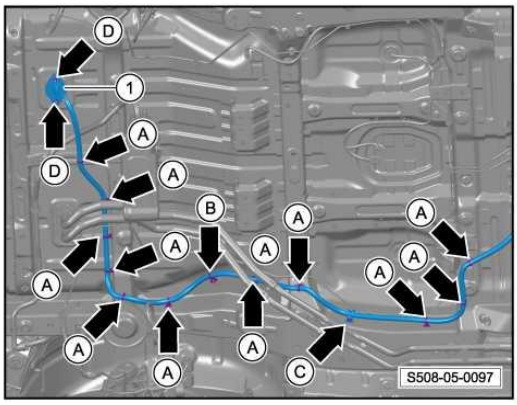
9 Remove the HV harness assembly of charger

a. Disconnect the connector (see arrow A) between the charger HV harness assembly ① and the HV box assembly.

b. Disengage the fixing clip (see arrow B) of charger HV harness assembly ①.



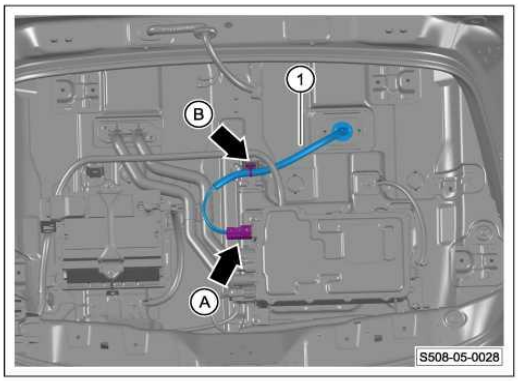
c. Disengage the fixing clips (see arrows A and B) of charger HV harness assembly ①.



d. Disengage the fixing clips (see arrows A and B) of charger HV harness assembly ①.

e. Unscrew the fixing nuts (see arrows C and D) of charger HV harness mounting bracket.

- Tightening torque of nut (see arrow C): 10±1 N·m
- Tightening torque of nut (see arrow D): 10±1 N·m



f. Disconnect the connector (see arrow A) between the charger HV harness assembly ① and the HV electrical appliance two-in-one assembly.

g. Disengage the fixing clip (see arrow B) of charger HV harness assembly ①.

h. Remove the charger HV harness assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

5.6.6.4 Removal and installation of A/C System HV harness

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

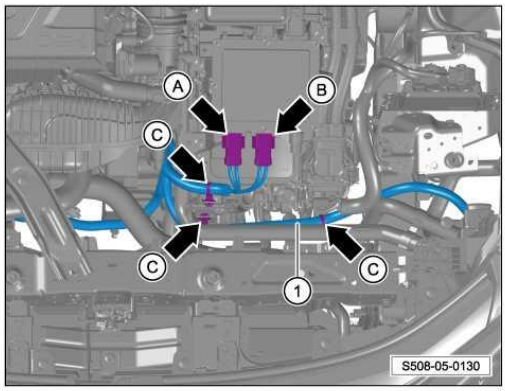
4 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

7 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

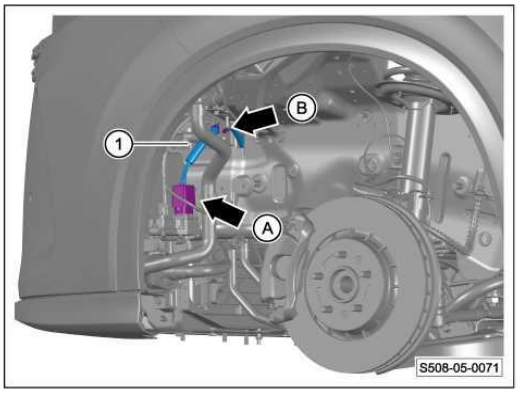
8 Remove the front left hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim



9 Remove the HV harness of A/C system

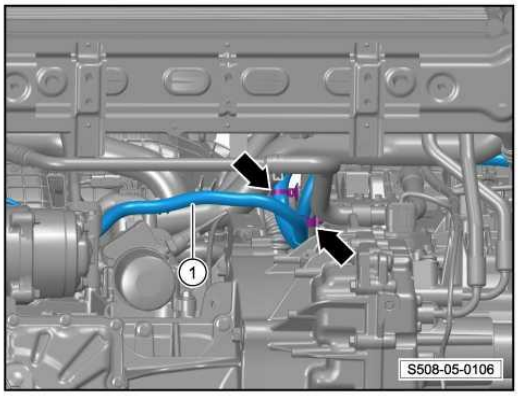
a. Disconnect the connectors (see arrows A and B), and disconnect the A/C system HV harness ① and the HV electrical appliance box.

b. Disengage the fixing clips (see arrow C) of A/C system HV harness.

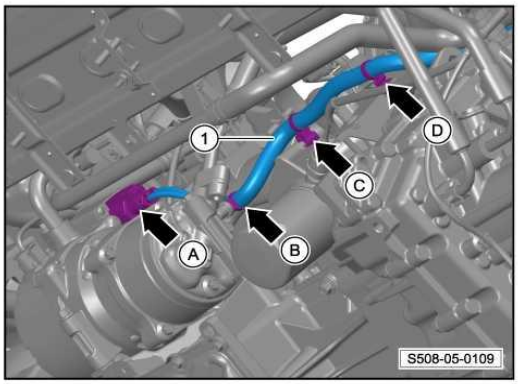


c. Disconnect the connector (see arrow A), and disconnect the A/C system HV harness ① and the PTC heater assembly.

d. Disengage the fixing clips (see arrow B) of A/C system HV harness.



e. Disengage the fixing clips (see the arrow) of A/C system HV harness ①.



f. Disconnect the connector (see arrow A), and disconnect the A/C system HV harness ① and the electric compressor.

g. Disengage the fixing clips (see arrows B, C and D) of A/C system HV harness ①.

h. Remove the A/C system HV harness ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

5.6.6.5 Removal and installation of battery package HV harness assembly

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

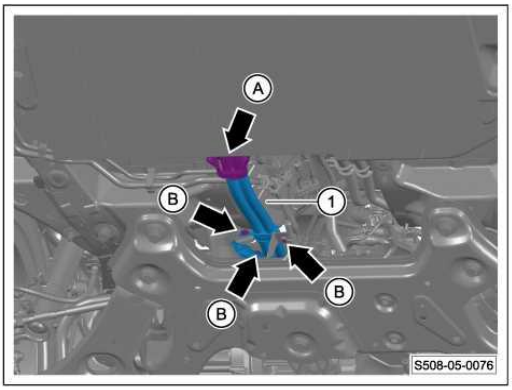
4 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

7 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component.

8 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

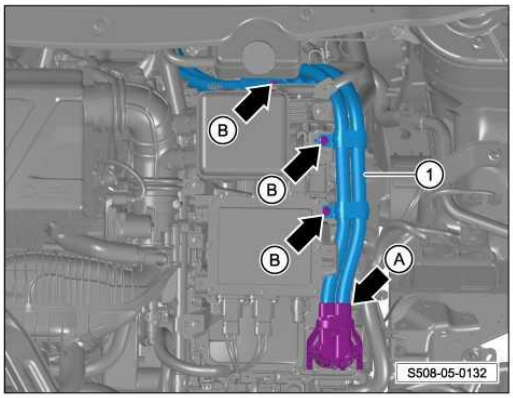


9 Remove the battery pack high voltage harness assembly.

a. Disconnect the connector (see arrow A) between the battery pack HV harness assembly ① and the battery pack assembly.

b. Disengage the fixing bolt (see arrow B) of the battery pack HV harness assembly ①.

• Tightening torque of bolt (see arrow B): 10±1 N·m



c. Disconnect the connector (see arrow A) between the battery pack HV harness assembly ① and the hybrid transmission.

d. Disengage the fixing bolt (see arrow B) of the battery pack HV harness assembly ①.

e. Remove the battery pack HV harness assembly ①.

• Tightening torque of bolt (see arrow B): 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

5.6.6.6 Removal and installation o GCU HV harness

Disassembly procedures

Notes:

When plugging and unplugging an HV connector, a maintenance person must wear insulated protection tools.

After removing the HV connector, wrap the HV output of the battery pack box and the HV harness with the insulating tape or special protective cover immediately, to avoid it from being connected with other parts of the body to cause short circuit.

If the battery pack box is detected as faulty with the diagnostic scanner of the vehicle, maintenance personnel shall wear HV face and eye protection tools for removal. Before the fault is eliminated, do not connect the HV connector at the end of battery pack box again!

Do not measure the voltage directly through the HV connector of battery pack box. To measure the voltage, use the HV connector measurement tooling to ensure safety.

1 Turn off all the electrical appliances and turn off the Start switch.

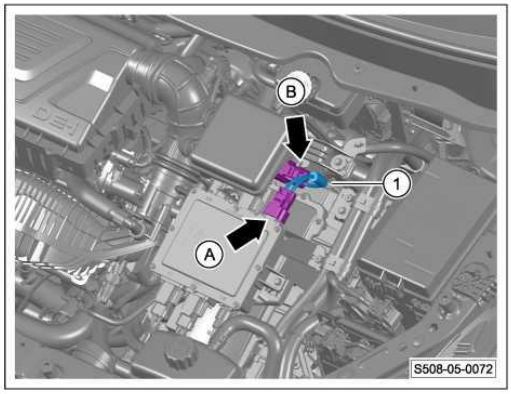
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

4 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).



7 Remove the GCU HV harness.

a. Disconnect the connector (see arrow A) between GCU HV harness ① and the HV electric appliance box assembly.

b. Disconnect the connector (see arrow B) between GCU HV harness ① and the hybrid transmission.

c. Remove the GCU HV harness ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

5.7 Electric-driven and Electronically Controlled Thermal Management System

5.7.1 Specification

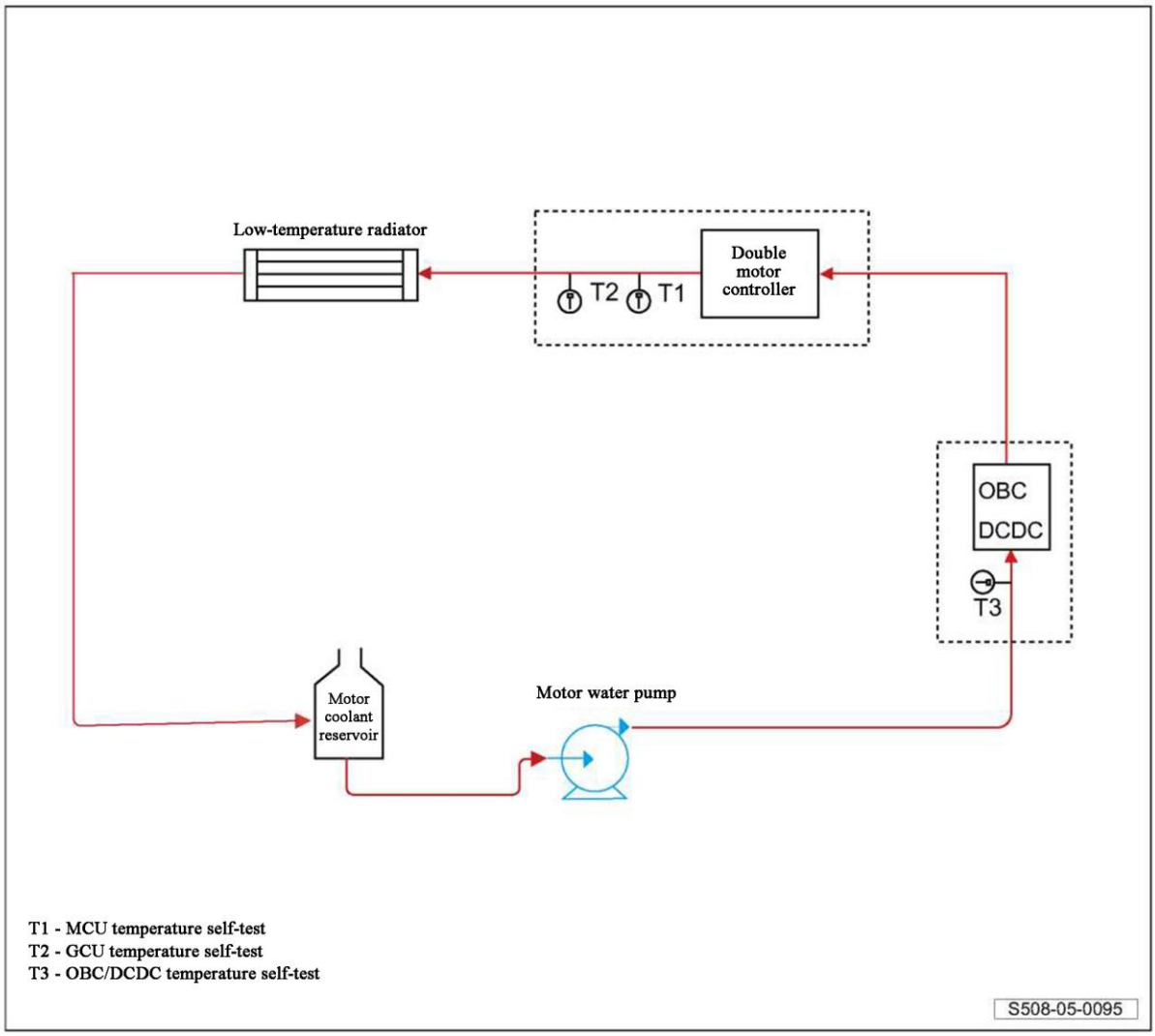
5.7.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection of low-temperature radiator and radiator	Hexagon head flange bolt M6×16	6±1
Connection of low-temperature radiator water inlet hose assembly and water tank lower crossmember	Hexagon flange nut M6	10±1
Connection of motor coolant pump and coolant pump mounting bracket I	Hexagon flange nut M6	10±1
Connection of motor kettle and water tank crossmember	Hexagon head flange bolt M6×16	8±1
Connection of coolant pump outlet hose assembly and front hub cover assembly	Hexagon head flange bolt M6×12	10±1
Connection of low-temperature water pipe component and vehicle body	Hexagon head flange bolt M8×1.25×16	25±2
Connection of low-temperature water pipe assembly and vehicle body side member LH	Hexagon head flange nut M8	25±2
Connection of DC-DC connecting water pipe assembly and vehicle body	Hexagon flange nut M6	10±1
	Hexagon head flange bolt (M6×1.0×20)	
Charger water pipe sheath and rear floor	Cross hexagon head flange screw M6×1.0×12	10±1
Connection between charger water pipe and floor	Hexagon head flange bolt M6×16	10±1

5.7.2 System description

5.7.2.1 Overview of electric-driven and electronically controlled thermal management system

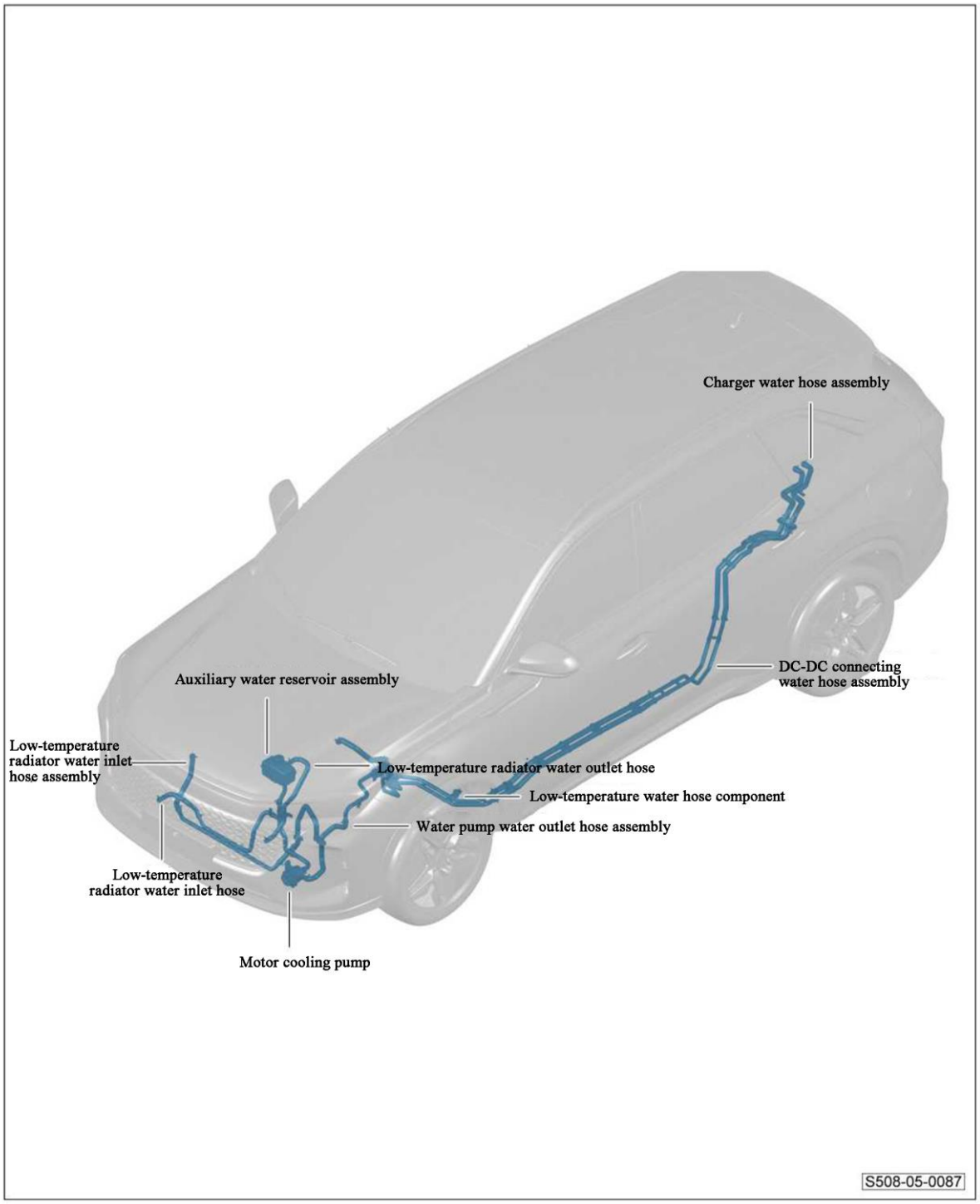
Cooling circuit block diagram:



The cooling circuit of the electric-driven and electronically controlled thermal management system includes: dual motor controller, DCDC/OBC, coolant pump, low-temperature radiator, expansion kettle, coolant temperature sensor, pipeline, fan, etc.

5.7.3 Component position

5.7.3.1 Component position



5.7.4 Removal and installation

5.7.4.1 Replacement of electric drive coolant

Discharging procedures

Tip:

Wait until the coolant completely cools down. Then discharge the coolant.

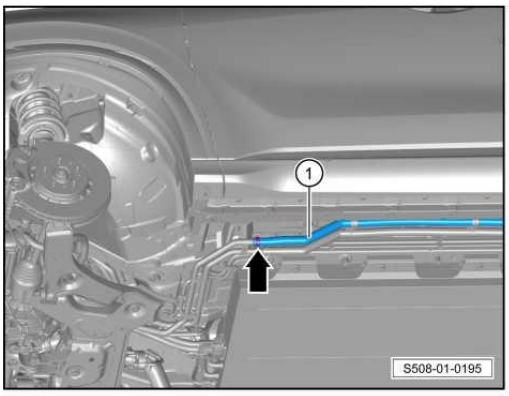
When the cover of expansion tank is opened, there will be hot steam flowing out. Take protective measures to avoid eye harm and skin scald. Cover the expansion tank cover with a piece of rag before open it, and then unscrew it carefully.

1 Remove the front engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front).

2 Remove the front engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

3 Remove the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left).

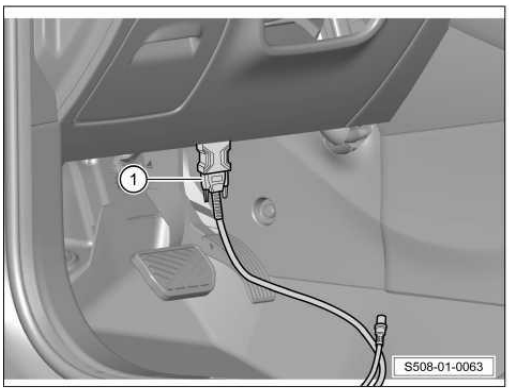
4 Remove the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).



5 Drain the motor coolant

a. Place the coolant collection container at the bottom of the car.

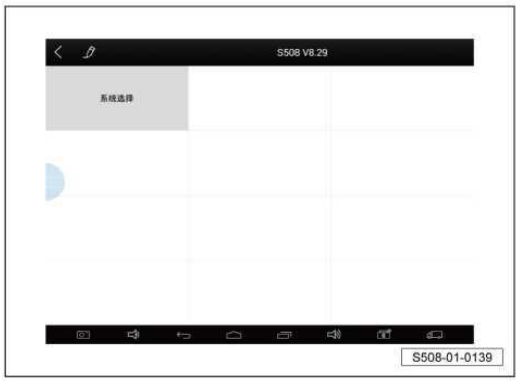
b. Loosen the clamp from the low-temperature water pipe component to DC-DC connecting water pipe assembly ① (see the arrow), and discharge coolant.



c. Connect the diagnostic scanner to the vehicle with test line ① and power up the vehicle.

d. Turn on the TDS800 host and click "TDS800" diagnostic software shortcut on the desktop to enter the diagnostic scanner interface.

e. Select "Dongfeng Fengon" on the diagnostic scanner interface and fined the new De-i E5 model, and then click to enter.



f. After the vehicle identification is completed, the main interface of diagnostic scanner will show. Select "System Selection" to enter.

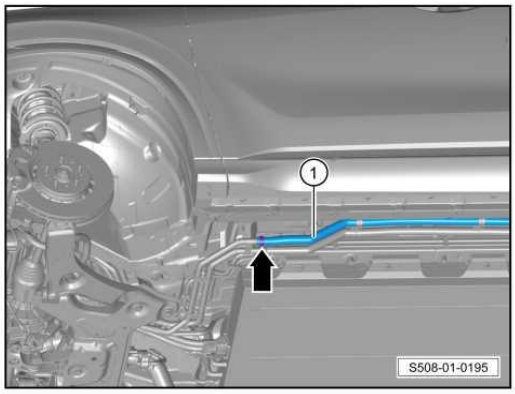
g. Select "body domain controller (BDC)" on the "System Selection" sub-function interface and click to enter.

h. Select "After-sales Function" on the "body domain controller (BDC)" sub-function interface and click to enter.

i. Select "Electric Control Pump Control" on the "After-sales Function" sub-function interface and click to enter.

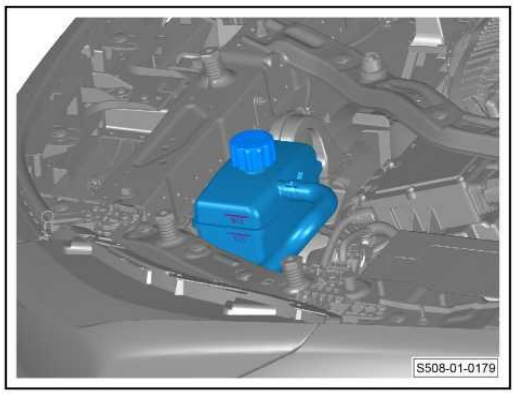
j. Select “PWM 60%” on the "Electric Control Pump Control" sub-function interface to run the motor pump.

k. After the battery coolant is discharged, select "Off" on the "Electric Control Pump Control" sub-function interface to put the motor pump out of operation.



l. Connect the clamp from the low-temperature water pipe component to DC-DC connecting water pipe assembly ① (see the arrow), and install the fixing clamp to the original position.

Filling procedure



6 Coolant filling

a. Slowly fill the coolant until it reaches the "MAX" mark on the water reservoir .

b. Install water filling cover.

c. Connect the diagnostic scanner, select “PWM 60%” on the "Electric Control Pump Control" sub-function interface to run the motor pump.

d. Observe the coolant level, and fill coolant if necessary to between the -MAX- and -MIN-.

e. Observe the reflux pipe of the water reservoir, when there are no bubbles in the coolant from the reflux pipe, select "Off" on the "Electric Control Pump Control" sub-function interface to put the motor pump out of operation.

Description

– Do not dilute the coolant at will.

– The coolant cannot be reused or mixed with other types of coolant. Also, it cannot be substituted with different colors of coolant.

– Coolant: FD-40, filling amount: 5.2L.

– The coolant can prevent frost, corrosion and scaling, as well as raising the boiling point. Therefore, the coolant must be refilled according to the standards.

– It is prohibited to use the coolant with phosphates or nitrates as preservative.

– In southern places with tropical climate, use the coolants of high boiling point.

– The proportion of additive and water in the coolant should be at least 50%. Under the standard atmospheric pressure (101 kPa), the coolant boiling

point is no less than 107°Cand the freezing point is no more than -35°C.

– The coolant must be recycled according to related national regulations.

5.7.4.2 Removal and installation of low-temperature radiator

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

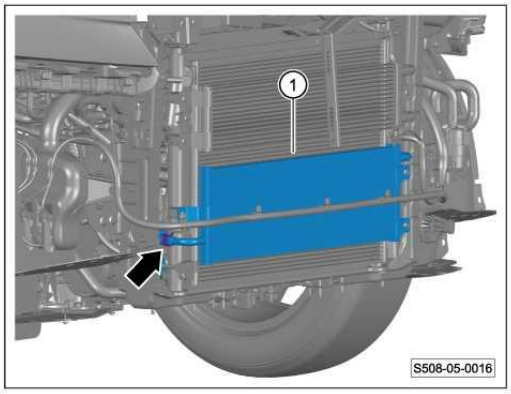
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

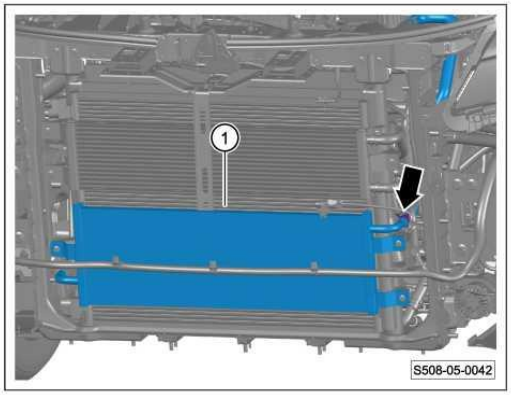
4 Remove the front bumper with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories.

5 Remove the frame front crossmember assembly. Refer to 9.4.3.13 Removal and installation of frame front crossmember assembly

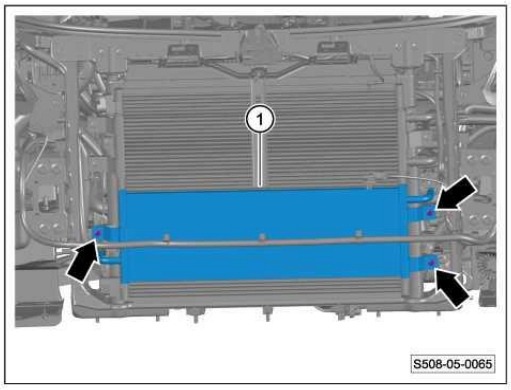
6 Remove the low-temperature radiator.



a. Loosen the fixing clamp (see the arrow) and disengage the low-temperature radiator water inlet hose from the low-temperature radiator ①.



b. Loosen the fixing clamp (see the arrow) and disengage the low-temperature radiator water outlet hose from the low-temperature radiator ①.



c. Unscrew the fixing bolts (see arrow), and remove the condenser assembly ①.

- Tightening torque of bolt: 6±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

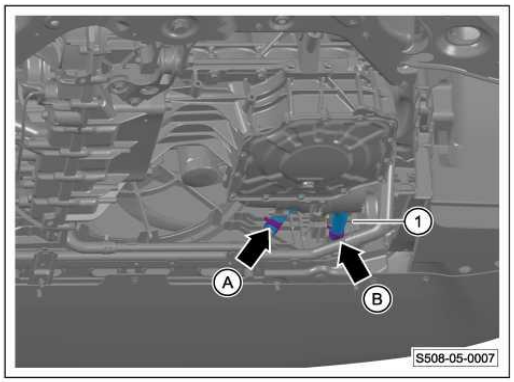
5.7.4.3 Removal and installation of low-temperature radiator inlet hose

Disassembly procedures

1 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

2 Lift the vehicle.

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Remove the low-temperature radiator water inlet hose

a. Disengage the fixing clamp (see arrow A), and remove the low-temperature radiator water inlet hose assembly from the low-temperature radiator water inlet hose ①.

b. Disengage the fixing clamp (see arrow B), and remove the low-temperature radiator from the low-temperature radiator water inlet hose ①.

c. Remove the low-temperature radiator water inlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.4 Removal and installation of low-temperature radiator water inlet hose assembly

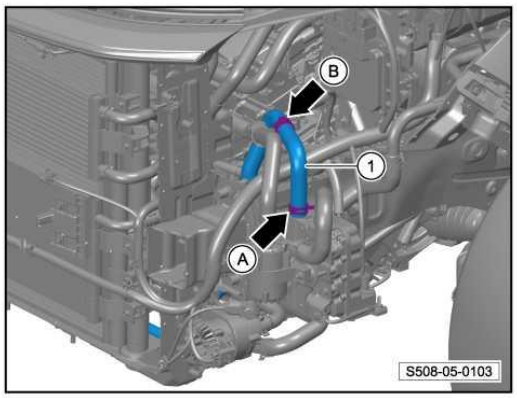
Disassembly procedures

1 Remove the front left hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

2 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

3 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

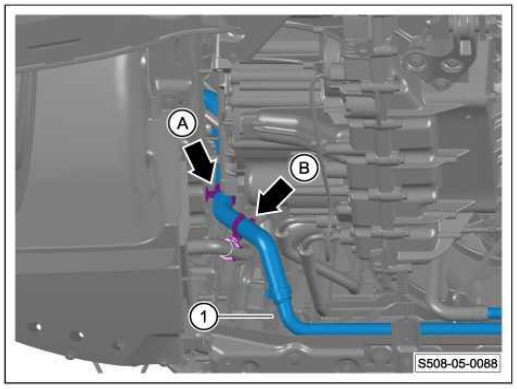
4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"



5 Remove the motor controller to water-cooled oil cooler water pipe.

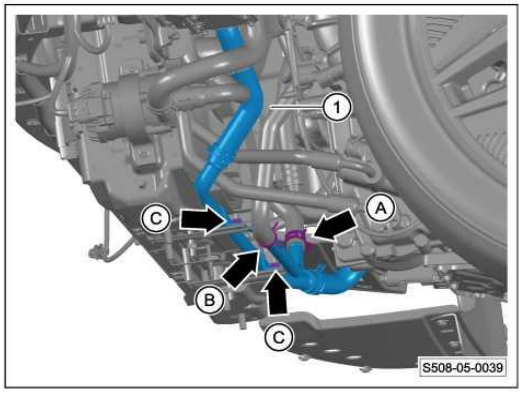
a. Loosen the fixing clamp (see arrow A), and remove the PTC heater assembly from the low-temperature radiator water inlet hose assembly ①.

b. Disengage the fixing clamp (see arrow B) between heater coolant pump inlet hose and low-temperature radiator inlet hose assembly ①.



c. Disengage the fixing clips (see arrow A) of the low-temperature radiator water inlet hose assembly ①.

d. Disengage the fixing clamp (see arrow B) of the low-temperature radiator water inlet hose assembly ①.

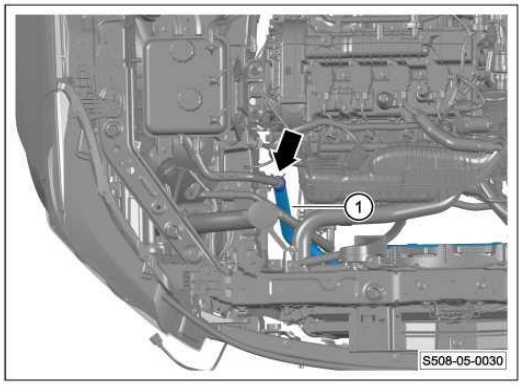


e. Loosen the fixing clamp (see arrow A), and remove the low-temperature radiator water inlet hose from the low-temperature radiator water inlet hose assembly ①.

f. Loosen the fixing clamp (see arrow B), and remove the motor controller water outlet hose from the low-temperature radiator inlet hose assembly ①.

g. Unscrew the fixing nut (see arrow C) of low-temperature radiator water inlet hose assembly ①.

• Tightening torque of nut (see arrow C): 10±1 N·m



h. Loosen the fixing clamp (see the arrow), and remove the HVAC circulation three-way water inlet hose assembly from the low-temperature radiator water inlet hose assembly ①.

i. Remove the low-temperature radiator water inlet hose assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

Add engine coolant after installation. Refer to 1.4.3.40 Replacement of engine coolant.

5.7.4.5 Removal and installation of motor coolant pump I

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

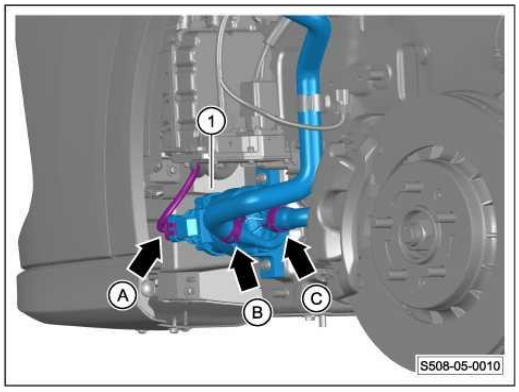
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

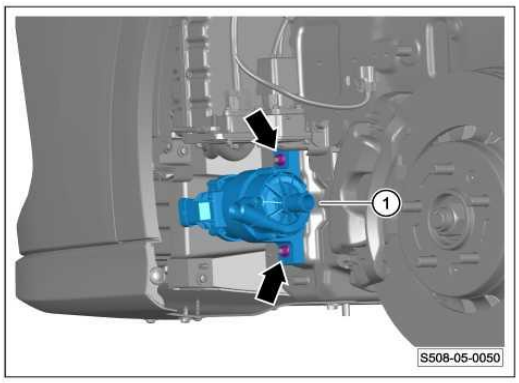
3 Remove the front left hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

4 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

5 Discharge the electric drive coolant. Refer to

1.4.3.48 Replacement of electric drive coolant





6 Remove the motor coolant pump I.

a. Disconnect the connector (see arrow A) of the motor coolant pump I.

b. Loosen the fixing clamp (see arrow B), and disengage the connection between the motor coolant pump I ① and the electric pump water outlet hose assembly.

c. Loosen the fixing clamp (see arrow C), and disengage the connection between the motor coolant pump I ① and the low-temperature radiator water outlet hose.

d. Unscrew the fixing nut (see the arrow), and remove the motor coolant pump I ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.6 Removal and installation of auxiliary water reservoir assembly

Disassembly procedures

1 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

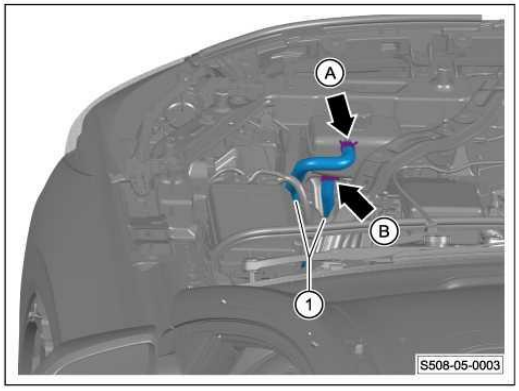
2 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 To remove the (front) engine compartment trim

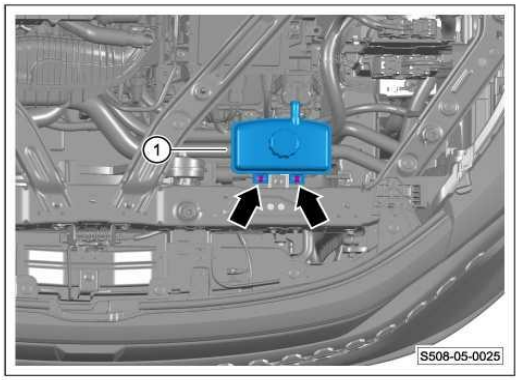
panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

5 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant



6 Remove the auxiliary water reservoir assembly.

a. Loosen the fixing clamps (see arrows A and B), and disengage the low-temperature radiator water outlet hose ① from the auxiliary water reservoir assembly.



b. Unscrew the fixing bolts (see the arrows) and remove the auxiliary water reservoir assembly ①.

- Tightening torque of bolt: 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.7 Removal and installation of low-temperature radiator outlet hose

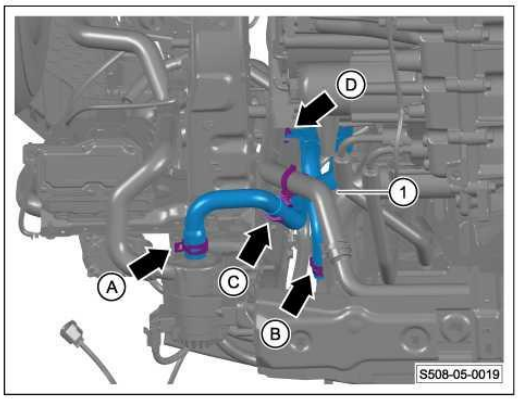
Disassembly procedures

1 Remove the auxiliary water reservoir assembly. Refer to 5.7.5.6 Removal and installation of auxiliary water reservoir assembly

2 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

4 Remove the front left hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim



5 Remove the low-temperature radiator water outlet hose

a. Loosen the fixing clamp (see arrow A), and remove the connection between the electric coolant pump and the low-temperature radiator water outlet hose ①.

b. Loosen the fixing clamp (see arrow B), and remove the connection between the low-temperature radiator and the low-temperature radiator water outlet hose ①.

c. Disengage the fixing clamp (see arrow C) of the low-temperature radiator water outlet hose ①.

d. Unscrew the fixing bolt (see arrow D) of the low-temperature radiator water outlet hose ①.

e. Remove the low-temperature radiator coolant outlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

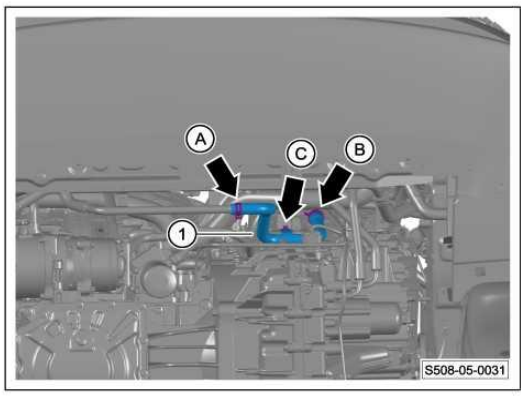
– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.8 Removal and installation of motor controller water outlet hose

Disassembly procedures

1 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

2 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



3 Remove the motor controller water outlet hose

a. Loosen the fixing clamp (see arrow A), and disengage the connection between the motor controller water outlet hose ① and the low-temperature radiator water inlet hose assembly.

b. Loosen the fixing clamp (see arrow B), and disengage the motor controller water outlet hose ① from the hybrid transmission assembly.

c. Unscrew the fixing bolt (see arrow C) of the motor controller water outlet hose bracket.

d. Remove the motor controller water outlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.9 Removal and installation of coolant pump water outlet hose assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

5 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

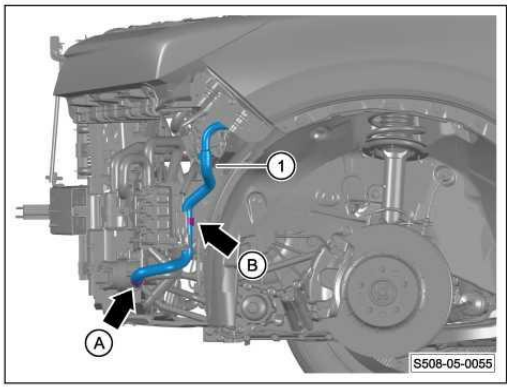
6 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

7 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

8 Remove the engine compartment fully-wrapped cover support plate component (left). Refer to 9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component.

9 Remove the VCU. Refer to 5.2.7.1 Removal and installation of VCU.

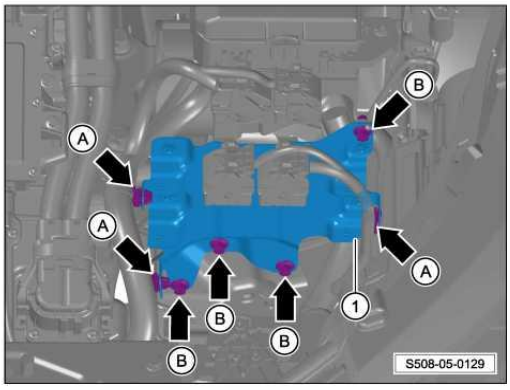
10 Remove the ECU assembly. Refer to 2.8.7.4 Removal and installation of ECU Assembly.



11 Removal of coolant pump outlet house assembly

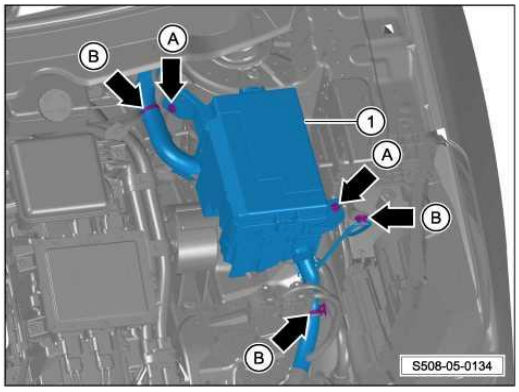
a. Loosen the fixing clamp (see arrow A), and disengage the coolant pump outlet hose assembly ① from the motor coolant pump.

b. Disengage the fixing clamp (see arrow B) of coolant pump outlet hose assembly ①.



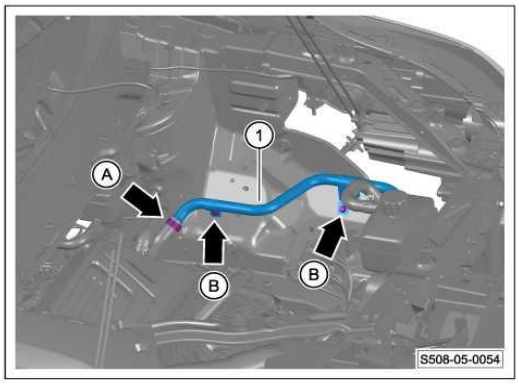
c. Disengage the harness fixing clip (see arrow A).

d. Unscrew the fixing bolt (see arrow B), and remove the ECU bracket ①.



e. Unscrew the fixing bolts (see arrow A) of engine compartment fuse box bracket.

f. Disengage the harness fixing clip (see arrow B), and put aside part of harnesses ① in the front engine compartment fuse box area.



g. Loosen the fixing clamp (see arrow A), and disengage the coolant pump outlet hose assembly ① from the low-temperature water pipe component.

h. Unscrew the fixing bolt (see arrow B) of the coolant pump outlet hose assembly ① bracket.

i. Remove the coolant pump outlet hose assembly ①.

- Tightening torque of bolt: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.10 Removal and installation of low-temperature water hose component

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

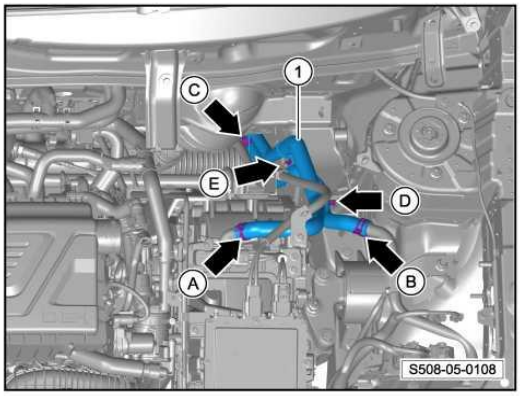
5 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".

6 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

7 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

8 Remove the air filter outlet pipe assembly. Refer to 2.6.7.4 Removal and installation of air filter outlet pipe assembly.

9 Remove the subframe welding assembly. Refer to 3.2.6.9 Removal and installation of front subframe welding assembly



10 Remove the low-temperature water hose component.

a. Loosen the fixing clamp (see arrow A), and disengage the connection between the low-temperature water hose component ① and the integrated dual electronic control.

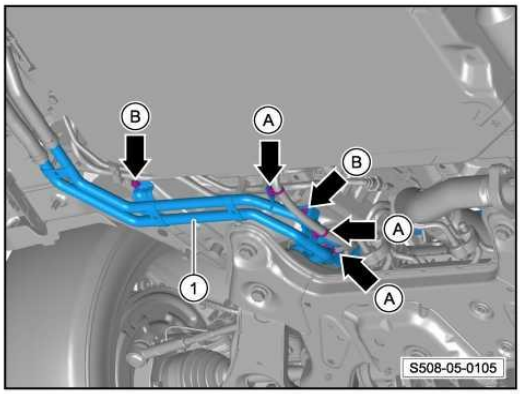
b. Loosen the fixing clamp (see arrow B), and disengage the connection between the low-temperature water hose component ① and the coolant pump outlet hose assembly.

c. Disengage the charger HV harness from the fixing clip (see arrow C) of the low-temperature water hose component ①.

d. Disengage the low-temperature water hose component ① from the vehicle body fixing clip (see arrow D).

e. Unscrew the fixing nut (see arrow E) of low-temperature water hose component ①.

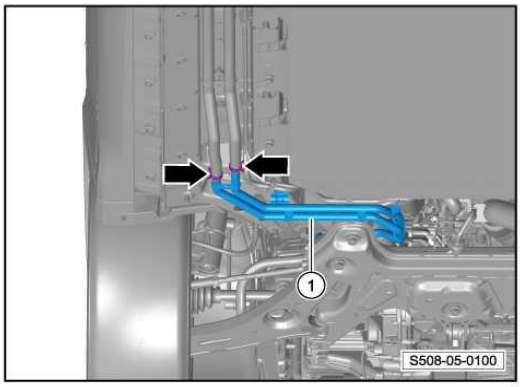
• Tightening torque of nut (see arrow E): 25±2 N·m



f. Disengage the charger HV harness from the fixing clip (see arrow C) of the low-temperature water hose component ①.

g. Unscrew the fixing bolt (see arrow B) of low-temperature water hose component ①.

• Tightening torque of bolt (see arrow B): 25±2 N·m



h. Loosen the fixing clamp (see the arrow), and disengage the connection between the low-temperature water hose component ① and the DC-DC connecting water hose assembly.

i. Remove the low-temperature water hose assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

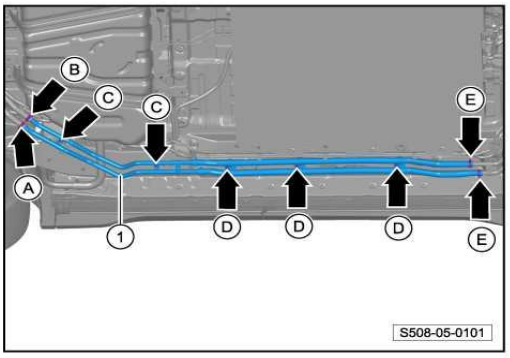
5.7.4.11 Removal and installation of DC-DC connecting water hose assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant



4 Remove the DC-DC connecting water hose assembly.

a. Loosen the fixing clamp (see arrow A), and disengage the connection between the DC-DC connecting water hose assembly ① and the rear middle passage electric drive water inlet hose.

b. Loosen the fixing clamp (see arrow B), and disengage the connection between the DC-DC connecting water hose assembly ① and the rear middle passage electric drive water outlet hose.

c. Unscrew the fixing nut (see arrow C) and bolt (see arrow D) of DC-DC connecting water hose assembly ① bracket.

d. Loosen the fixing clamp (see arrow E), and disengage the connection between the DC-DC connecting water hose assembly ① and the low-temperature water hose component.

e. Remove the DC-DC connecting water hose assembly ①.

- Tightening torque of nut (see arrow C): 10±1 N·m
- Tightening torque of bolt (see arrow D): 10±1 N·m

Installation procedures

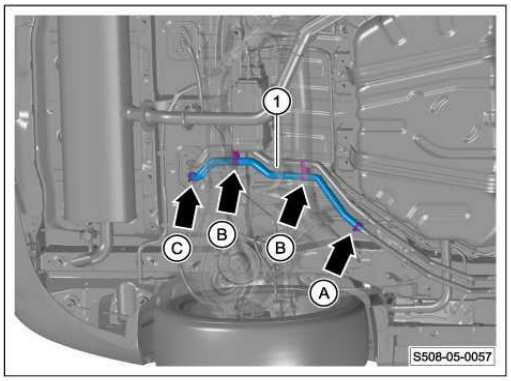
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.12 Removal and installation of rear middle passage electric drive water inlet hose

Disassembly procedures

1 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant



2 Remove the rear middle passage electric drive water inlet hose.

a. Lift the vehicle.

b. Loosen the fixing clamp (see arrow A), and disengage the connection between rear middle passage electric drive water inlet hose ① and the DC-DC connecting water hose assembly.

c. Disengage the double pipe clip (see arrow B) of rear middle passage electric drive water inlet hose ①.

d. Loosen the fixing clamp (see arrow C), and disengage the connection between rear middle passage electric drive water inlet hose ① and the charger water hose assembly.

e. Remove the rear middle passage electric drive water inlet hose ①.

Installation procedures

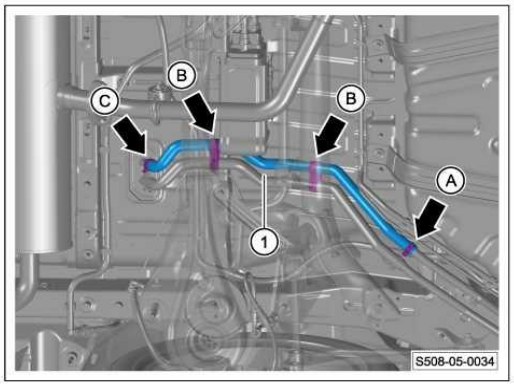
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

5.7.4.13 Removal and installation of rear middle passage electric drive water outlet hose

Disassembly procedures

1 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant



2 Remove the rear middle passage electric drive water outlet hose.

a. Lift the vehicle.

b. Loosen the fixing clamp (see arrow A), and disengage the connection between rear middle passage electric drive water outlet hose ① and the DC-DC connecting water hose assembly.

c. Disengage the double pipe clip (see arrow B) of rear middle passage electric drive water outlet hose ①.

d. Loosen the fixing clamp (see arrow C), and disengage the connection between rear middle passage electric drive water outlet hose ① and the charger water hose assembly.

e. Remove the rear middle passage electric drive water outlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

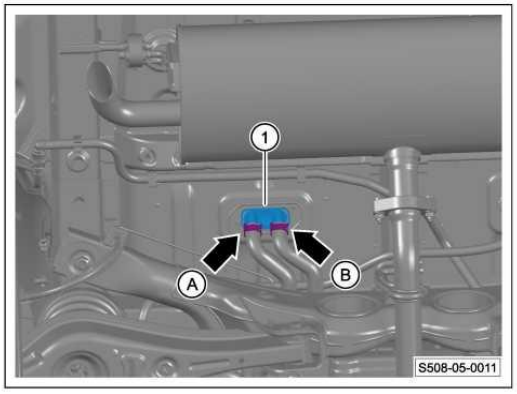
5.7.4.14 Removal and installation of charger water outlet hose assembly

Disassembly procedures

1 Discharge the electric drive coolant. Refer to 1.4.3.48 Replacement of electric drive coolant

2 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

3 Remove the driver's tool box. Refer to 9.14.2.26 Removal and installation of driver's tool box

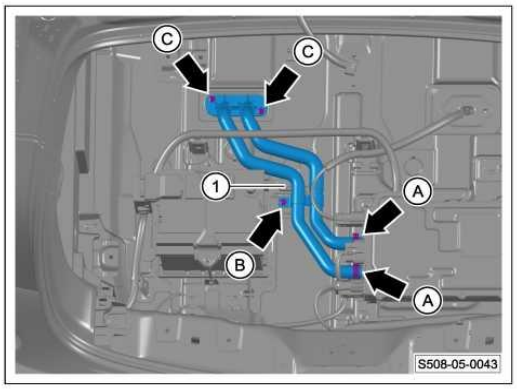


4 Remove the charger water hose assembly

a. Lift the vehicle.

b. Loosen the fixing clamp (see arrow A), and disengage the connection between the charger water hose assembly ① and the rear middle passage electric drive water inlet hose.

c. Loosen the fixing clamp (see arrow B), and disengage the connection between the charger water hose assembly ① and the rear middle passage electric drive water outlet hose.



d. Loosen the fixing clamp (see arrow A), and disengage the connection between the charger water pipe assembly ① and the HV electrical appliance two-in-one assembly.

e. Unscrew the fixing bolts (see arrows B and C) of charger water hose assembly ① bracket.

f. Remove the charger water hose assembly ①.

- Tightening torque of bolt (see arrow B): 10±1 N·m
- Tightening torque of bolt (see arrow C): 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Add the electric drive coolant after installation. Refer to 1.4.3.48 Replacement of electric drive coolant.

A/C

6.1 Warnings and notes.....4

6.1.1 Warnings and notes 4

6.1.1.1 Warnings and notes 4

6.2 Cooling system.....5

6.2.1 Specification.....5

6.2.1.1 Fastener specifications..... 5

6.2.2 System description.....6

6.2.2.1 Overview 6

6.2.2.2 Description of working principle of A/C cooling system..... 8

6.2.3 Exploded view.....9

6.2.3.1 Exploded view..... 9

6.2.4 Electrical schematic diagram.....10

6.2.4.1 Electrical schematic diagram.... 10

6.2.5 Diagnosis information and steps 11

6.2.5.1 Diagnostic instructions..... 11

6.2.5.2 Visual inspection 11

6.2.5.3 ECU terminals 11

6.2.5.4 Data list 12

6.2.5.5 DTC list..... 12

6.2.5.6 DTC: B111717, B111716..... 21

6.2.5.7 DTC: U007388..... 25

6.2.5.8 DTC: P3E8049, P3E8149..... 26

6.2.5.9 DTC: P3E841D, P3E8997..... 27

6.2.5.10 DTC: P3E9117, P3E9216..... 30

6.2.5.11 DTC: P3E864B..... 31

6.2.6 Removal and installation 34

6.2.6.1 Removal and installation of HVAC assembly..... 34

6.2.6.2 Removal and installation of condenser assembly..... 36

6.2.6.3 Removal and installation of expansion valve..... 37

6.2.6.4 Removal and installation of evaporator core..... 39

6.2.6.5 Removal and installation of front evaporator pipeline assembly .. 41

6.2.6.6 Removal and installation of compressor suction pipeline assembly 45

6.2.6.7 Removal and installation of compressor discharge pipeline assembly 46

6.2.6.8 Removal and installation of A/C temperature and pressure sensor..... 47

6.2.6.9 Removal and installation of A/C pressure sensor..... 48

6.2.6.10 Removal and installation of front evaporator water drain hose assembly 49

6.2.6.11 Removal and installation of the compressor assembly..... 50

6.2.6.12 Recycling/Filling refrigerant 52

6.2.6.13 A/C system vacuumization 53

6.2.6.14 Recycling/Filling compressor lubricating oil..... 55

6.3 Heating System..... 57

6.3.1 Specification 57

6.3.1.1 Fastener specifications..... 57

6.3.2 System description.....58

6.3.2.1 System description..... 58

6.3.3 Component position.....59

6.3.3.1 Component location diagram.... 59

6.3.4 Electrical schematic diagram.....60

6.3.4.1 Electrical schematic diagram.... 60

6.3.5 Diagnosis information and steps 61

6.3.5.1 Diagnostic instructions 61

6.3.5.2 Visual inspection 61

6.3.5.3 ECU terminals 61

6.3.5.4 Data list..... 62

6.3.5.5 DTC list 63

6.3.5.6 DTC: B111716, B111717..... 64
6.3.5.7 DTC: U007388..... 68
6.3.5.8 DTC: P1A8016, P1A8017..... 69
6.3.5.9 DTC: P1A8972, P1A8973..... 70
6.3.5.10 DTC: P1A8898, P1A8398..... 72
6.3.5.11 DTC: P1A8B19, P1A8C73..... 76
6.3.5.12 DTC: P1A8E01 77
6.3.5.13 DTC: U014087..... 78
6.3.6 Removal and installation 80
6.3.6.1 Removal and installation of heater core assembly 80
6.3.6.2 Removal and installation of PTC heater assembly 81
6.3.6.3 Removal and installation of PTC heater ground wire..... 83
6.3.6.4 Removal and installation of HVAC water pipe assembly 84
6.3.6.5 Removal and installation of water pump inlet hose 85
6.3.6.6 Removal and installation of PTC circulating water pump inlet pipe assembly..... 87
6.3.6.7 Removal and installation of PTC circulating water pump outlet pipe assembly..... 88
6.3.6.8 Removal and installation of water outlet hose I of three-way valve 91
6.3.6.9 Removal and installation of A/C circulating water pump assembly..... 92
6.3.6.10 Removal and installation of solenoid three-way valve inlet hose 93
6.3.6.11 Removal and installation of HVAC circulating three-way coolant valve assembly (warm air) 94
6.3.6.12 Removal and installation of HVAC circulating three-way coolant valve assembly (battery)..... 96
6.3.6.13 Removal and installation of HVAC circulating three-way water valve inlet pipe assembly 97
6.3.6.14 Removal and installation of HVAC circulating three-way water valve outlet pipe No.2 assembly 98

6.4 Ventilation circulation device 100

6.4.1Removal and installation 100
6.4.1.1 Removal and installation of air filter element 100
6.4.1.2 Removal and installation of motor with impeller assembly..... 101
6.4.1.3 Removal and installation of speed regulation module..... 101

6.5 Air vent unit 103

6.5.1 Specification 103
6.5.1.1 Fastener specifications..... 103
6.5.2 Component position.....104
6.5.2.1 Component position..... 104
6.5.3 Exploded view 105
6.5.3.1 Exploded view 105
6.5.4 Removal and installation 107
6.5.4.1 Removal and installation of side air outlet assembly (left)..... 107
6.5.4.2 Removal and installation of side air outlet assembly (right)..... 107
6.5.4.3 Removal and installation of central air vent assembly 108
6.5.4.4 Removal and Installation of rear air-to-face vent assembly..... 109
6.5.4.5 Removal and installation of side defrosting outlet..... 110
6.5.4.6 Removal and installation of front defrosting panel assembly 111
6.5.4.7 Removal and Installation of front left air-to-footwell pipeline assembly 112
6.5.4.8 Removal and Installation of front right air-to-footwell pipeline assembly 112
6.5.4.10 Removal and installation of central

defrosting air duct assembly.. 113

6.5.4.11 Removal and installation of front defrosting air duct assembly.. 114

6.5.4.12 Removal and Installation of front section of rear air-to-footwell pipeline..... 116

6.5.4.14 Removal and installation of rear air-to-face pipeline assembly 1..... 117

6.5.4.15 Removal and installation of rear air-to-face pipeline assembly 2..... 120

6.6 Controller device components 121

6.6.1 Specification.....121

6.6.1.1 Fastener specifications..... 121

6.6.2 System description.....122

6.6.2.1 System description 122

6.6.3 Electrical schematic diagram...124

6.6.3.1 Electrical schematic diagram.. 124

6.6.4 Removal and installation.....125

6.6.4.1 Removal and installation of A/C control panel assembly..... 125

6.6.4.2 Removal and installation of room temperature sensor..... 126

6.6.4.3 Removal and installation of evaporator temperature sensor..... 126

6.6.4.4 Removal and installation of internal/external circulation actuator..... 129

6.6.4.5 Removal and installation of mode actuator..... 131

6.6.4.6 Removal and installation of temperature actuator..... 133

6.6.4.7 Removal and installation of ambient temperature sensor... 134

6.6.4.8 Removal and installation of PM2.5 sensor body assembly..... 135

6.6.4.9 Removal and installation of anion generator assembly..... 136

6.1 Warnings and notes

6.1.1 Warnings and notes

6.1.1.1 Warnings and notes

Warning!

Perform refrigerant related operations in a well-ventilated environment in order not to inhale refrigerant vapors. Avoid inhaling A/C refrigerant R134a and lubricating oil vapor or mist. The eyes, nose and pharyngeal will be irritated if getting in touch with them. Use a certified servicing device meeting relevant requirements (R134a recycling device) to recycle the A/C refrigerant R134a from the A/C system. In case of accidental discharge of the system, the working areas must be ventilated before continuing maintenance.

Warning!

Disconnect the battery negative terminal before servicing any electric system. It is prohibited to carry out welding or steam cleaning operations at or near the parts equipped with A/C pipelines.

Notes for A/C refrigerant

Warning!

1. Contact between A/C refrigerant and skin may cause frostbite.
2. Wear proper goggles and protective gloves in operation.

Operations to be avoided for A/C refrigerant

Warning!

1. Do not store the refrigerant in a place exposed to sunlight or with heat source.
2. Do not place the refrigerant cylinder upright, but keep the valve downward during filling.
3. Do not expose refrigerant cylinder to sunlight.
4. Do not allow the refrigerant cylinder to fall off.
5. Do not directly discharge the refrigerant into the atmosphere under any circumstance.
6. Do not mix such refrigerants as R134a (tetrafluoroethane) and R12 (difluoromethylene chloride).

Notes for compressor lubricating oil

Warning!

The compressor lubricating oil of type and grade specified by the compressor manufacturer must be used. Compressor lubricating oil of different types and grades shall never be mixed. Otherwise, the compressor will be damaged. Minimize the exposure of compressor lubricating oil to air because the compressor lubricant can easily absorb water.

Warning!

Never clean the A/C system with water, corrosive solvent or flammable and explosive solvent.

6.2 Cooling system

6.2.1 Specification

6.2.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
HVAC assembly and steering support member assembly	Cross recessed hexagon head flange bolt	8±1
HVAC assembly and A/C mounting bracket	Hexagon nut and conical spring washer cluster M6	6±1
HVAC assembly and front wall reinforcement plate upper panel	Hexagon head bolt c/w big washer cluster M6×25	6±1
Condenser and radiator tank assembly	Hexagon head flange bolt M6×16	6±1
Compressor suction pipe assembly and front evaporator pipeline assembly	Cross recessed hexagon flange screw M6×25	8±1
Compressor outlet hose and condenser	Cross recessed hexagon flange screw M6×25	8±1
Front evaporator pipeline assembly and condenser assembly	Cross recessed hexagon flange screw M6×25	8±1
Front evaporator pipeline assembly and power suspension assembly (right)	Cross recessed hexagon flange screw M6×25	8±1
Front evaporator pipeline assembly and front wheel guard middle section reinforcement component (right)	Cross recessed hexagon flange screw M6×25	8±1
Front evaporator pipeline assembly and HVAC assembly	Cross recessed hexagon flange screw M6×20	8±1
Connection of compressor and engine	Hexagon head flange bolt M8×70	25±2

6.2.2 System description

6.2.2.1 Overview

General instructions of A/C system

– The HVAC refrigeration system is the device used for cooling, heating and ventilating the air inside the compartment. It provides driver and passengers with comfortable environment, reduces the fatigue of the driver and improves the driving safety.

System composition

– The A/C system is generally composed of A/C compressor, condenser, evaporator, expansion valve, drying fluid reservoir, front evaporator pipeline assembly, radiator fan motor assembly and A/C controller (integrated body domain controller).

Ventilation function of the A/C system

– Ventilation means drawing a certain amount of fresh air from outside of the car, and exhausting the vitiated air inside the car, so as to keep the air in the car fresh and prevent the windshield from misting.

Dehumidification function of the A/C system

– Liquefy the vapor in the air inside the car to condensed water and exhaust it to the exterior, thereby to reduce the relative humidity in the car. When the refrigerant in the A/C evaporator evaporates, it will absorb a large amount of heat, which will greatly reduce the surface temperature of the evaporator. At the lower temperature, the water vapor in the air inside the vehicle is condensed and forms liquid water. This condensed water will flow to the drain pan and be discharged out of the vehicle through the water drain hose. This is the operating principle of A/C to dehumidify.

Instructions for using R134a refrigerant

– R134a refrigerant, with a standard steam temperature of -26.5°C, is widely used in the A/C systems of modern cars. It is colorless, odorless and non-flammable, and has excellent safety, low toxicity and stable chemical property.

– It is characterized by large latent heat and heat capacity, good refrigerating capacity, high conductivity and good heat conduction performance, low viscosity and good fluidity, and no damage to the ozone layer.

– R134a also features low corrosion to metal, high stability, insolubility in water; low condensation point, applicability for low temperature operation. In addition, it is easy to detect in case of leakage.

– Before opening the refrigerant circulating system, use special appliance to recycle the refrigerant.

Use the A/C refrigerant properly and take protective measures to avoid any harm to the human body:

– Refrigerant does not contain oxygen and has a high density. When released in a limited space, it will fill the narrow space and dissipate the oxygen, resulting in space hypoxia. Please try to avoid such a case.

– Refrigerant is neither combustible nor explosive, but it will generate harmful gases when contacting open flames. So it is necessary to avoid open flames.

– Refrigerant evaporates abruptly under the atmosphere. When the liquid sticks to the skin, it will absorb a lot of heat from the skin then evaporate, resulting in freezing injury. Please try to prevent it from contacting with your skin.

– Reserve certain space for expansion when the container is filled with refrigerant, so as to prevent explosion caused by excessive internal pressure.

Instructions for using compressor lubricating oil

– Compressor lubricant is specially designed for the A/C compressor. It can ensure the smooth and reliable operation of the compressor and extend the service life of the compressor. It is used to lubricate, seal, cool and denoise the compressor of the A/C refrigeration system.

Notes for compressor lubricating oil:

– Be sure to strictly use the compressor lubricating oil grade specified for the original vehicle A/C compressor. It is forbidden to use compressor lubricant of different models and brands.

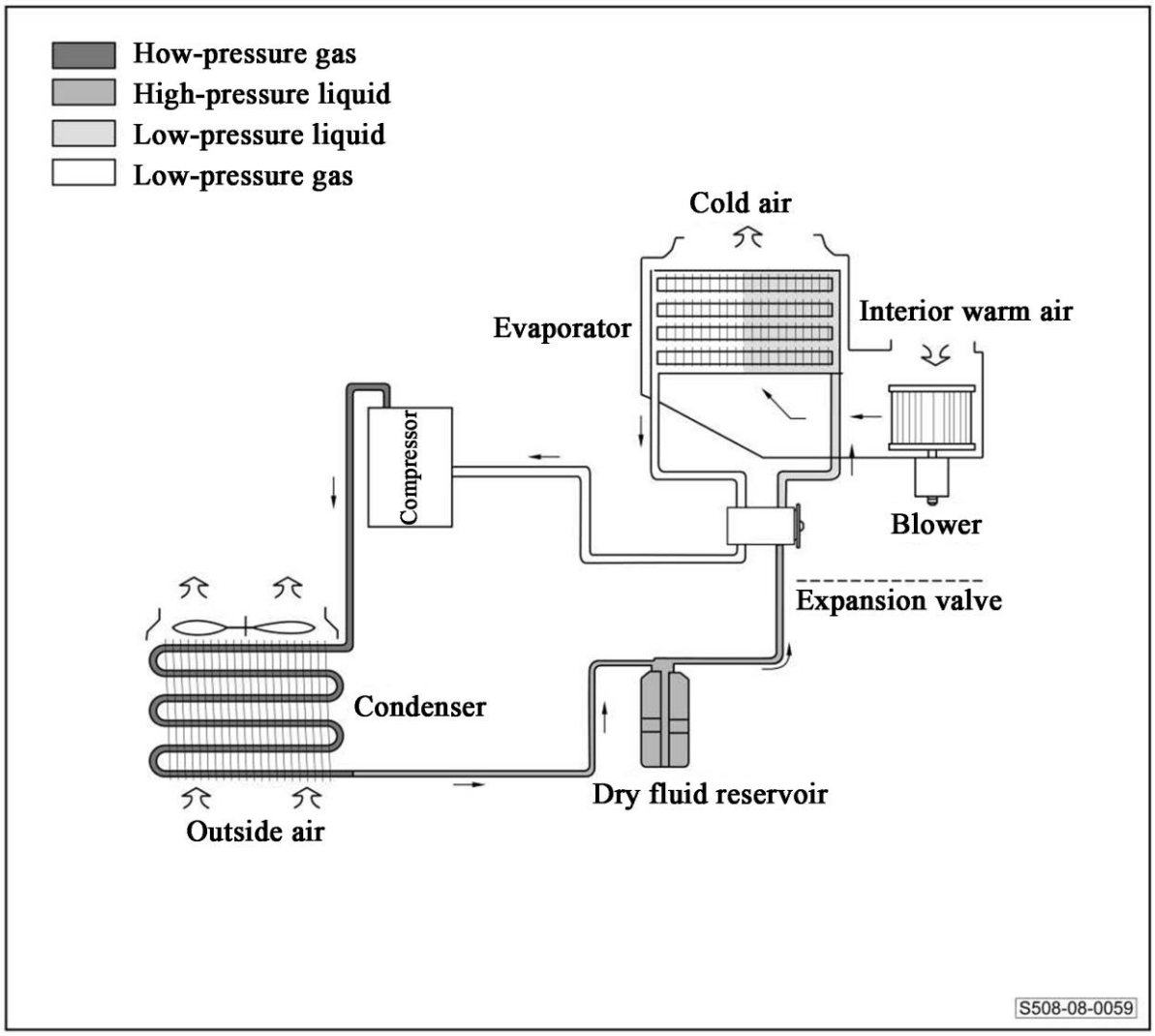
– Compressor lubricating oil can easily absorb water, so operate quickly when refilling or replacing, and seal the lubricant tank lid immediately after refilling to avoid any leakage.

– Do not use degenerative compressor lubricant.

– Only add to the specified amount and take care not to fill excessively, so as not to reduce the refrigeration effect.

– Operate slowly when discharging the refrigerant to avoid discharging the compressor lubricant together with the refrigerant.

6.2.2.2 Description of working principle of A/C cooling system



– During refrigeration process, the compressor takes in the low-pressure and low-temperature gaseous refrigerant from the evaporator. After compression, the refrigerant's temperature and pressure get higher. Then the refrigerant is fed into the condenser. In the condenser, the high-temperature high-pressure gaseous refrigerant is cooled by the condenser, and then becomes high-temperature high-pressure liquid refrigerant after liquefaction through condenser cooling.

– The high-temperature, high-pressure liquid refrigerant goes through the reservoir drier and high pressure pipes to flow rapidly into the expansion valve where it is throttled by the throttle expansion valve and turned into the gas-mist state. After rapidly cooling and depressurization, it is then fed into the evaporator via a distributor.

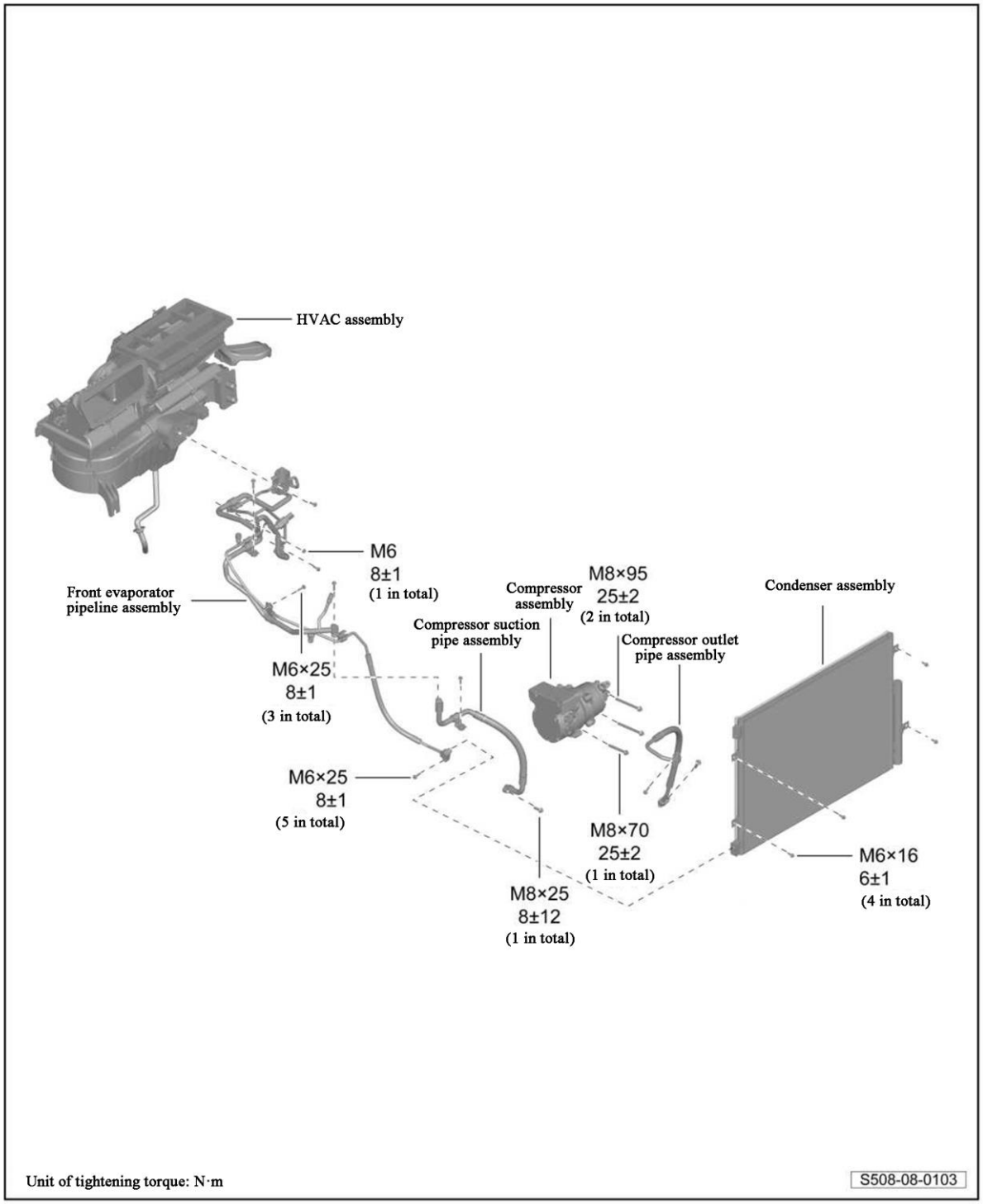
– In the evaporator, the blower draws the in-car air to the surface of the evaporator. The air exchanges heat with the low-temperature and low-pressure gas-mist refrigerant through the evaporator cooling fins. The refrigerant absorbs the heat inside the car, turns the low-temperature low-pressure gas-mist refrigerant into low-temperature low-pressure gaseous refrigerant, and is then fed into the compressor low pressure end via pipes for the next cycle.

– After the heat exchange, the generated cool air is sent into car through the blower, reducing the in-car temperature.

6.2.3 Exploded view

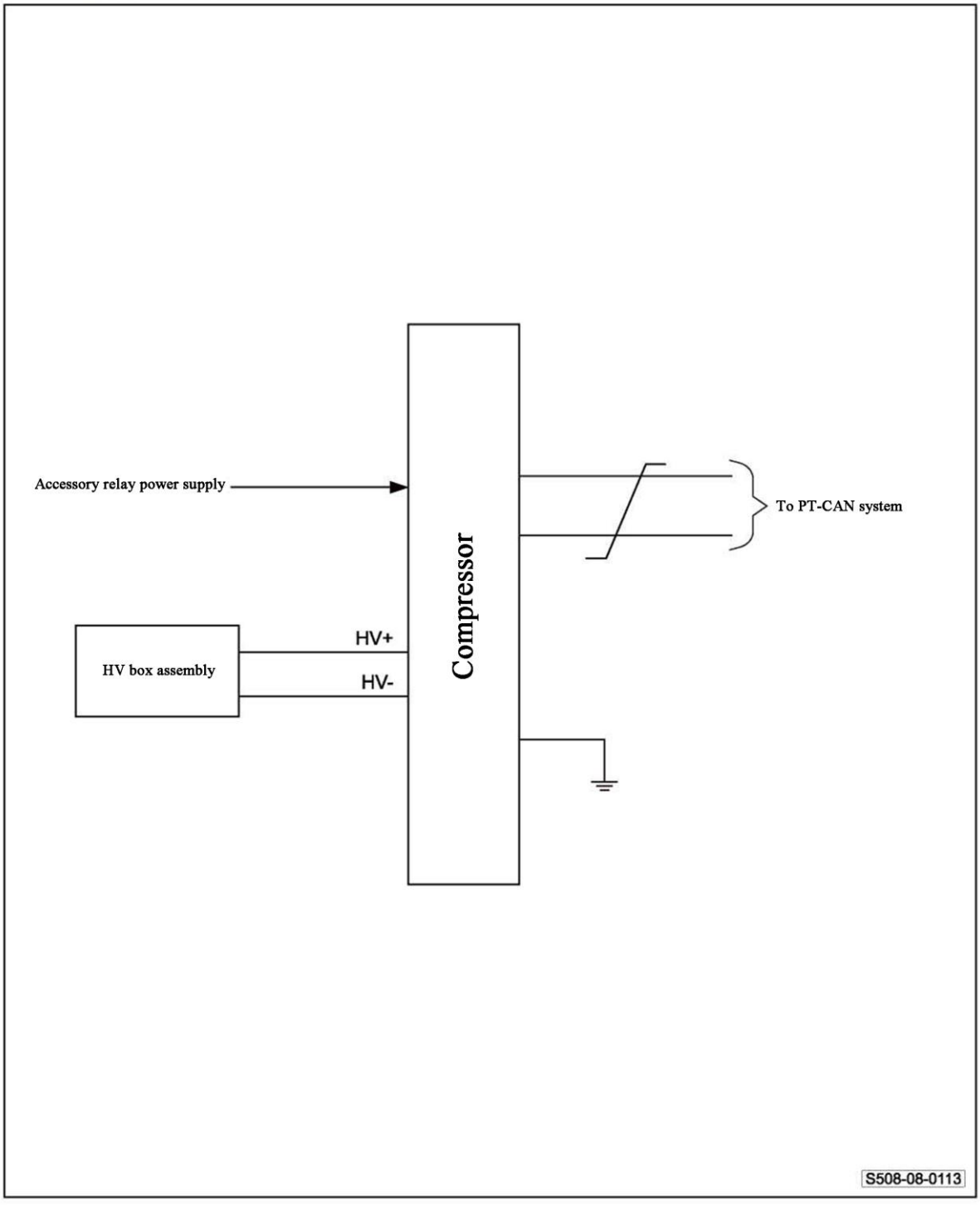
6.2.3.1 Exploded view

Exploded view of cooling system



6.2.4 Electrical schematic diagram

6.2.4.1 Electrical schematic diagram



6.2.5 Diagnosis information and steps

6.2.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the CCU with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

6.2.5.2 Visual inspection

- Confirmation of fault symptom

The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then simulate the same or similar conditions and environment as when the customer's vehicle fails.

No matter how experienced and skilled the maintenance personnel are, if troubleshooting is done without confirming the symptoms of the fault

something important in repair will be ignored and false guesses will be made in some places. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

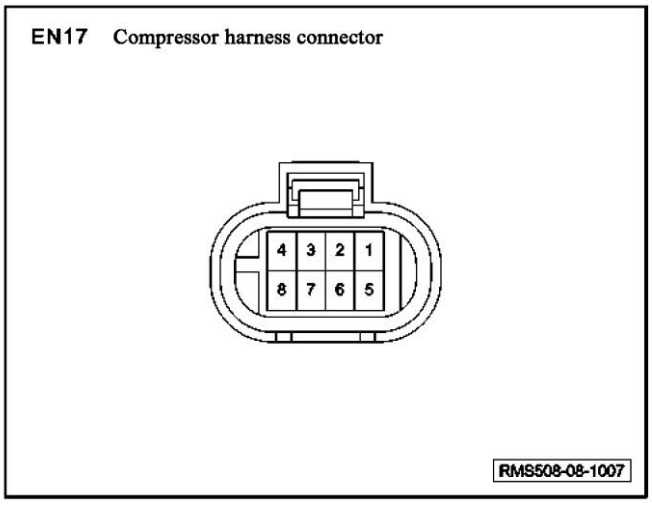
A Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

B Gently shake the connector in the vertical and horizontal directions.

C Gently shake the harness in the vertical and horizontal directions.

6.2.5.3 ECU terminals

Compressor harness connector (EN17)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
2	0.35/pink-white	PT CAN-H	—	—
3	0.35/pink	PT CAN-L	—	—
4	0.35/gray-	Power supply	Put the start switch to	Battery voltage

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
	white		"ON" position	
8	0.35/black	Ground	—	0V

6.2.5.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
CF03	Mileage at time of fault	Odometer	0	1677721.4	km
CF05	Time of fault (year)	Year	2000	2059	/
	Time of fault (month)	Month	0	12	/
	Time of fault (day)	Day	0	31	/

6.2.5.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
B111716	Battery voltage is too low	-	-	-
B111717	Battery voltage is too high	-	-	-
U007388	PT CAN network BUS OFF fault	Compressor shutdown after 10s of continuous busoff	1. CAN bus has physical fault 2. Bus is interfered 3. Internal fault of control unit	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
U010687	Loss of communication with HMC (0x36D) compressor control message	Compressor shutdown when no compressor controller node message is received	1. HCM controller fails to send the message 2. CAN bus has	1. Open circuit of CAN bus 2. CAN bus is short-circuited to the ground

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
		for consecutive10s	physical fault 3. Bus is interfered 4. Internal fault of control unit	or power supply 3. Short circuit of CAN bus high and low wires 4. CAN bus is interfered by wireless signal 5. Power supply fault, grounding fault, controller fault
P3E8049	Fault in sampling circuit	Compressor shutdown after DTC fault, no ECU function degradation measures	Compressor internal fault	1. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 2. If the compressor still generates the DTC, repeat the above steps for more than 3 times and record the data as well as the phenomena of the whole process.
P3E8149	Motor phase loss	Compressor shutdown after DTC fault, no ECU function degradation measures	Compressor internal fault	1. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 2. If the compressor still generates the DTC, repeat the above steps for more than 3 times and record the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				data as well as the phenomena of the whole process.
P3E8249	IPM/IGBT fault	Compressor shutdown after DTC fault, no ECU function degradation measures	Compressor internal fault	1. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 2. If the compressor still generates the DTC, repeat the above steps for more than 3 times and record the data as well as the phenomena of the whole process.
P3E8349	Interior temperature sensor fault	Compressor shutdown after DTC fault, no ECU function degradation measures	Compressor internal fault	1. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 2. If the compressor still generates the DTC, repeat the above steps for more than 3 times and record the data as well as the phenomena of the whole process.
P3E841D	Overcurrent due to overload	Compressor shutdown after DTC fault, no ECU function degradation	1. The A/C system pressure is too high due to abnormal A/C system; A: the	1. Confirm whether the A/C system is normal, whether there are abnormal noises when the compressor

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
		measures	electronic condenser fan does not work; B: the pressure heat dissipation effect of the A/C condenser is poor; C: there is blockage abnormality in the A/C system; D: other possible causes that may lead to abnormal A/C system pressure, and it is necessary to check the system pressure of the complete vehicle 2. The compressor structure is damaged and stuck 3. Compressor internal fault	starts and runs, whether the electronic condenser fan works normally, whether the suction and exhaust pressure of the compressor works normally, and whether the amount of refrigerant in the system is normal. If all the above are normal, then go to Step 2 for troubleshooting 2. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 3. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the whole process.
P3E8573	Fail to start	Compressor shutdown after DTC fault, no ECU function degradation measures	1. The compressor starting pressure is too high due to abnormal A/C system; A: the electronic condenser fan does not work; B: the pressure heat dissipation effect of the A/C condenser is poor; C: there is blockage abnormality in the A/C system;	1. Confirm whether the A/C system is normal, whether there are abnormal noises when the compressor starts and runs, whether the electronic condenser fan works normally, whether the suction and exhaust pressure of the compressor works normally, and whether the amount of refrigerant in the system is normal. If all the above are normal,

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
			D: other possible causes that may lead to abnormal A/C system pressure, and it is necessary to check the system pressure of the complete vehicle 2. The compressor structure is damaged and stuck 3. Compressor internal fault	then go to Step 2 for troubleshooting 2. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 3. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the whole process.
P3E864B	Temperature abnormality	Compressor shutdown after DTC fault, no ECU function degradation measures	1. Whether there are abnormal noises when the compressor starts and runs 2. Check whether the electronic fan and the condenser fan work normally. 3. Check whether the suction/discharge pressure of the compressor is normal.	1. Confirm whether the A/C system is normal, whether there are abnormal noises when the compressor starts and runs, whether the electronic condenser fan works normally, whether the suction and exhaust pressure of the compressor works normally, and whether the amount of refrigerant in the system is normal. If all the above are normal, then go to Step 2 for troubleshooting 2. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 3. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the whole process.
P3E8774	Abnormal Speed	Compressor shutdown after DTC fault, no ECU function degradation measures	1. The compressor is out of synchronization during operation. 2. Out-of-synchronization due to excessive load	1. Confirm whether the A/C system is normal, whether there are abnormal noises when the compressor starts and runs, whether the electronic condenser fan works normally, whether the suction and exhaust pressure of the compressor works normally, and whether the amount of refrigerant in the system is normal. If all the above are normal, then go to Step 2 for troubleshooting 2. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 3. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				whole process.
P3E8997	Overload	Compressor shutdown after DTC fault, no ECU function degradation measures	1. The load is too high, and the compressor consumes too much power. 2. The load is too high and the phase current of compressor is too high 3. Compressor internal fault	1. Confirm whether the A/C system is normal, whether there are abnormal noises when the compressor starts and runs, whether the electronic condenser fan works normally, whether the suction and exhaust pressure of the compressor works normally, and whether the amount of refrigerant in the system is normal. If all the above are normal, then go to Step 2 for troubleshooting 2. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 3. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the whole process.
P3E901C	Abnormal power supply at LV side	Compressor shutdown after DTC fault, no ECU function degradation measures	Compressor internal fault	1. Confirm whether the 12V power supply, low voltage wiring harness and connectors of the complete vehicle are normal. If all above are normal, then go to Step 2 for troubleshooting 2. Clear DTC –>

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
				Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 3. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the whole process.
P3E9117	Load overvoltage	Compressor shutdown after DTC fault, no ECU function degradation measures	1. The high voltage of the complete vehicle is too high 2. Compressor internal fault	1. Check the compressor high pressure connector 2. Check the high voltage of the complete vehicle. If all are normal, then skip to Step 3. 3. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 4. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the whole process.

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
P3E9216	Load undervoltage	Compressor shutdown after DTC fault, no ECU function degradation measures	1. Compressor high-voltage wiring harness or connector fails 2. The high voltage of the complete vehicle is too high low 3. Compressor internal fault	1. Check the compressor high pressure connector 2. Check the high voltage of the complete vehicle. If all are normal, then skip to Step 3. 3. Clear DTC –> Power off the complete vehicle –> Disconnect the low voltage connector of compressor for more than 10s –> Connect it to the low voltage connector again –> Power on the complete vehicle –> Turn on A/C –> Confirm whether the compressor can work properly 4. If the compressor still generates the DTC, repeat step 2 above for more than 3 times and record the data as well as the phenomena of the whole process.

6.2.5.6 DTC: B111717, B111716

DTC	DTC definition
B111716	Battery voltage is too low
B111717	Battery voltage is too high

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: 11~14V

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the compressor fuse LF07.

A Check whether the fuse LF07 is blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuit of fuse LF07.

A Check whether the circuit of fuse LF07 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

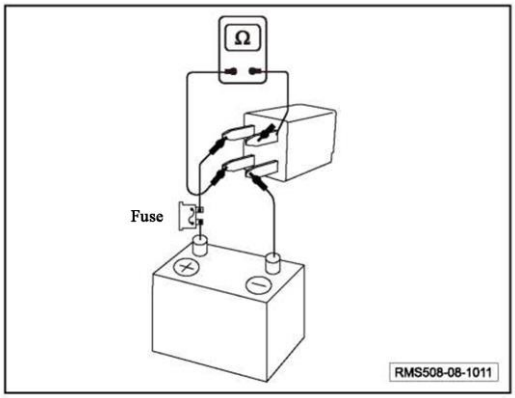
Rated value of fuse: LF07 15 A

	D	Confirm whether the compressor works normally.

Yes → The system works normally.

No

Step 5	Check the accessory relay.



A Turn the start switch to "OFF" position.

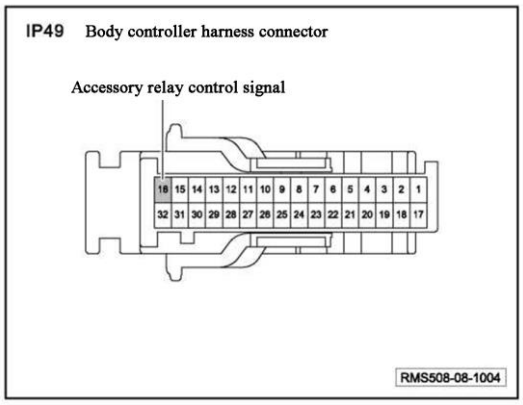
B Remove the accessory relay LRP04.

C Connect one end of the accessory relay coil to the battery positive terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the accessory relay.

Yes

Step 6	Check whether the accessory relay control circuit is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP49.

C Remove the accessory relay LRP04.

D Measure the resistance between terminal 16 of the body controller harness connector IP49 and slot 86 of the accessory relay LRP04.

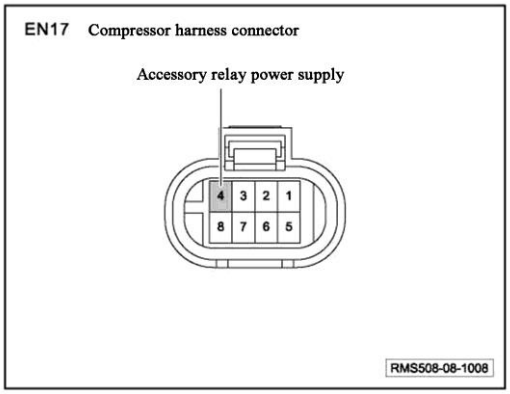
Standard resistance value: <1Ω

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check the compressor power circuit.



A Turn the start switch to "OFF" position.

B Disconnect the compressor harness connector EN17.

C Put the Start switch to "ON" position to start A/C refrigeration.

D Measure the voltage between terminal 4 of the compressor harness connector EN17 and the body ground.

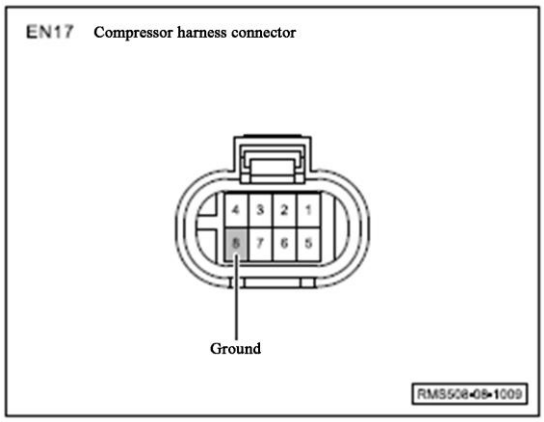
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No — Repair or replace the harness.

Yes

Step 8	Check the ground circuit of the compressor.



A Turn the start switch to "OFF" position.

B Disconnect the compressor harness connector EN17.

C Measure the resistance between terminal 8 of the compressor harness connector EN17 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 9	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes — The system works normally.

Next

Step 10	The diagnosis is over.

6.2.5.7 DTC: U007388

DTC	DTC definition
U007388	PT CAN network BUS OFF fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

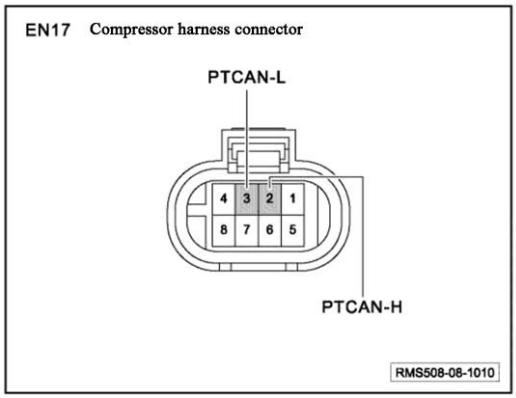
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the PTCAN data communication wire.



A Turn the start switch to "OFF" position.

B Disconnect the compressor harness connector EN17.

C Measure the resistance between terminals 2 and 3 of the compressor harness connector EN17.

Standard resistance value: about 120Ω

D Confirm if the resistance conforms to the standard value

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No — Repair or replace the harness.

Yes

Step 4	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

6.2.5.8 DTC: P3E8049, P3E8149.....

DTC	DTC definition
P3E8049	Fault in sampling circuit
P3E8149	Motor phase loss
P3E8249	IPM/IGBT fault
P3E8349	Interior temperature sensor fault
P3E901C	Abnormal power supply at LV side
U010687	Loss of communication with HMC (0x36D) compressor control message

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No → Repair or replace the harness.

Yes

Step 3	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes The system works normally.

Next

Step 4 The diagnosis is over.

6.2.5.9 DTC: P3E841D, P3E8997.....

DTC	DTC definition
P3E841D	Overcurrent due to overload
P3E8997	Overload
P3E8774	Abnormal Speed
P3E8573	Fail to start

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the radiator fan

A Check whether the radiator fan works normally.

No Repair the circuit and replace the radiator fan.

Yes

Step 3	Check the A/C system pressure.

A Turn the start switch to "OFF" position.

B Connect the A/C pressure gauge to the A/C refrigeration pipeline, the red connector is connected to the A/C system high-pressure maintenance interface and the blue connector is connected to the A/C system low-pressure maintenance interface.

C Power up the complete vehicle, turn on A/C and adjust the interior temperature to the minimum.

D Measure the A/C system pressure.

Standard value of system low pressure: 1.0bar–2.5bar

Standard value of system high pressure: 15bar–18bar

E Check whether the A/C system pressure is too high.

Yes → Recycle the refrigerant and refill it.

No

Step 4	Check the condenser.

A Check whether the condenser is dirty or clogging.

B Check whether the condenser connecting pipeline is flattened.

Yes → Clean or replace the condenser or relevant pipelines.

No

Step 5	Check the expansion valve.

A Check the expansion valve for blockage or failure.

B Check whether the expansion valve is frozen.

Yes → Replace the expansion valve or refill refrigerant.

No

Step 6	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No → Repair or replace the harness.

Yes

Step 7	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

6.2.5.10 DTC: P3E9117, P3E9216

DTC	DTC definition
P3E9117	Load overvoltage
P3E9216	Load undervoltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the high-voltage line of the compressor.

A Check whether the high-voltage circuit of compressor is normal.

No → Repair or replace the A/C high voltage harness assembly.

Yes

Step 3	Check the low-voltage power supply grounding wire of the compressor.

A Check whether the power supply ground wire of the compressor is OK.

No → Repair or replace the harness.

Yes

Step 4	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

6.2.5.11 DTC: P3E864B

DTC	DTC definition
P3E864B	Temperature abnormality

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the radiator fan.

A Check whether the radiator fan works normally.

No → Repair the circuit and replace the radiator fan.

Yes

Step 3	Check the A/C system pressure.

A Turn the start switch to "OFF" position.

B Connect the A/C pressure gauge to the A/C refrigeration pipeline, the red connector is connected to the A/C system high-pressure maintenance interface and the blue connector is connected to the A/C system low-pressure maintenance interface.

C Power up the complete vehicle, turn on A/C and adjust the interior temperature to the minimum.

D Measure the A/C system pressure.

Standard value of system low pressure: 1.0bar–2.5bar

Standard value of system high pressure: 15bar–18bar

E Check whether the A/C system pressure is too high.

Yes → Recycle the refrigerant and refill it.

No

Step 4	Check the condenser.

A Check whether the condenser is dirty or clogging.

B Check whether the condenser connecting pipeline is flattened.

Yes → Clean or replace the condenser or relevant pipelines.

No

Step 5	Check the expansion valve.

A Check the expansion valve for blockage or failure.

B Check whether the expansion valve is frozen.

Yes → Replace the expansion valve or refill refrigerant.

No

Step 6	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No → Repair or replace the harness.

Yes

Step 7	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

6.2.6 Removal and installation

6.2.6.1 Removal and installation of HVAC assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Recycle refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

4 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

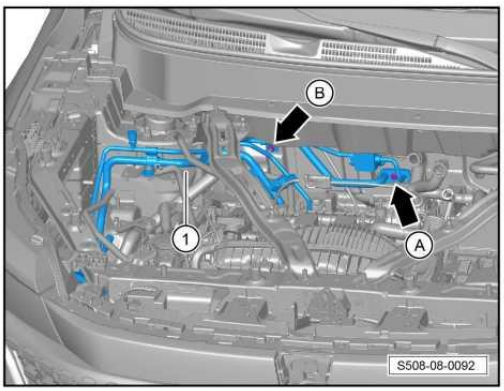
5 Remove the steering support structure component assembly. Refer to 9.8.3.16 Removal and installation of steering support structure

6 Remove the HVAC water pipe assembly. Refer to 6.3.6.4 Removal and installation of HVAC water pipe assembly.

7 Remove the rear air-to-face pipeline assembly 1. Refer to 6.5.4.14 Removal and installation of rear air-to-face pipeline assembly 1

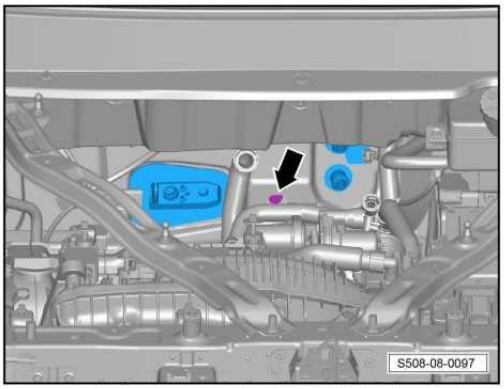
8 Remove the front section of rear air-to-footwell pipeline. Refer to 6.5.4.12 Removal and installation of front section of rear air-to-footwell pipeline

9 Remove the HVAC assembly



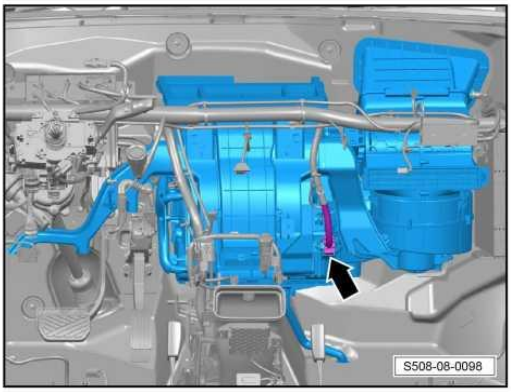
a. Unscrew the fixing bolts-arrow A-, and nuts-B-, and disconnect the front evaporator pipe assembly ① from the HVAC assembly.

- Tightening torque of bolt (see arrow A): 8±1 N·m
- Tightening torque of nut (see arrow B): 8±1 N·m

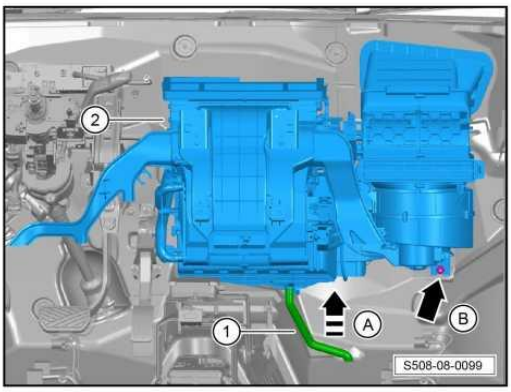


b. Unscrew the fixing bolt (see the arrow) of HVAC assembly.

- Tightening torque of bolt: 6±1 N·m



c. Disconnect the HVAC assembly harness connector (see the arrow).



d. Disengage the HVAC assembly water drain hosed assembly ① from the body along in the direction of -arrow A-.

e. -Unscrew the fixing bolts (see the arrows) and remove the HVAC assembly ②.

• Tightening torque of nut (see arrow B): 6±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Pay attention to the installation position. The installation positions of HVAC water inlet and outlet pipes cannot be interchanged.

– Fill and add the coolant. Refer to 1.4.3.40 Replacing of Engine coolant

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

6.2.6.2 Removal and installation of condenser assembly

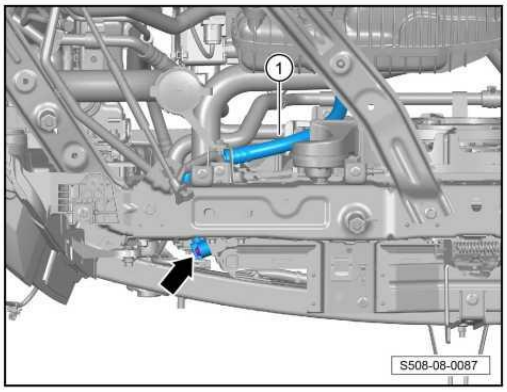
Disassembly procedures

1 Remove the oil cooler assembly. Refer to 4.2.8.3 Removal and installation of oil cooler assembly

2 Remove the low temperature radiator. Refer to 5.7.5.2 Removal and installation of low temperature radiator

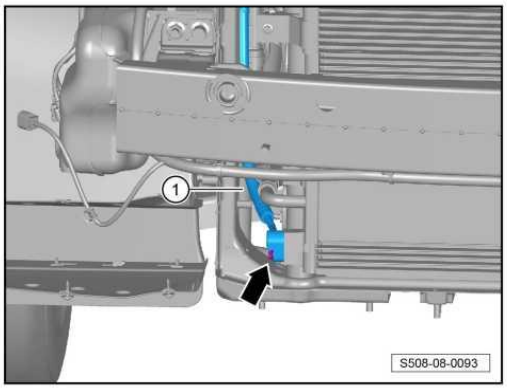
3 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

4 Remove the condenser assembly



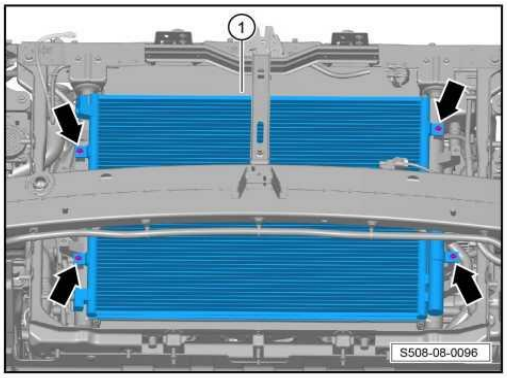
a. Unscrew the fixing bolt (see arrow) and disengage the compressor discharge pipeline assembly ① from the condenser assembly.

- Tightening torque of bolt: 8±1 N·m



b. Unscrew the fixing bolt (see arrow) and disengage the front evaporator pipeline assembly ① from the condenser assembly.

- Tightening torque of bolt: 8±1 N·m



c. Unscrew the fixing bolts (see arrow) and remove the condenser assembly ①.

- Tightening torque of bolt: 6±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

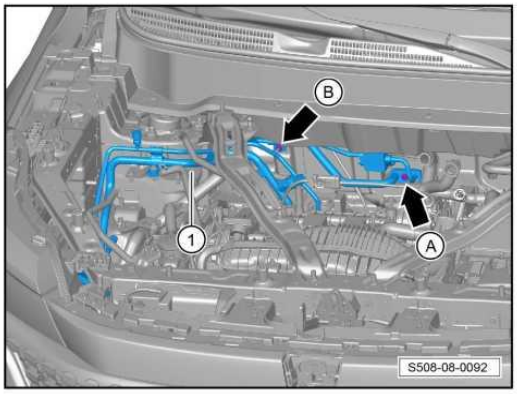
6.2.6.3 Removal and installation of expansion valve

Disassembly procedures

1 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

2 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

3 Remove the HVAC water pipe assembly. Refer to 6.3.6.4 Removal and installation of HVAC water pipe assembly.

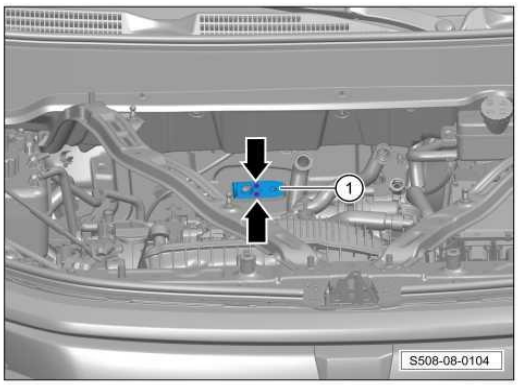


4 Remove the expansion valve

a. Unscrew the fixing bolt-arrow A-, and nut-arrow B-, and disengage the front evaporator pipeline assembly ① from the expansion valve.

• Tightening torque of bolt (see arrow A): 8±1 N·m

• Tightening torque of nut (see arrow B): 8±1 N·m



b. Unscrew the fixing bolts (see arrow) and remove the expansion valve ①.

• Tightening torque of bolt: 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

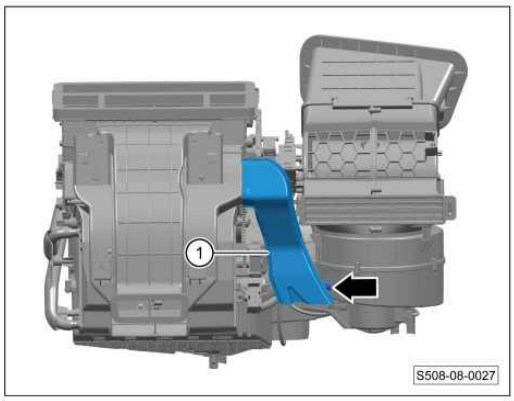
– Add coolant to the engine cooling system. Refer to 1.4.3.40 Replacement of Engine Coolant

6.2.6.4 Removal and installation of evaporator core

Disassembly procedures

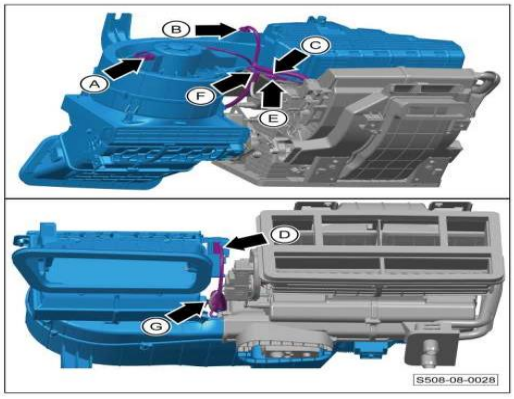
1 Remove the HVAC assembly. Refer to 6.2.6.1 Removal and installation of HVAC assembly

2 Remove the expansion valve. Refer to 6.2.6.3 Removal and installation of expansion valve



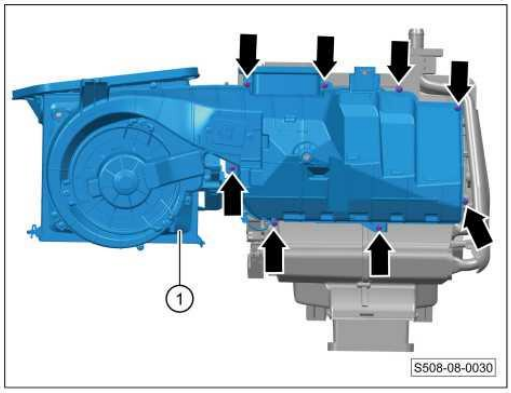
3 Remove the evaporator core

a. Unscrew the fixing screw (see arrow) and remove the front right air-to-footwell pipeline component ①.

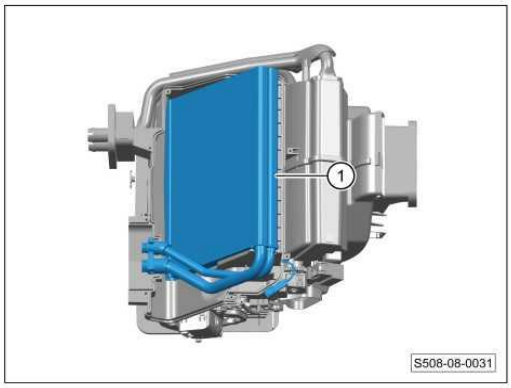


b. Disconnect the A/C harness connectors (see arrows A, B, C and D).

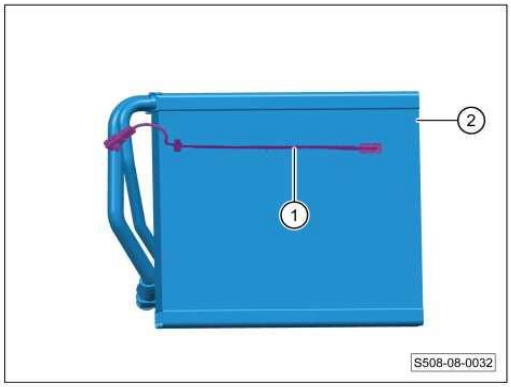
c. Disconnect the fixing clips (see arrows E, F and G) of harness.



d. Unscrew the fixing screws (see arrow) of the lower housing and remove the lower housing assembly ①.



e. Take out the evaporator core assembly ① with accessories.



f. Separate the evaporator temperature sensor ① from the evaporator core ② and take out the evaporator core ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

6.2.6.5 Removal and installation of front evaporator pipeline assembly

Disassembly procedures

1 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

2 Remove the water reservoir assembly. Refer to 2.9.7.2 Removal and installation of water reservoir assembly

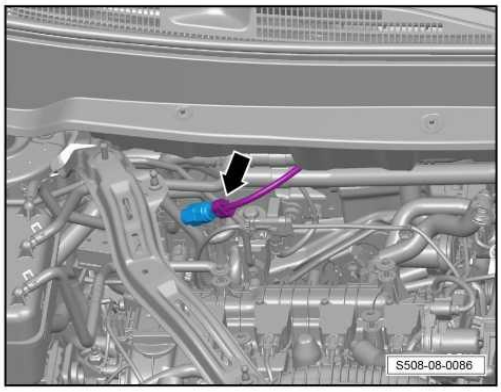
3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 Remove the HVAC water pipe assembly. Refer to 6.3.6.4 Removal and installation of HVAC water pipe assembly.

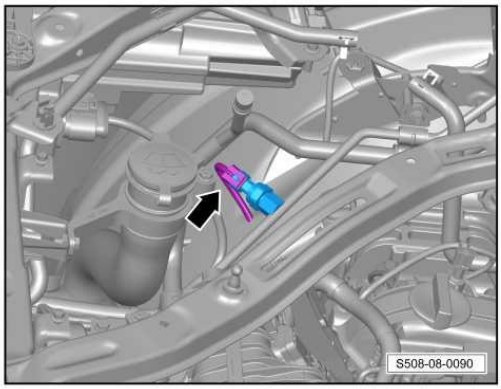
5 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

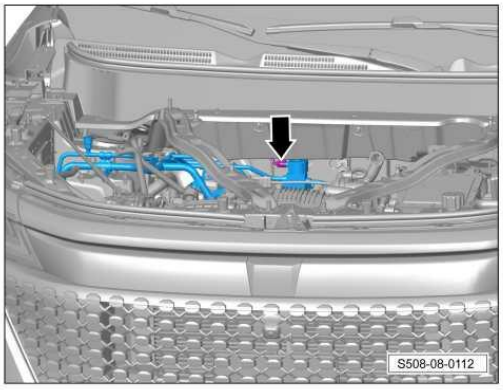
6 Remove the front evaporator pipeline assembly

a. Disconnect the connector (see the arrow) of A/C temperature and pressure sensor.

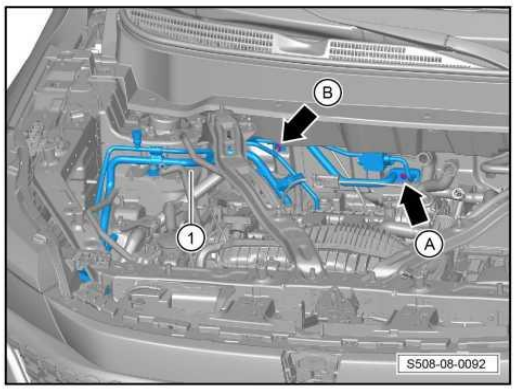


b. Disconnect the connector (see the arrow) of the A/C pressure sensor.



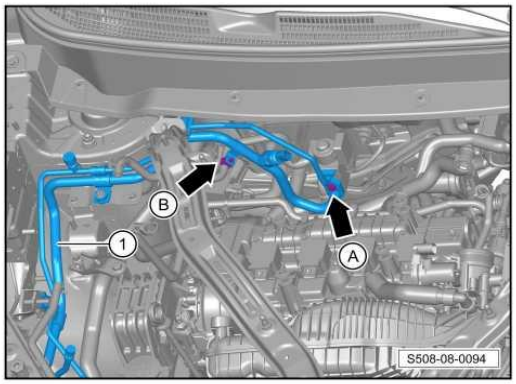


c. Disconnect the connector (see the arrow) of A/C pipeline refrigerant stop valve.



d. Unscrew the fixing bolt-arrow A-, and nut-arrow B-, and disengage the front evaporator pipeline assembly ① from the expansion valve.

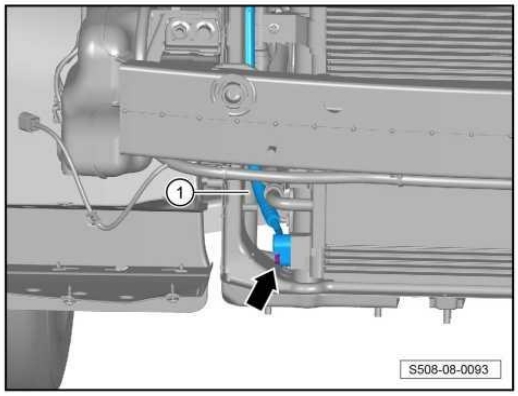
- Tightening torque of bolt (see arrow A): 8±1 N·m
- Tightening torque of nut (see arrow B): 8±1 N·m



e. Unscrew the fixing bolt (see arrow A) of front evaporator pipeline assembly.

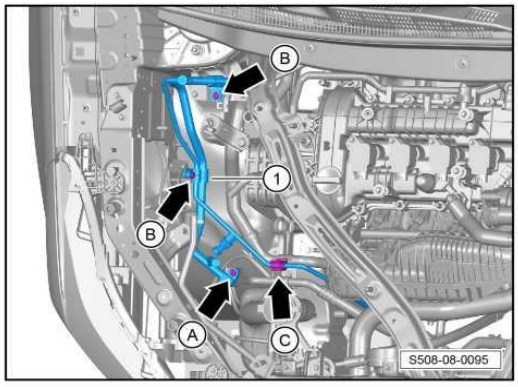
f. Disengage the fixing clips (see arrow B) and disengage the front evaporator pipe assembly ① from the battery compensation reservoir inflow hose.

- Tightening torque of bolt (see arrow A): 8±1 N·m



g. Unscrew the fixing bolt (see arrow) and disengage the front evaporator pipeline assembly ① from the condenser assembly.

- Tightening torque of bolt: 8±1 N·m



h. Unscrew the fixing bolt (see arrow A) and disengage the front evaporator pipeline assembly ① from the condenser suction pipeline assembly.

i. Unscrew the fixing bolt (see arrow B) of front evaporator pipeline assembly.

j. Unscrew the fixing bolt (see arrow C) and remove the front evaporator pipeline assembly ①.

- Tightening torque of bolt (see arrow A): 8±1 N·m
- Tightening torque of bolt (see arrow B): 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

– Add coolant to the engine cooling system. Refer to 1.4.3.40 Replacement of Engine Coolant

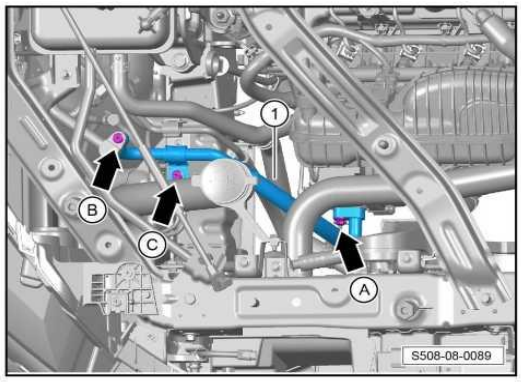
6.2.6.6 Removal and installation of compressor suction pipeline assembly

Disassembly procedures

1 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

2 Remove the air filter assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly.

3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Remove the compressor suction pipeline

a. Unscrew the fixing bolt (see arrow A), and disengage the compressor suction pipe assembly ① from the compressor assembly.

b. Unscrew the fixing bolt (see arrow B) and disengage the compressor suction pipeline assembly ① from the front evaporator pipeline assembly.

c. Unscrew the fixing bolt (see arrow C) and remove the compressor suction pipeline assembly ①.

- Tightening torque of bolt (see arrow A): 8±1 N·m
- Tightening torque of bolt (see arrow B): 8±1 N·m
- Tightening torque of bolt (see arrow C): 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

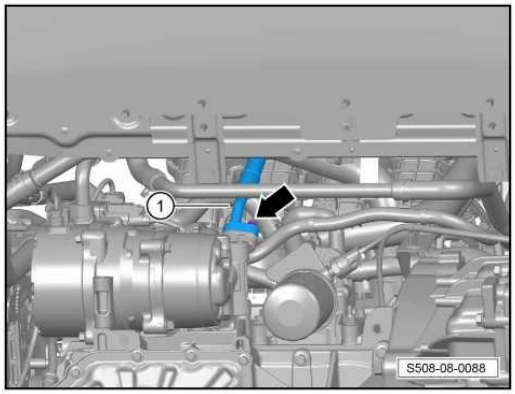
6.2.6.7 Removal and installation of compressor discharge pipeline assembly

Disassembly procedures

1 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

2 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

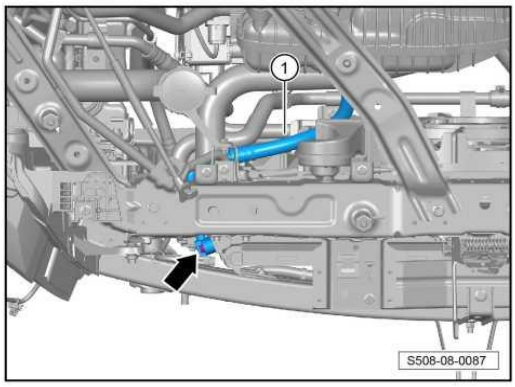
3 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard



4 Remove the compressor discharge pipeline assembly

a. Unscrew the fixing bolt (see the arrow) and disengage the compressor discharge pipeline assembly ① from the condenser assembly.

- Tightening torque of bolt: 8±1 N·m



b. Unscrew the fixing bolt (see arrow) and remove the compressor discharge pipeline assembly ①.

- Tightening torque of bolt: 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

6.2.6.8 Removal and installation of A/C temperature and pressure sensor

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

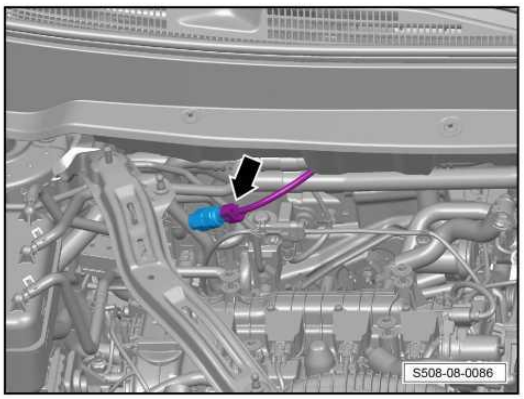
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

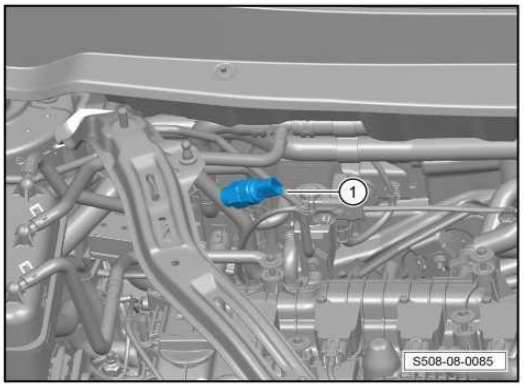
4 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

5 Remove the A/C temperature and pressure sensor

a. Disconnect the connector (see the arrow) of A/C temperature and pressure sensor.



b. Unscrew the A/C temperature and pressure sensor ① counterclockwise.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

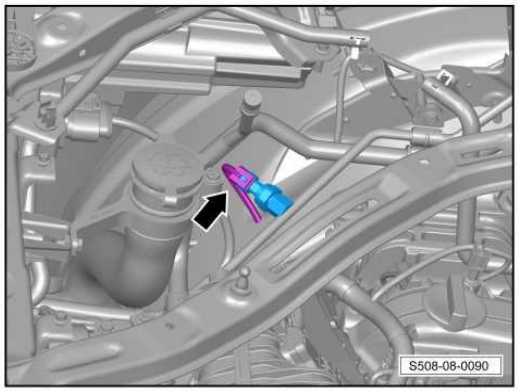
6.2.6.9 Removal and installation of A/C pressure sensor

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

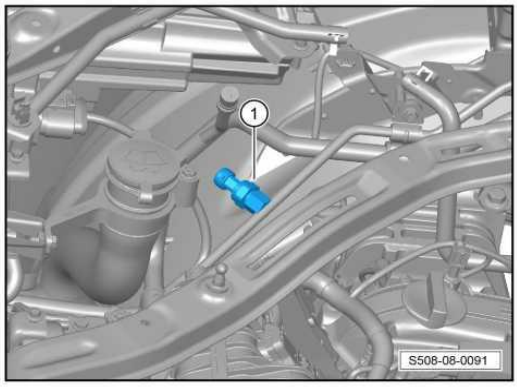
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant



4 Remove the A/C pressure sensor

a. Disconnect the connector (see the arrow) of the A/C pressure sensor.



b. Unscrew the A/C pressure sensor ① counterclockwise.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

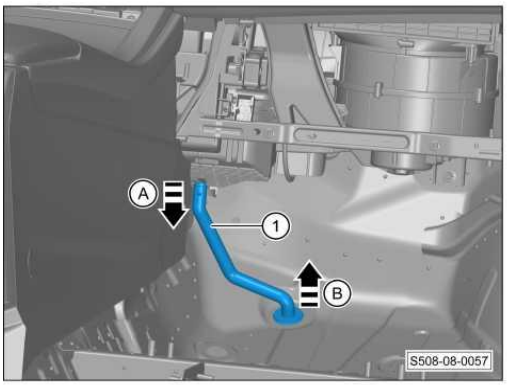
– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

6.2.6.10 Removal and installation of front evaporator water drain hose assembly

Disassembly procedures

1 Remove the A-pillar lower interior trim panel assembly (right). Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly



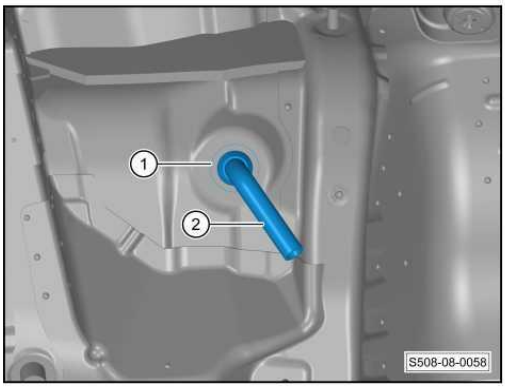
2 Remove the front evaporator water drain hose assembly

a. Lift the front floor carpet of front passenger seat.

b. Disengage the front evaporator water drain hose component ① from the HVAC assembly in direction of arrow A.

c. Remove the front evaporator water drain hose component ① in direction of arrow B.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Confirm whether the blank cap ① of water drain hose assembly is installed in place.

– Check whether the drain hose component ① is fully exposed.

6.2.6.11 Removal and installation of the compressor assembly

Disassembly procedures

Note:

Since the lubricating oil of the compressor is sealed in each new compressor according to the amount required by the A/C cycle, the compressor oil should be drained when replacing it with a new one.

Its emissions are calculated as follows:

Amount of discharged compressor oil = oil sealed in the new compressor-amount of oil remaining in the removed compressor.

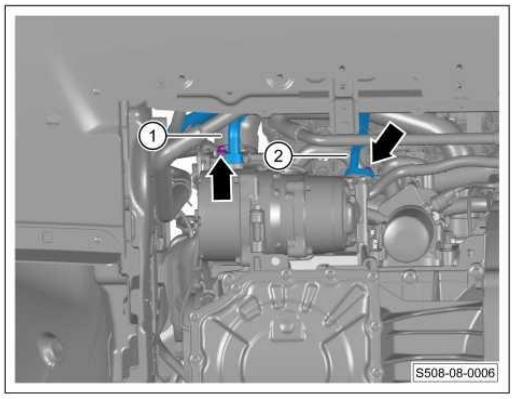
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

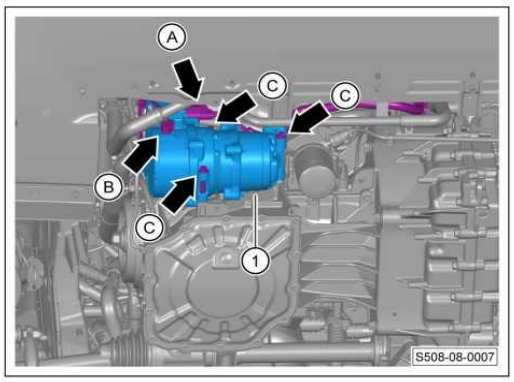
4 Remove the engine guard. Refer to 9.15.2.5 Removal and installation of engine guard

5 Remove the compressor assembly.



a. Unscrew the fixing bolts (see the arrows), disengage the compressor suction pipe assembly ① from the compressor assembly, and disconnect the compressor discharge pipe assembly ② from the compressor assembly.

- Tightening torque of bolt: 8±1 N·m



b. Disconnect the HV connector (see arrow A).

c. Disconnect the LV connector (see arrow B).

d. Unscrew the fixing bolts (see arrow C) and remove the compressor assembly ①.

- Tightening torque of bolt: 25±2 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

6.2.6.12 Recycling/Filling refrigerant

1 Turn off all the electrical appliances and turn off the Start switch.

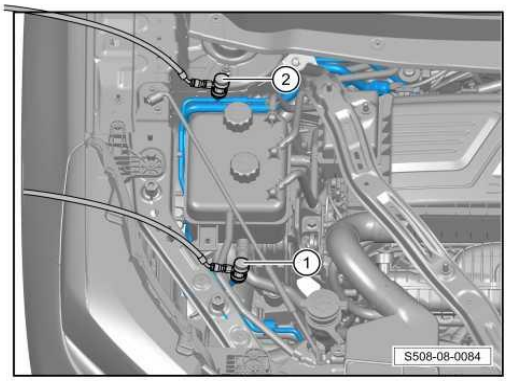
2 Switch on equipment power supply.

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle).

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right).

6 To remove the (front) engine compartment trim panel assembly, refer to 9.2.3.3 "Removal and installation of (front) engine compartment trim panel assembly".



7 Refrigerant recovery

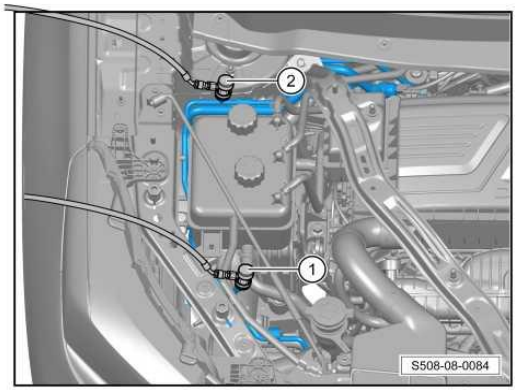
a. Connect the high and low pressure pipelines of the refrigeration circuit.

b. Turn on the appliance's low pressure valve switch ① and high pressure valve switch ②.

c. Select the "Refrigerant Recovery" option of the equipment, start the equipment and begin the recovery process.

d. Check the pressure value of the low pressure gauge of the equipment. When the pressure gauge reaches the vacuum degree of -34kPa, shut down the equipment and stop the recovery.

Tip:
Vacuumize the A/C system before filling the refrigerant.
Fill the refrigerant after adding the A/C compressor lubricating oil.



4 Fill refrigerant

a. Select the "Adding refrigerant" option, and adjust the filling amount.

b. Turn on the low pressure valve switch ①, turn off the high pressure valve switch ②, and start the appliance to fill the refrigerant.

c. Observe the equipment display. When the filling amount has reached the set value, the equipment screen will indicate that the refilling is complete.

d. Switch off the valve to complete the refilling.

Please fill the refrigerant according to the standards below.

Refrigerant type	Refrigerant filling amount (g)
R134a	580±20

If the appliance indicates slow filling speed, refer to the following filling methods

– Disconnect the high pressure joint of refrigerating circuit and only connect the low pressure end.

– Close the appliance's high and low pressure valves.

– Shift the vehicle to the P gear. Start the vehicle, turn on the A/C and set the A/C to the low temperature mode.

– Open the appliance's low pressure valve to let the refrigerant flow into the refrigerant pipeline via the low pressure end.

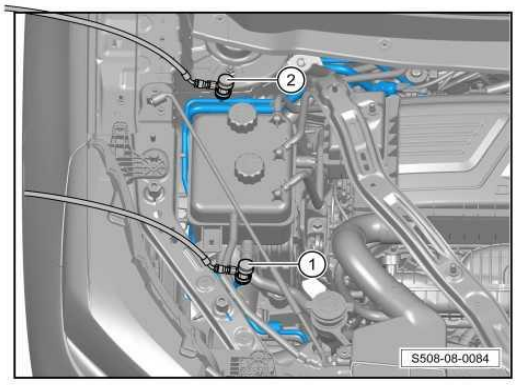
– When the pressure gauge displays that the pressure has reached the standard value, disconnect the joint of the low-pressure end.

– Refrigerant refilling is finished.

6.2.6.13 A/C system vacuumization

Tip:
After the refrigerant is recovered, vacuumize the A/C system.

1 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant



2 A/C system vacuumization

a. Connect the high and low pressure pipelines of the refrigeration circuit.

b. Open the appliance's low pressure valve ① and high pressure valve ②, select "Vacuumizing" option, and set the time to 15 minutes. Start the appliance to vacuumize; when the time reaches the set value, the appliance stops automatically.

c. Close the high pressure valve ② and check the pressure value on the low pressure gauge.

d. If the pressure reaches the set value and does not increase again after a while, it means that the refrigerant circuit has no leakage, and the compressor lubricating oil and refrigerant can now be added.

e. If the pressure rises, check the cooling circuit for leakage.

6.2.6.14 Recycling/Filling compressor lubricating oil

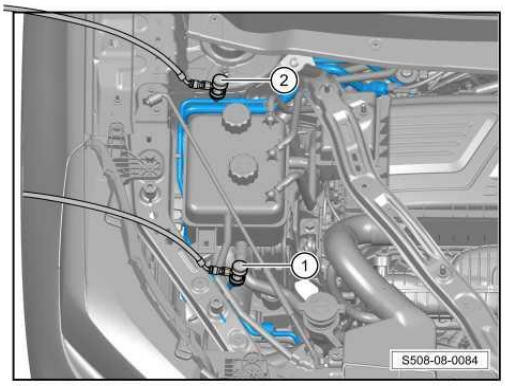
Tip:

Discharge the A/C compressor lubricating oil only after refrigerant recycling is completed.

Recycle and dispose the waste lubricating oil and refrigerant according to related regulations.

Empty the filling machine oil collection bottle.

1 Discharge the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant



2 Discharge compressor lubricating oil

a. Connect the high and low pressure pipelines of the refrigeration circuit.

b. Turn on the appliance's low pressure valve switch ① and high pressure valve switch ②.

c. Turn on the start appliance of engine oil discharge valve on the control panel of the A/C refrigerant filling machine, and check if the A/C compressor lubricating oil is discharged into the collection bottle.

d. After the A/C compressor lubricating oil is discharged, stop discharging and close the engine oil discharge valve.

e. Inspect the collection bottle and record the oil amount.

Add compressor lubricating oil

Tip:

Add compressor lubricating oil after the refrigeration system is vacuumized.

Install the filling bottle, and add compressor lubricating oil according to the standards

- When replacing the A/C components with new ones, estimate the volume of oil in each original component, and add oil as per such volume.
- Addition of compressor lubricating oil
-

Replaced item	Lubricating oil to be added (ml)
Evaporator	34
Condenser	34
Pipeline	12

- Compressor lubricating oil specification: RFL46XC
- If it is inevitable to release refrigerant for engine removal and installation or other reasons, and there is no refrigerant recycling machine, 20~30

mL compressor lubricating oil may be supplemented appropriately. There is no need to supplement compressor lubricating oil if only refrigerant is supplemented.

– Connect the high and low pressure pipelines of the refrigeration circuit, and open the high pressure valve of the equipment and turn on the compressor lubricating oil refilling switch.

– Start the A/C refrigerant refiller and observe the height of the oil level in the refilling bottle until the required amount of oil is reached.

– Close the high pressure valve.

6.3 Heating System

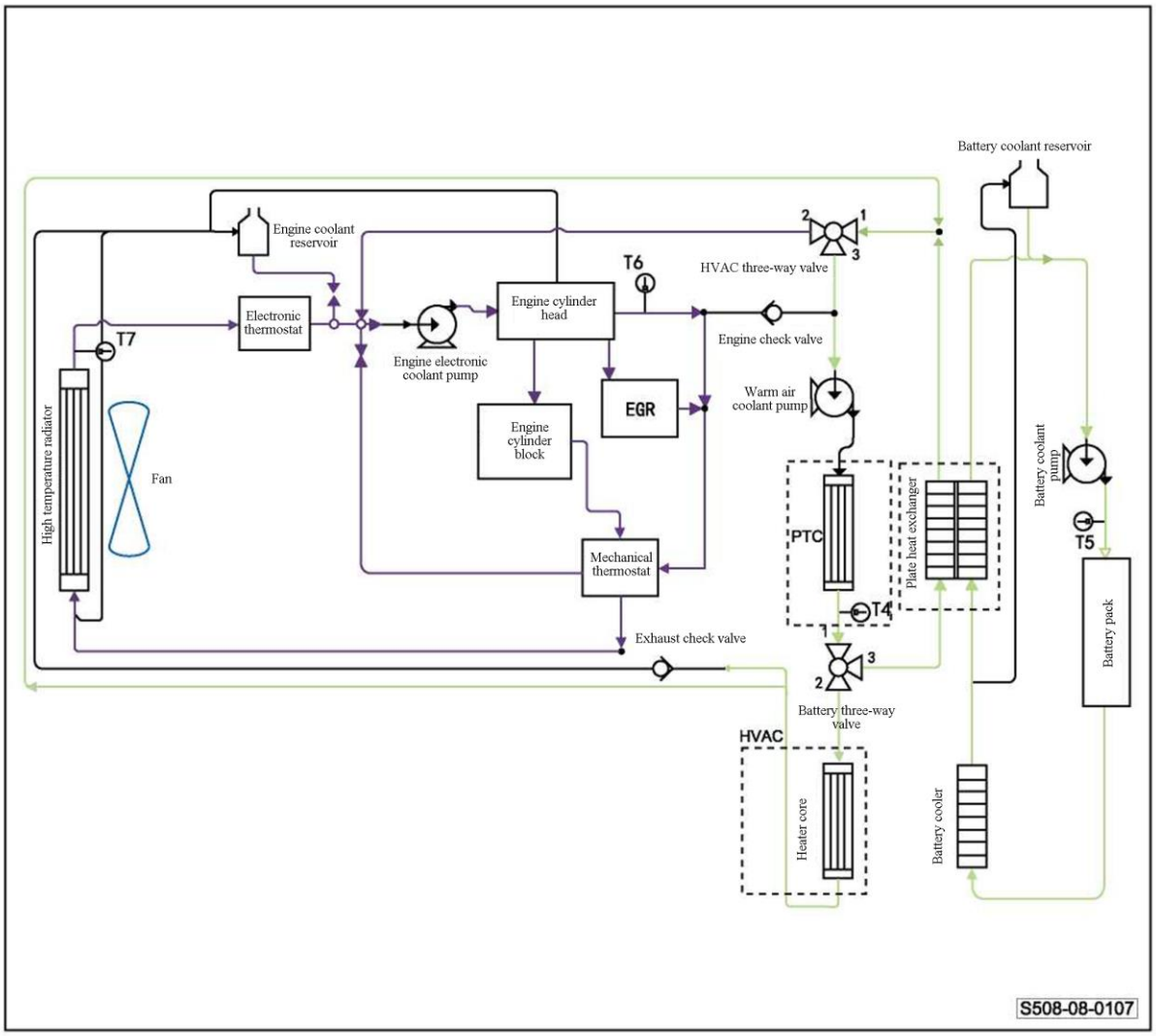
6.3.1 Specification

6.3.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
PTC Heater Assembly Fixing	Cross hexagon head flange screw M6×1.0×12	8±1
PTC GND WIRING HARNESS	Hexagon head bolt c/w plain washer cluster M6×16	10±1
	Hexagon flange nut M6	10±1
Connection of HVAC water pipes and front wall	Cross hexagon head flange screw M6×1.0×12	10±1
Connection of HVAC circulating three-way water valve inlet pipe assembly and right longitudinal beam	Cross hexagon head flange screw M6×1.0×12	10±1
PTC circulating water pump inlet pipe assembly	Hexagon head flange bolt M6×20	8±1

6.3.2 System description

6.3.2.1 System description



Note

- T4 – Electric heater temperature self-test
- T5 – Battery pack water inlet pipe arrangement temperature sensor
- T6 – Engine coolant temperature self-test
- T7 – Radiator outlet temperature arrangement temperature sensor

Initial position of battery three-way valve:

- Initial state: 1-2 fully open, 1-3 closed
- Maintenance mode: 50% opening for 1-2 and 1-3 respectively

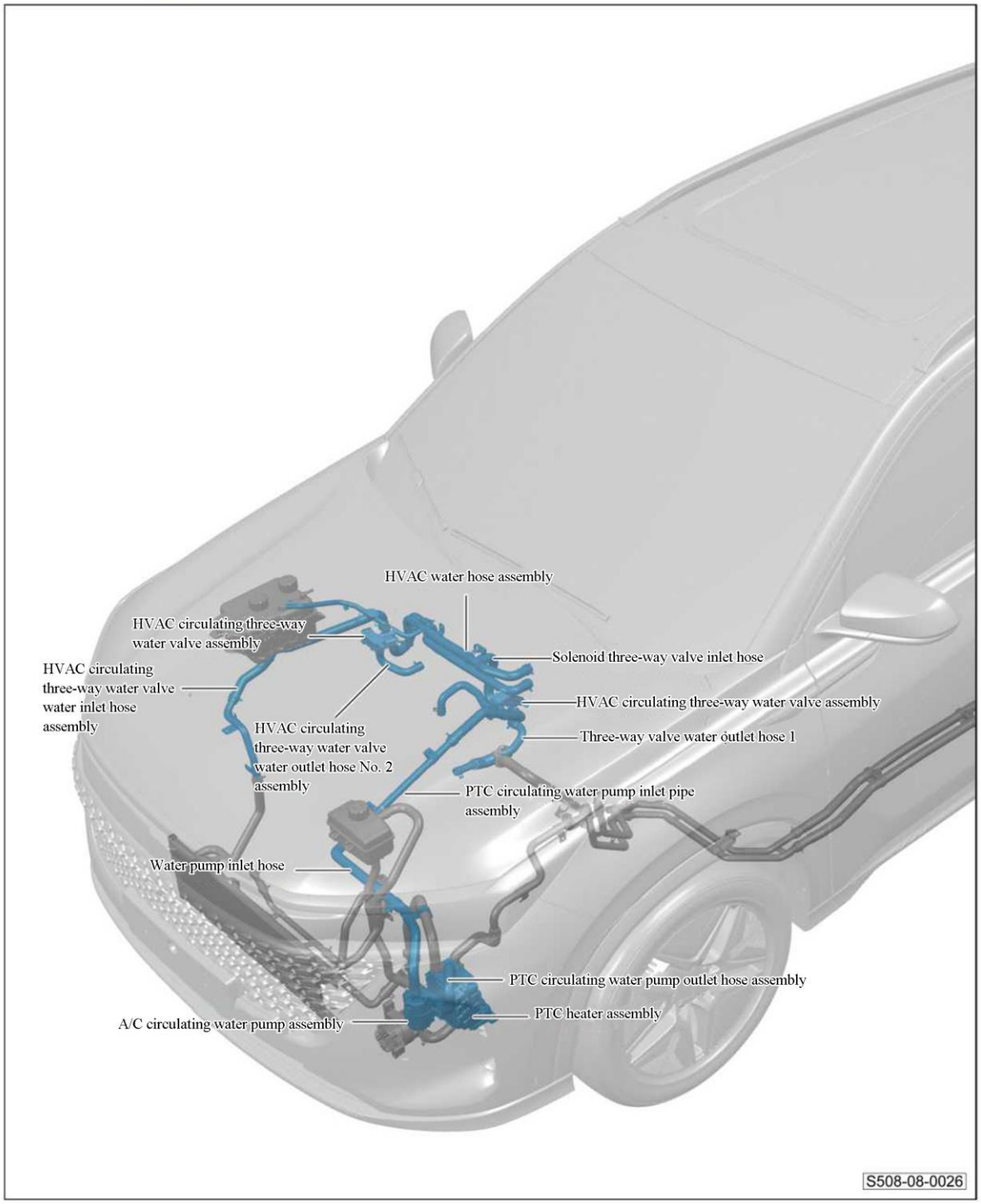
Position of warm air three-way valve:

- Initial state; 1-2 closed, 1-3 fully open
- Maintenance mode; 50% opening for 1-2 and 1-3 respectively

Refrigerant stop valve: normally open in the initial state; EXV valve: normally closed in the initial state.

6.3.3 Component position

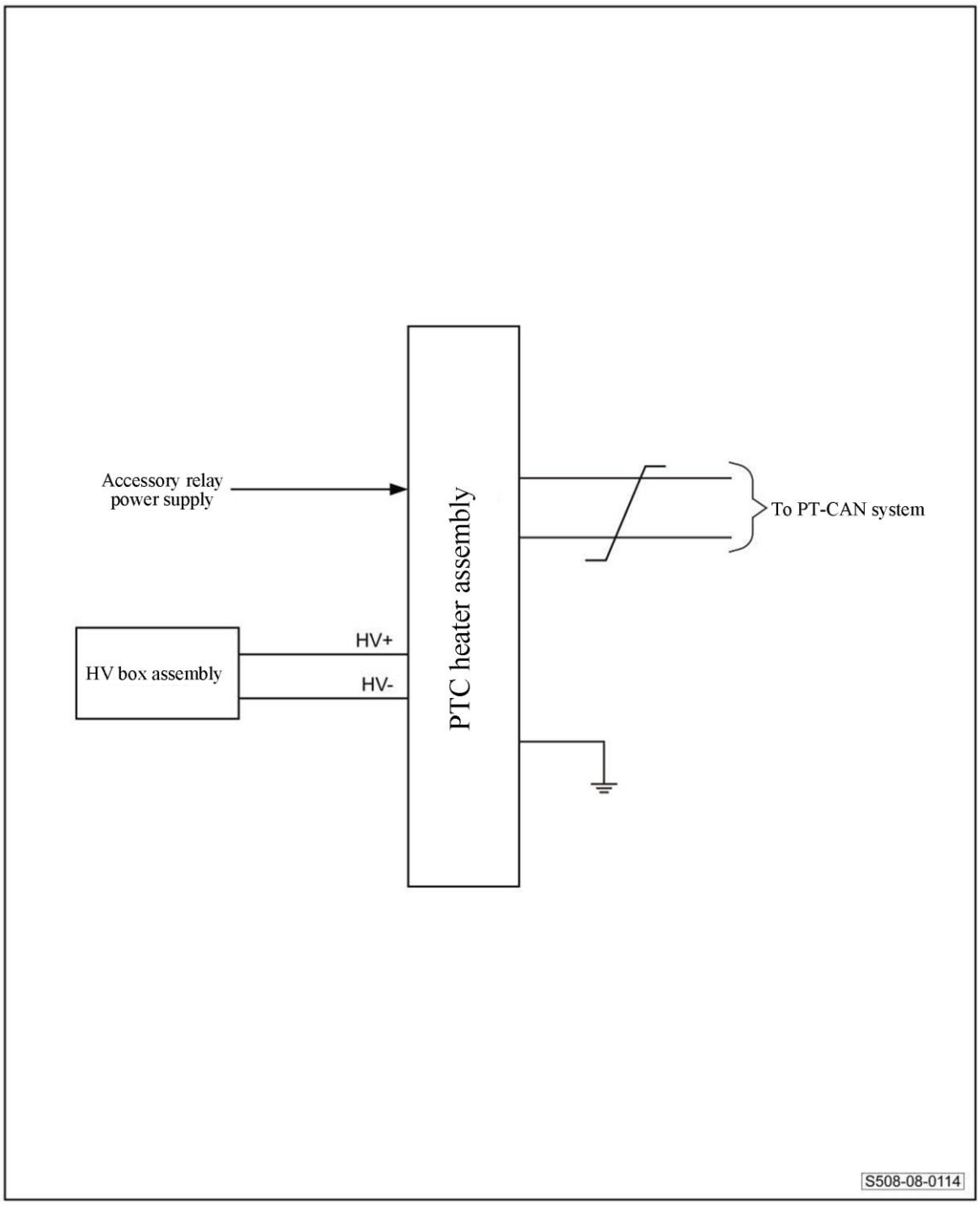
6.3.3.1 Component location diagram



6.3.4 Electrical schematic diagram

6.3.4.1 Electrical schematic diagram

Electrical Schematic Diagram of A/C System



6.3.5 Diagnosis information and steps

6.3.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the PTC with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

6.3.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.

- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

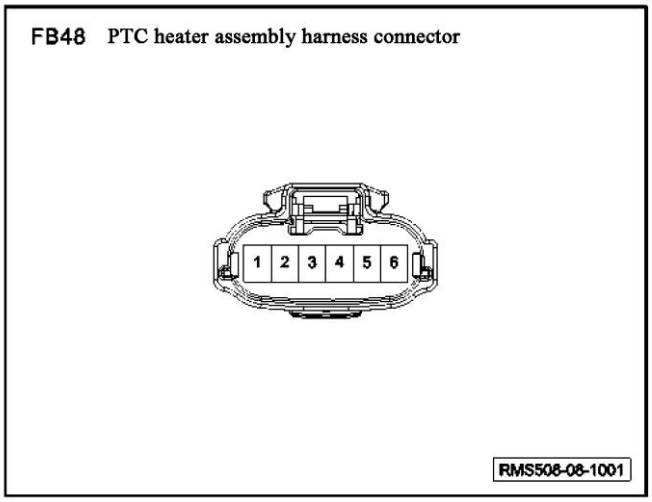
A Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

B Gently shake the connector in the vertical and horizontal directions.

C Gently shake the harness in the vertical and horizontal directions.

6.3.5.3 ECU terminals

PTC heater assembly harness connector (FB48)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/gray-white	Power supply	Put the start switch to “ON” position	Battery voltage
2	0.35/black	Ground	—	0V
3	0.35/pink-white	PT CAN-L	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
4	0.35/pink	PT CAN-H	—	—

6.3.5.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
CF00	Battery voltage	Battery voltage	0	25.5	V
CF01	Vehicle speed	Vehicle speed	0	270	km/h
CF02	Speed at time of fault	Engine speed	0	8191.875	rpm
CF03	Mileage at time of fault	Odometer	0	1677721.4	km
CF04	Mileage (at the time of the first fault)	Odometer	0	1677721.4	km
CF05	Time of fault_second	Second	0	59	-
	Time of fault_minute	Minute	0	59	-
	Time of fault_hour	Hour	0	23	-
	Time of fault_day	Day	1	31	-
	Time of fault_month	Month	1	12	-
	Time of fault_year	Year	2000	2099	-
0.00E+00	Percentage of operating power	-	0	100	%
0.00E+00	DCDC voltage	-	0	25.5	V
0.00E+00	HV terminal voltage	-	0	1020	V
0.00E+00	Operating current	-	0	25.5	A
0.00E+00	PCB1 temperature value	-	-40	215	degC
0.00E+00	PCB2 temperature value	-	-40	215	degC
0.00E+00	Water outlet temperature value	-	-40	215	degC
0.00E+00	Water inlet temperature value	-	-40	215	degC
0.00E+00	IGBT control	IGBT1	0	1	-
		IGBT2	0	1	-

		IGBT3	0	1	-
		IGBT_high-end	0	1	-

6.3.5.5 DTC list

DTC	DTC definition	Recommendations for Maintenance
B111716	Battery voltage is too low	1. Check whether the battery voltage is normal 2. Check whether the controller power supply is normal 3. Replacement of Controller
B111717	Battery voltage is too high	1. Check whether the battery voltage is normal 2. Check whether the controller power supply is normal 3. Replacement of Controller
U007388	BUS OFF	1. Check whether the CAN line is short-circuited and open 2. Replace the controller
P1A8016	High voltage too low	1. Check whether the voltage of HV battery is normal 2. Check PTC high-voltage power supply relay or fuse 3. Check PTC high voltage connector or wiring harness 4. Replace the controller
P1A8017	High voltage too high	1. Check whether the voltage of HV battery is normal 2. Replace the controller
P1A8116	DCDC undervoltage	1. Check whether the LV battery voltage is normal 2. Replace the controller
P1A8117	DCDC overvoltage	1. Check whether the LV battery voltage is normal 2. Replace the controller
P1A8972	Open circuit of water inlet temperature sensor	Replace the controller
P1A8973	Short circuit of water inlet temperature sensor	Replace the controller
P1A8572	Open circuit of outlet water temperature sensor	Replace the controller
P1A8573	Short circuit of outlet water temperature sensor	Replace the controller
P1A8672	Open circuit of low voltage side PCB temperature sensor	Replace the controller
P1A8673	Short circuit of low voltage side PCB temperature sensor	Replace the controller
P1A8772	Open circuit of high voltage side PCB temperature sensor	Replace the controller
P1A8773	Short circuit of high voltage side PCB temperature sensor	Replace the controller

DTC	DTC definition	Recommendations for Maintenance
P1A8898	Water inlet overtemperature fault	1. Check whether the coolant is normal 2. Check whether the water pump is normal 3. Check whether pipeline connection is normal. 4. Replace the controller
P1A8398	Water outlet overtemperature fault	1. Check whether the coolant is normal 2. Check whether the water pump is normal 3. Check whether pipeline connection is normal. 4. Replace the controller
P1A894B	Low voltage side PCB overtemperature fault	1. Check whether the coolant is normal 2. Check whether the water pump is normal 3. Check whether pipeline connection is normal. 4. Replace the controller
P1A8A4B	High voltage side PCB overtemperature fault	1. Check whether the coolant is normal 2. Check whether the water pump is normal 3. Check whether pipeline connection is normal. 4. Replace the controller
P1A8B19	Overcurrent fault	Replace the controller
P1A8C73	Short circuit	Replace the controller
P1A8472	Open circuit of IGBT	Replace the controller
P1A8473	IGBT short circuit	Replace the controller
P1A8E01	HV interlocking fault	1. Check whether the high voltage connector is normal 2. Replace the controller
P1A8C49	Internal communication failure	Replace the controller
P1A8D00	Dry burning fault	1. Check whether the coolant is normal 2. Check whether the water pump is normal 3. Check whether pipeline connection is normal. 4. Replace the controller
U014087	Lost communication with BDC	1. Check whether IVI is normal 2. Check whether the controller power supply is normal 3. Replacement of Controller

6.3.5.6 DTC: B111716, B111717.....

DTC	DTC definition
B111716	Battery voltage is too low
B111717	Battery voltage is too high
P1A8116	DCDC undervoltage
P1A8117	DCDC overvoltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No

As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: 11~14V

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check PTC heater assembly fuse LF07.

A Check whether the fuse LF07 is blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuit of fuse LF07.

A Check whether the circuit of fuse LF07 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

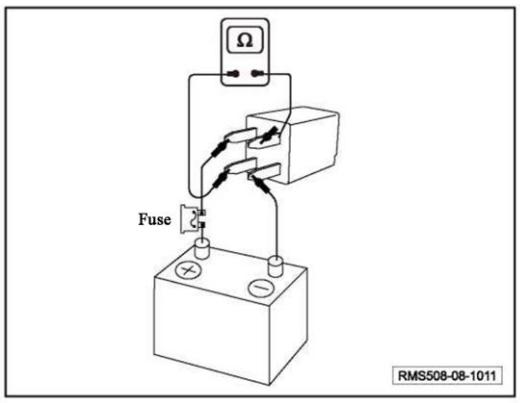
Rated value of fuse: LF07 15 A

D Confirm whether the PTC heater assembly works normally.

Yes → The system works normally.

No

Step 5	Check the accessory relay.



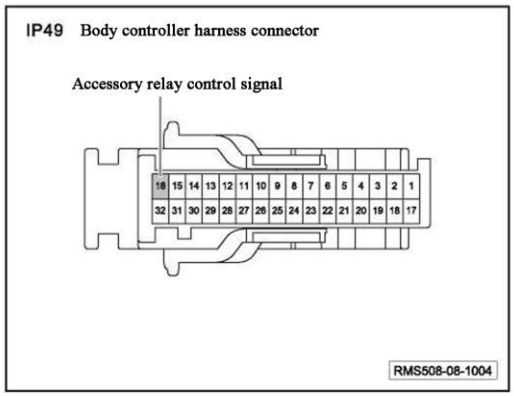
A Turn the start switch to "OFF" position.

B Remove the accessory relay LRP04.

C Connect one end of the accessory relay coil to the battery positive terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the accessory relay.

Step 6	Check whether the accessory relay control circuit is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP49.

C Remove the accessory relay LRP04.

D Measure the resistance between terminal 16 of the body controller harness connector IP49 and slot 86 of the accessory relay LRP04.

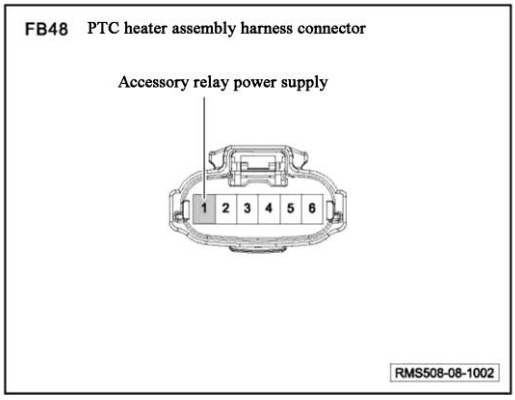
Standard resistance value: <1Ω

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Check the power circuit of PTC heater assembly.



A Turn the start switch to "OFF" position.

B Disconnect the PTC heater assembly harness connector FB48.

C Turn the start switch to "ON" position to start A/C heating.

D Measure the voltage value between terminal 1 of the PTC heater assembly harness connector FB48 and the body ground.

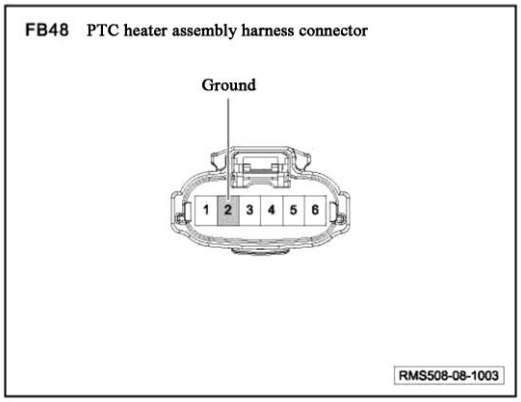
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 8	Check the PTC heater assembly ground circuit.



A Turn the start switch to "OFF" position.

B Disconnect the PTC heater assembly harness connector FB48.

C Measure the resistance between terminal 2 of the PTC heater assembly harness connector FB48 and the body ground.

Standard resistance value: <1Ω

D Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 9	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes	The system works normally.

Next

Step 10	The diagnosis is over.

6.3.5.7 DTC: U007388

DTC	DTC definition
U007388	BUS OFF

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

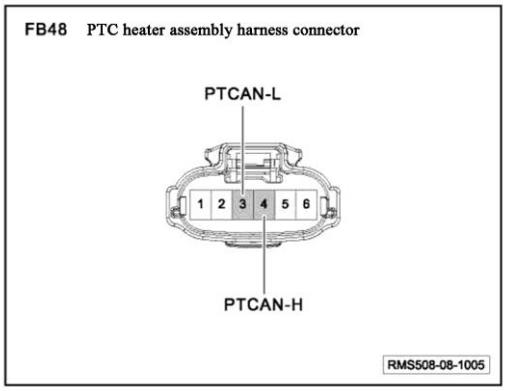
D Read the DTC again.

E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the PTCAN data communication wire.



A Turn the start switch to "OFF" position.

B Disconnect the PTC heater assembly harness connector FB48.

C Measure the resistance between terminals 3 and 4 of PTC heater assembly harness connector FB48.

Standard resistance value: about 120Ω

D Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal. .

No → Repair or replace the harness.

Yes

Step 4	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

6.3.5.8 DTC: P1A8016, P1A8017

DTC	DTC definition
P1A8016	High voltage too low
P1A8017	High voltage too high

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the PTC heater assembly high voltage wiring harness.

A Check the PTC heater assembly high voltage wiring harness for proper operation.

No — Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No — Repair or replace the harness.

Yes

Step 4	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes — The system works normally.

Next

Step 5	The diagnosis is over.

6.3.5.9 DTC: P1A8972, P1A8973.....

DTC	DTC definition
P1A8972	Open circuit of water inlet temperature sensor
P1A8973	Short circuit of water inlet temperature sensor
P1A8572	Open circuit of outlet water temperature sensor
P1A8573	Short circuit of outlet water temperature sensor
P1A8672	Open circuit of low voltage side PCB temperature sensor
P1A8673	Short circuit of low voltage side PCB temperature sensor
P1A8772	Open circuit of high voltage side PCB temperature sensor
P1A8773	Short circuit of high voltage side PCB temperature sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 3	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

6.3.5.10 DTC: P1A8898, P1A8398.....

DTC	DTC definition
P1A8898	Water inlet overtemperature fault
P1A8398	Water outlet overtemperature fault
P1A894B	Low voltage side PCB overtemperature fault
P1A8A4B	High voltage side PCB overtemperature fault
P1A8D00	Dry burning fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the coolant level of the engine.

A Check whether the engine coolant level is too low.

Yes → Add coolant or check and repair coolant leakage.

No

Step 3	Check the heater water pump.

A Check whether the heater water pump works normally.

No → Repair the fault of warm air water pump.

Yes

Step 4	Check the HVAC circulating three-way water valve assembly.

A Check the HVAC circulating three-way water valve assembly for normal operation.

No → Check and repair the circuit fault of HVAC circulating three-way water valve assembly; replace the assembly.

Yes

Step 5	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

6.3.5.11 DTC: P1A8B19, P1A8C73.....

DTC	DTC definition
P1A8B19	Overcurrent fault
P1A8C73	Short circuit
P1A8472	Open circuit of IGBT
P1A8473	IGBT short circuit
P1A8C49	Internal communication failure

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 3	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

6.3.5.12 DTC: P1A8E01

DTC	DTC definition
P1A8E01	HV interlocking fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the PTC heater assembly high voltage wiring harness connector.

A Put the start switch to "OFF" position and disconnect the battery negative terminal.

B Disconnect the PTC heater assembly high voltage wiring harness connector.

C Inspect the terminals in the harness connector for looseness, poor contact, bending, corrosion, contamination, deterioration or damage.

Yes → Replace the A/C high voltage harness assembly.

No

Step 3	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

6.3.5.13 DTC: U014087

DTC	DTC definition
U014087	Lost communication with BDC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

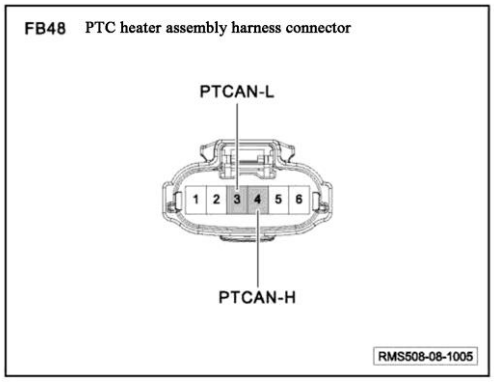
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the PTC heater assembly and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the PTC heater assembly harness connector FB48.

C Disconnect body controller harness connector IP47

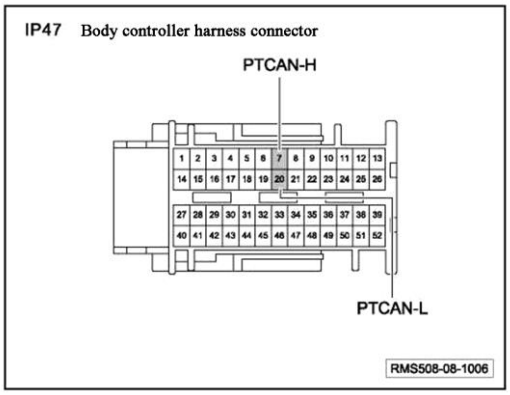
D Measure the resistance between terminal 3 of the PTC heater assembly harness connector FB48 and terminal 20 of the body controller harness connector IP47.

E Measure the resistance between terminal 4 of the PTC heater assembly harness connector FB48 and terminal 7 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

Next

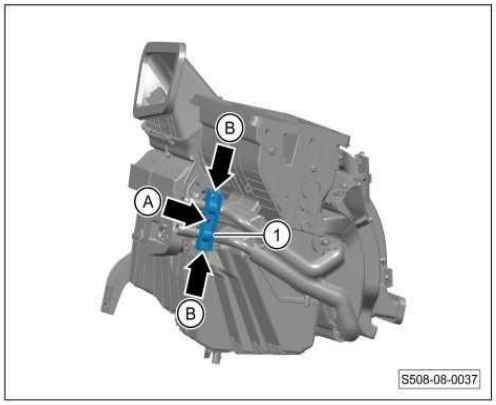
Step 6	The diagnosis is over.

6.3.6 Removal and installation

6.3.6.1 Removal and installation of heater core assembly

Disassembly procedures

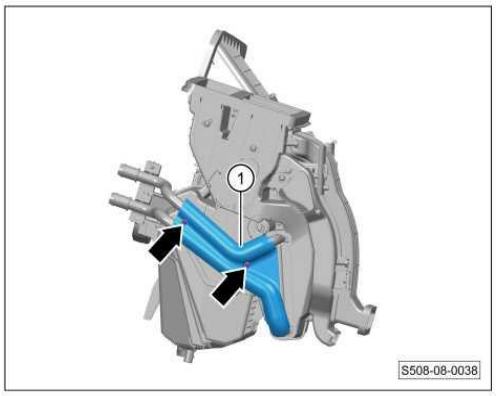
1 Remove the HVAC assembly. Refer to 6.2.6.1 Removal and installation of HVAC assembly



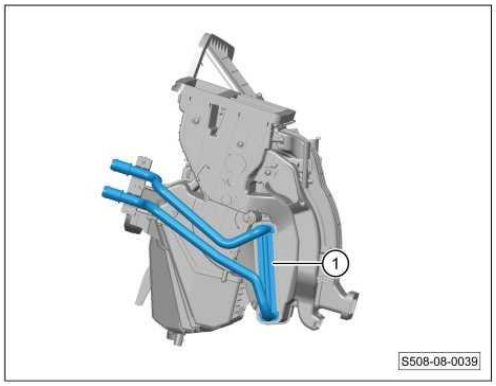
2 Remove the heater core assembly

a. Unscrew the fixing screws (see arrow A) of heater tank fastener.

b. Disengage the fixing clips (see arrow B) and remove the heater tank fastener ① .



c. Unscrew the fixing screws (see arrow) and remove the protective panel ① of heater tank.



d. Take out the heater core assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Pay attention to the installation position. The installation positions of HVAC water inlet and return pipes cannot be interchanged.

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

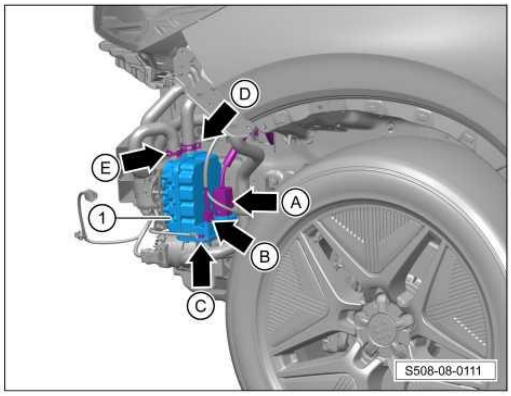
6.3.6.2 Removal and installation of PTC heater assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Removal of PTC heater assembly

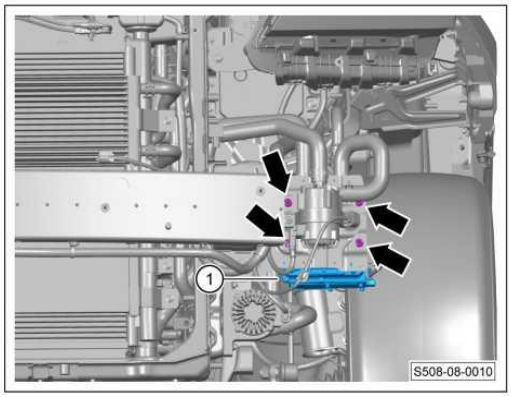
a. Disconnect the PTC heater assembly high voltage wiring harness connector (see arrow A)

b. Disconnect the PTC heater assembly low voltage wiring harness connector (see arrow B)

c. Unscrew the fixing nut (see arrow C) of PTC heater assembly ground.

d. Loosen the fixing clamp (see arrow D) of low temperature radiator water inlet pipe assembly.

e. Loosen the fixing clamp (see arrow E) of PTC circulating water pump outlet pipe assembly.



f. Unscrew the fixing bolts (see the arrows) and remove the PTC heater assembly ①.

- Tightening torque of bolt: 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 Replacement of Engine Coolant

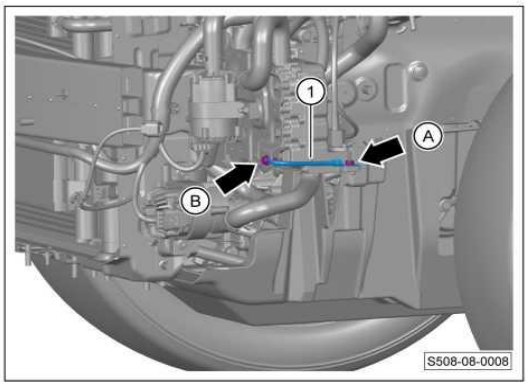
6.3.6.3 Removal and installation of PTC heater ground wire

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the PTC air heater ground wire.

a. Unscrew the fixing nuts (see arrow A) and bolts (see arrow B).

b. Remove the PTC heater ground wire ①.

• Tightening torque of nut (see arrow A): 10±1N·m

• Tightening torque of bolt (see arrow B): 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.3.6.4 Removal and installation of HVAC water pipe assembly

Disassembly procedures

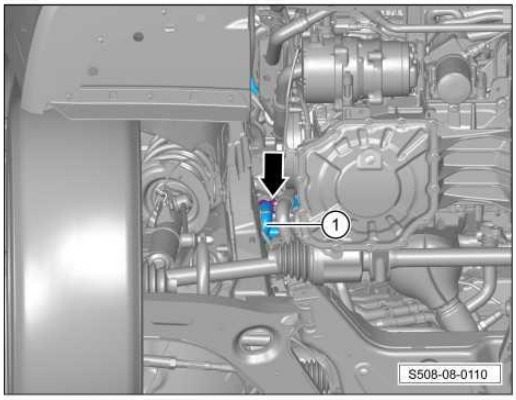
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

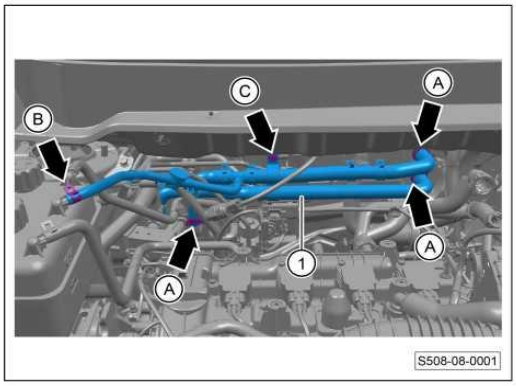
3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

5 Remove the HVAC water pipe assembly



a. Loosen the fixing clamp (see the arrow) of HVAC water pipe assembly ①.



b. Release the fixing clamps (see arrows A and B) of HVAC water pipe assembly.

c. Unscrew the fixing bolts (see arrow C), and remove the HVAC water pipe assembly ①.

- Tightening torque of bolt (see arrow C): 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.5 Removal and installation of water pump inlet hose

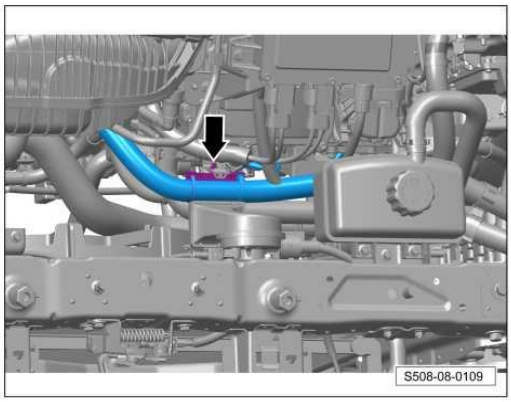
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

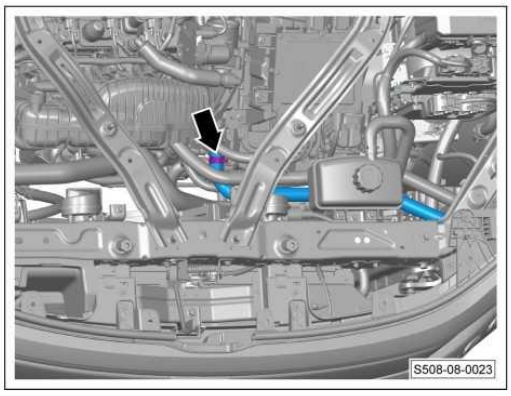
3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

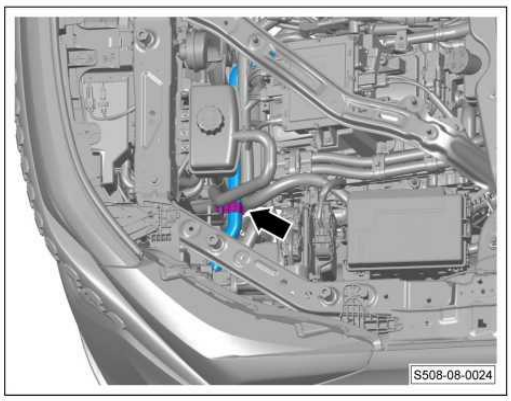


5 Remove the water pump inlet hose

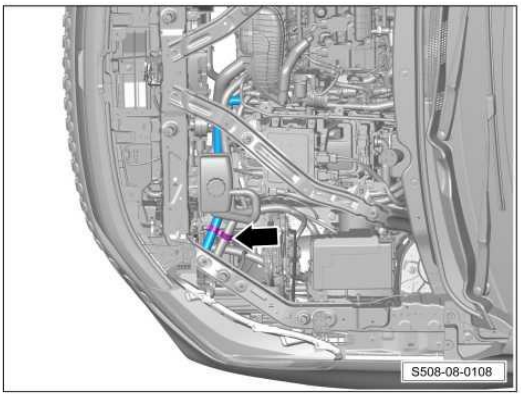
a. Disengage the fixing clips (see the arrows) of engine harness and move them aside.



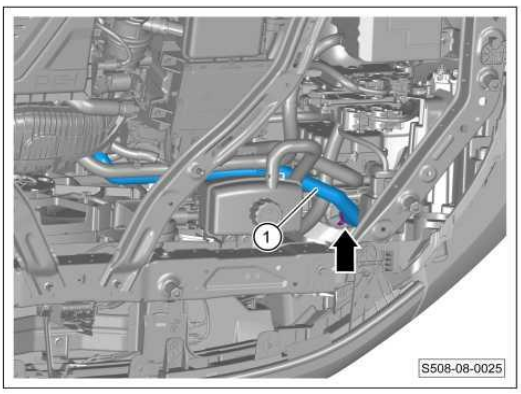
b. Loosen the fixing clamp (see the arrow) of water pump inlet hose.



c. Loosen the fixing clips (see the arrows) of water pump inlet hose.



d. Disengage the fixing clip (see the arrow) of water pump inlet hose.



e. Loosen the fixing clamp (see the arrow) of water pump inlet hose and remove the water pump inlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.6 Removal and installation of PTC circulating water pump inlet pipe assembly

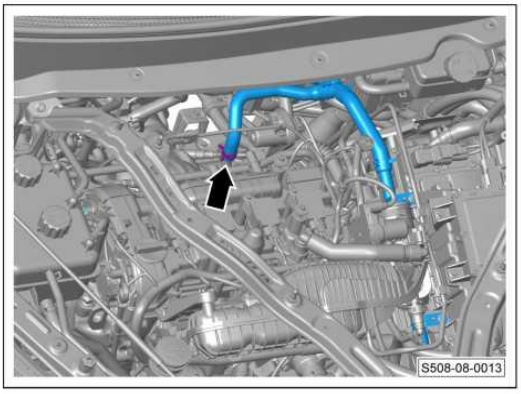
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

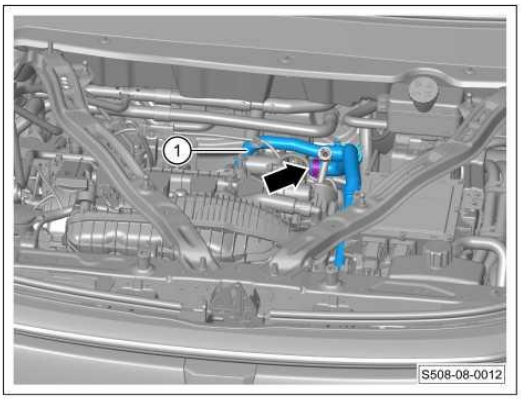
3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

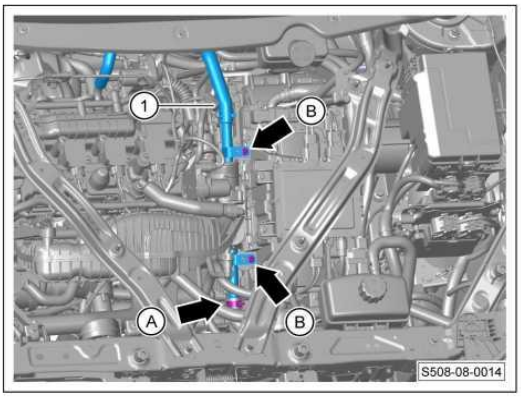


5 Remove the PTC circulating water pump inlet pipe assembly

a. Loosen the fixing clamp (see arrow-) of PTC circulating water pump inlet pipe assembly.



b. Loosen the fixing clamp (see arrow-) of PTC circulating water pump inlet pipe assembly.



c. Loosen the fixing clamp (see arrow A) of PTC circulating water pump inlet pipe assembly.

d. Unscrew the fixing bolt (see arrow B) and remove the PTC circulating water pump inlet pipe assembly ①.

- Tightening torque of bolt (see arrow B): 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.7 Removal and installation of PTC circulating water pump outlet pipe assembly

Disassembly procedures

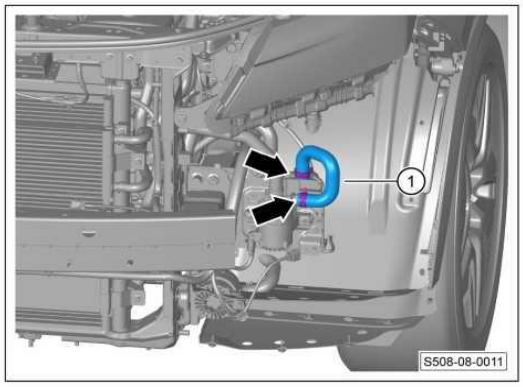
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to

8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"



5 Remove the PTC circulating water pump outlet pipe assembly

a. Loosen the fixing clamp (see the arrow) and remove the PTC circulating water pump outlet pipe assembly. .

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.8 Removal and installation of water outlet hose I of three-way valve

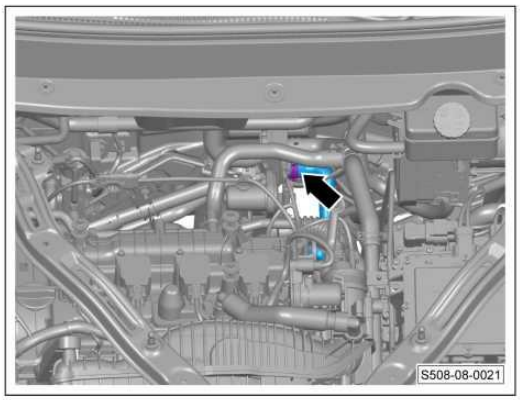
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

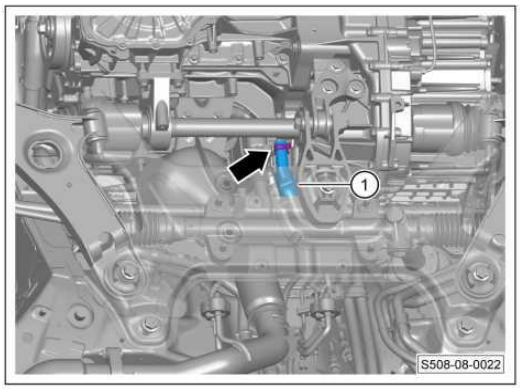
3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"



5 Remove the three-way valve water outlet hose I

a. Loosen the fixing clamp (see the arrow) of three-way valve water outlet hose I.



b. Loosen the fixing clamp (see arrow) and remove the three-way valve water outlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.9 Removal and installation of A/C circulating water pump assembly

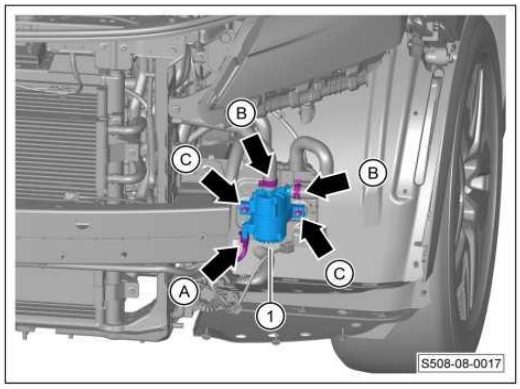
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"



5 Remove the A/C circulating water pump assembly

a. Disconnect the connector (see arrow A).

b. Release the fixing clamp (see arrow B).

c. Unscrew the fixing bolts (see arrow C) and remove the A/C circulating pump assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.10 Removal and installation of solenoid three-way valve inlet hose

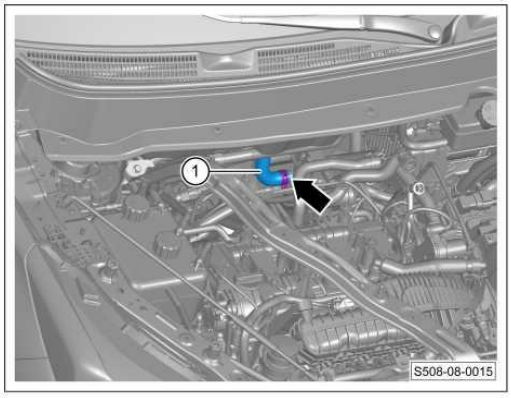
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

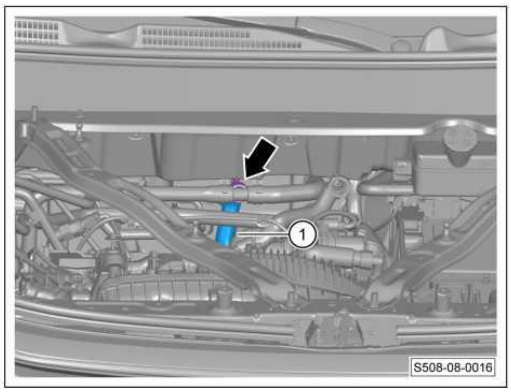


5 Remove the solenoid three-way valve inlet hose

a. Loosen the fixing clamp (see the arrow) and disengage the solenoid three-way valve inlet hose ① from the HVAC circulating three-way valve assembly.

Notes

Before disengaging the hose, place a suitable container underneath to collect coolant



b. Loosen the fixing clamp (see the arrow) and remove the solenoid three-way valve inlet hose ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.11 Removal and installation of HVAC circulating three-way coolant valve assembly (warm air)

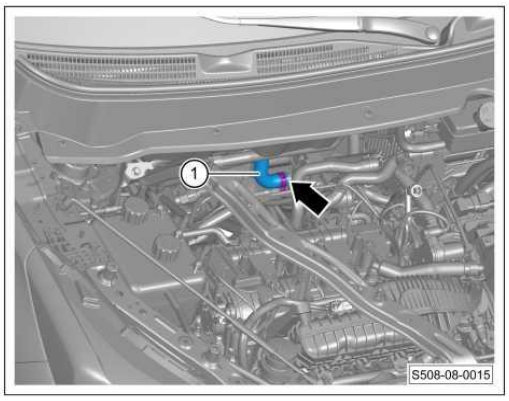
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

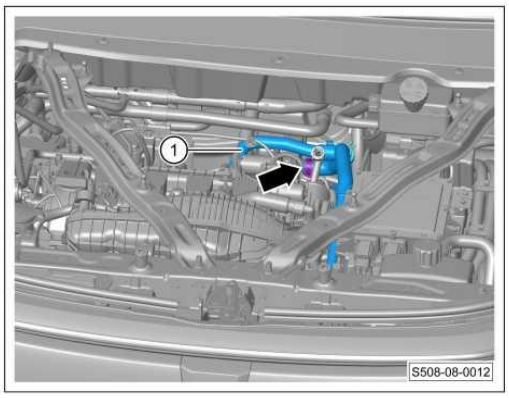


5 Remove the HVAC circulating three-way coolant valve assembly (warm air).

a. Loosen the fixing clamp (see the arrow) and disengage the solenoid three-way valve inlet hose ① from the HVAC circulating three-way valve assembly (warm air).

Notes

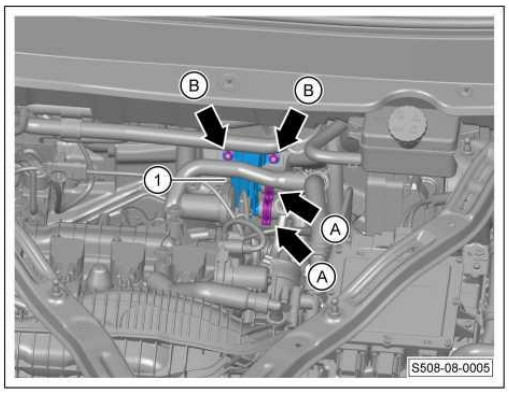
Before disengaging the hose, place a suitable container underneath to collect coolant



b. Loosen the fixing clamp (see the arrow) and disengage the PTC circulating water pump inlet pipe assembly ① from the HVAC circulating three-way valve assembly (warm air).

Notes

Before disengaging the hose, place a suitable container underneath to collect coolant



c. Loosen the fixing clamp (see arrow A) and unscrew the fixing nut (see arrow B).

d. Remove the HVAC circulating three-way water valve assembly (warm air) ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.12 Removal and installation of HVAC circulating three-way coolant valve assembly (battery)

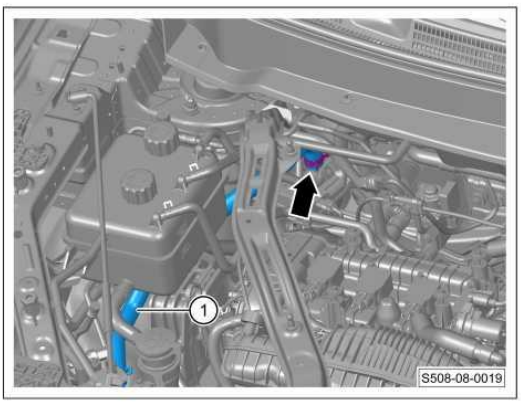
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

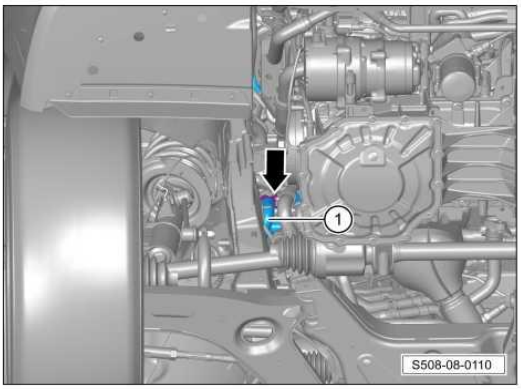


5 Remove the HVAC circulating three-way coolant valve assembly (battery)

a. Loosen the fixing clamp (see the arrow) and disengage the HVAC circulating three-way water inlet pipe assembly ① from the HVAC circulating three-way water valve assembly (battery).

Notes

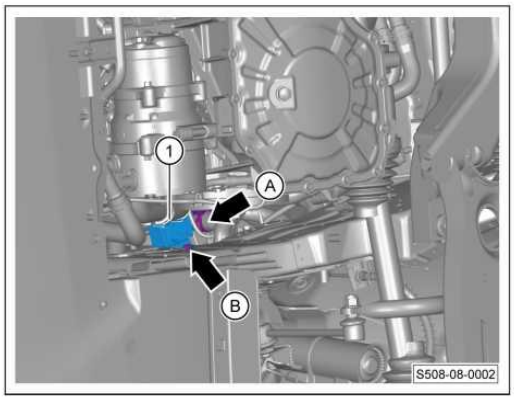
Before disengaging the hose, place a suitable container underneath to collect coolant



b. Loosen the fixing clamp (see the arrow) and disengage the HVAC water pipe assembly ① from the HVAC circulating three-way valve assembly (battery).

Notes

Before disengaging the hose, place a suitable container underneath to collect coolant

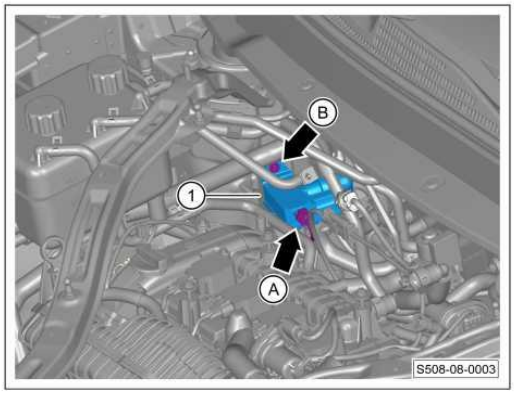


c. Loosen the fixing clamp (see arrow A), and disengage HVAC circulating three-way coolant outlet pipe No. 2 assembly from HVAC circulating three-way coolant valve assembly (battery) ①.

d. Unscrew the fixing bolts (see arrow B) of HVAC circulation three-way coolant valve assembly (battery).

Notes

Before disengaging the hose, place a suitable container underneath to collect coolant



e. Disconnect the connector (see arrow A) and unscrew the fixing bolt (see arrow B) of the fixing nut.

f. Remove the HVAC circulation three-way water valve assembly (battery) ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.3.6.13 Removal and installation of HVAC circulating three-way water valve inlet pipe assembly

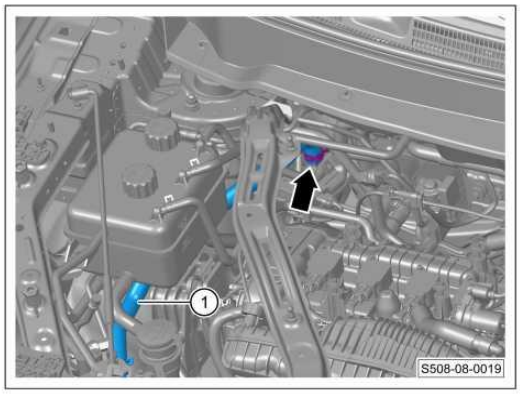
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the air filter element. Refer to 2.6.7.1 Removal and installation of air filter element

4 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"

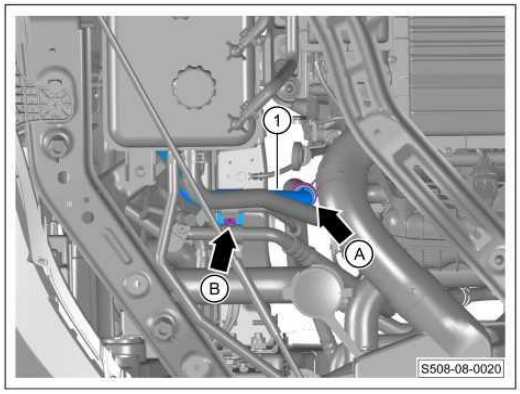


5 Remove the HVAC circulating three-way water valve inlet pipe assembly

a. Loosen the fixing clamp (see the arrow) and disengage the HVAC circulating three-way water inlet pipe assembly ① from the HVAC circulating three-way water valve assembly (outlet pipe).

Notes

Before disengaging the hose, place a suitable container underneath to collect coolant



b. Loosen the fixing clamp (see arrow A) and disengage the HVAC circulation three-way water inlet pipe assembly ① from the low temperature radiator water inlet pipe assembly.

c. Unscrew the fixing bolt (see arrow B) and remove the HVAC circulation three-way water inlet pipe assembly ①.

• Tightening torque of bolt (see arrow B): 10±1 N·m

Notes

Before disengaging the hose, place a suitable container underneath to collect coolant

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

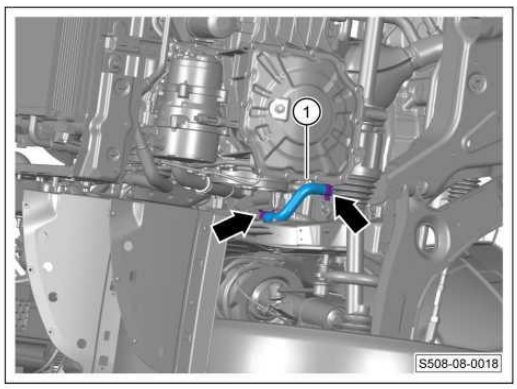
6.3.6.14 Removal and installation of HVAC circulating three-way water valve outlet pipe No.2 assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 To discharge the engine coolant, refer to 1.4.3.40 "Replacement of engine coolant"



4 Remove the HVAC circulating three-way water valve outlet pipe No.2 assembly

a. Loosen the fixing clamp (see arrow) and remove HVAC circulating three-way water valve outlet pipe No.2 assembly ①.

Notes

Before disengaging the hose, place a suitable container underneath to collect coolant

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Check and add engine coolant. Refer to 1.4.3.40 *Replacement of Engine Coolant*

6.4 Ventilation circulation device

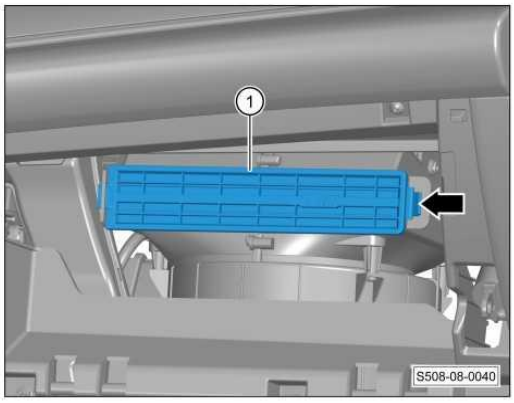
6.4.1Removal and installation

6.4.1.1 Removal and installation of air filter element

Disassembly procedures

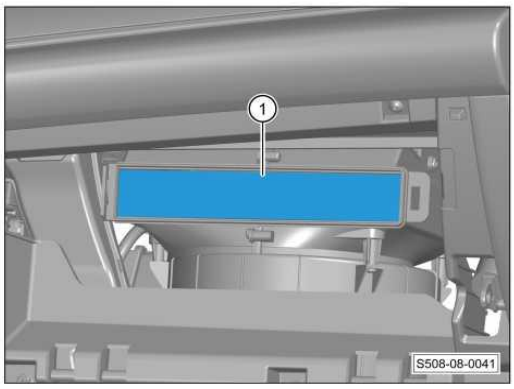
1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly



3 Remove the A/C filter element

a. Press the filter screen cover clip (see the arrow) and remove the filter screen cover ①.



b. Take out the A/C filter element ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

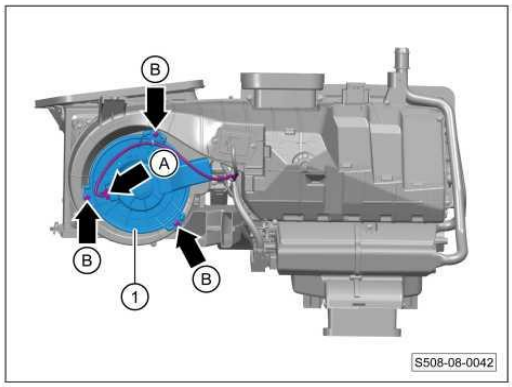
– Pay attention to the intake and exhaust directions of A/C filter element to avoid reverse installation.

6.4.1.2 Removal and installation of motor with impeller assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the motor with impeller assembly

a. Disconnect the connector (see arrow A) of motor with impeller assembly.

b. Unscrew the fixing screws (see arrow B) and take out the motor with impeller assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

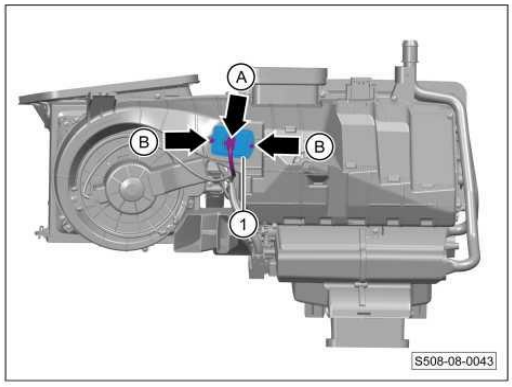
– After installation is completed, check whether the motor with impeller assembly functions normally.

6.4.1.3 Removal and installation of speed regulation module

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the speed regulation module

a. Disconnect the connector (see arrow A) of speed regulation module.

b. Unscrew the fixing screws (see arrow B) and take out the speed regulation module ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation is completed, check whether the speed regulation module functions normally.

6.5 Air vent unit

6.5.1 Specification

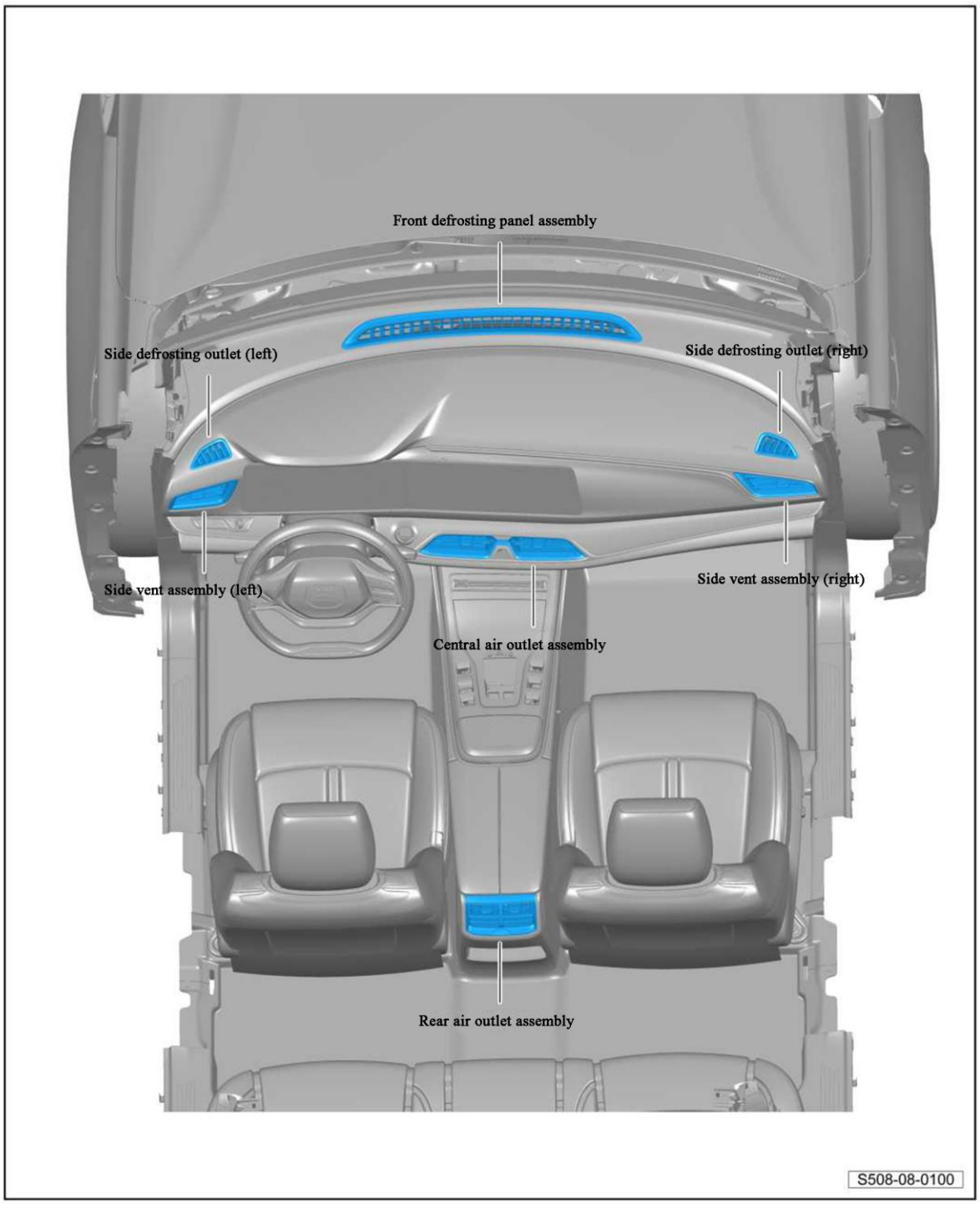
6.5.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Rear air-to-face pipeline assembly 1 and middle channel reinforcement assembly	Cross recessed mushroom head tapping screw	6±1
Rear air-to-face pipeline assembly 2 and control box assembly	Cross recessed pan head self-tapping screw	3±1

6.5.2 Component position

6.5.2.1 Component position

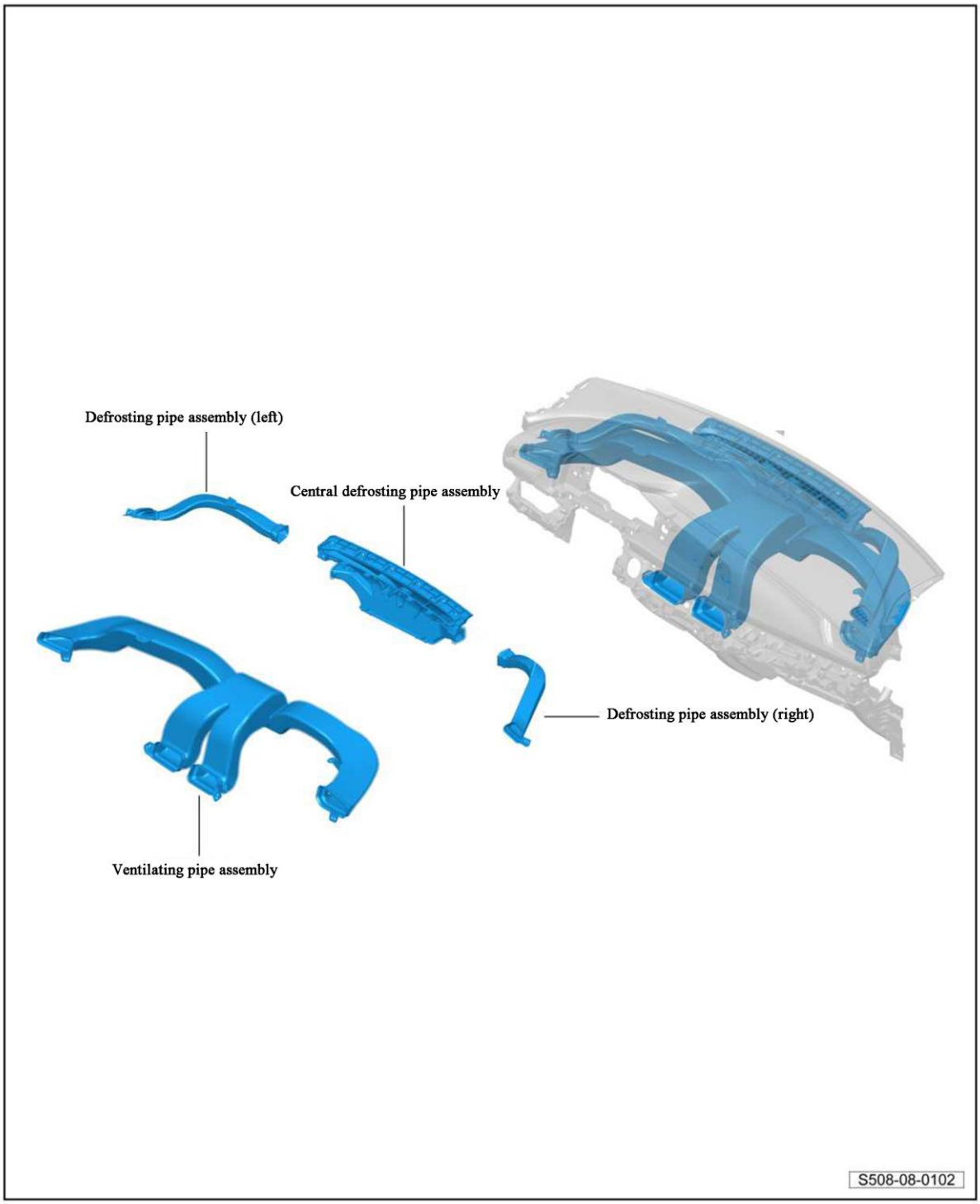
Position of air vent

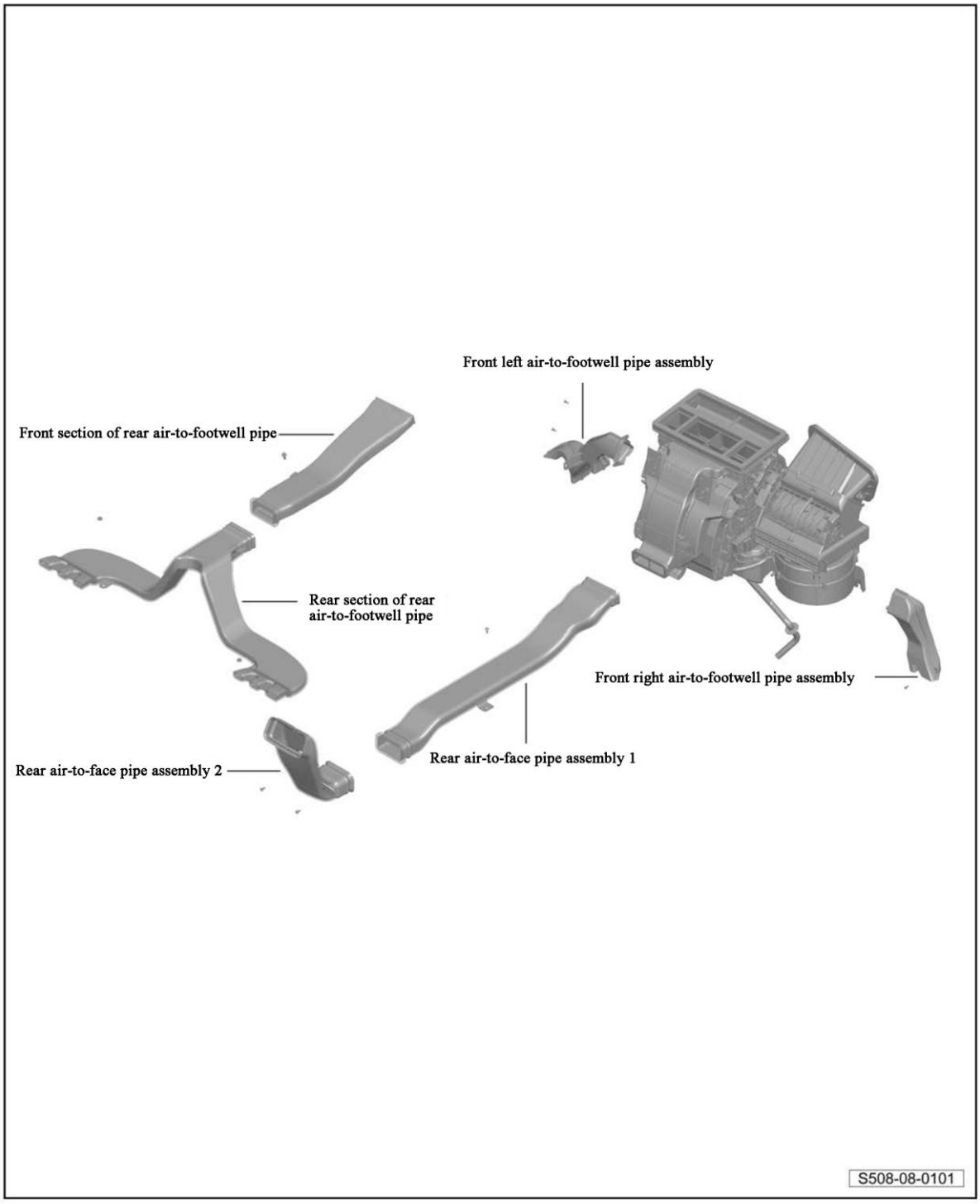


6.5.3 Exploded view

6.5.3.1 Exploded view

Exploded view

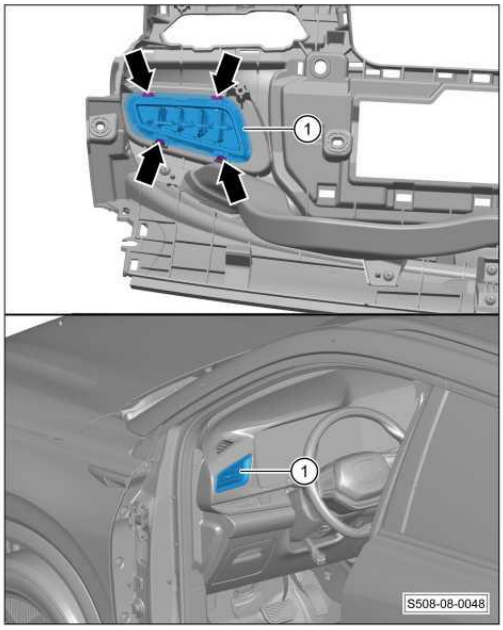



Front left air-to-footwell pipe assembly
Front section of rear air-to-footwell pipe
Rear section of rear air-to-footwell pipe
Front right air-to-footwell pipe assembly
Rear air-to-face pipe assembly 2
Rear air-to-face pipe assembly 1
S508-08-0101

6.5.4 Removal and installation

6.5.4.1 Removal and installation of side air outlet assembly (left)

Disassembly procedures



1 Remove the side air outlet assembly (left)

a. Disengage the fixing clips (see the arrows) and remove the side air outlet assembly (left) ①.

Installation procedures

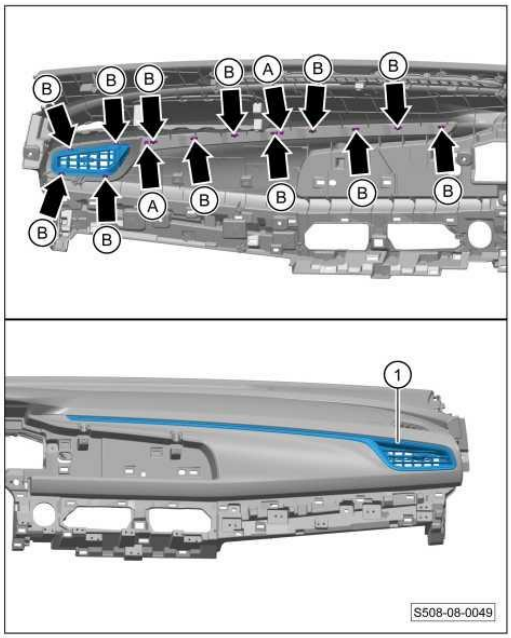
The installation procedure is to be performed basically in the reverse order:

6.5.4.2 Removal and installation of side air outlet assembly (right)

Disassembly procedures

1 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

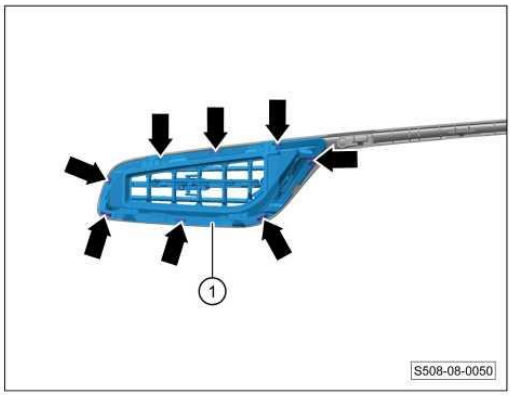
2 Remove the ventilation pipeline assembly. Refer to 6.5.4.9 Removal and installation of ventilation pipeline assembly



3 Remove the side air outlet assembly (right).

a. Unscrew the fixing screws (see arrow A) of side air vent panel (right).

b. Disengage the fixing clips (see arrow B) and remove the side air outlet assembly (right) with side air outlet panel (right) ①.



c. Disengage the fixing clips (see the arrows) and remove the side air outlet assembly (right) ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.5.4.3 Removal and installation of central air vent assembly

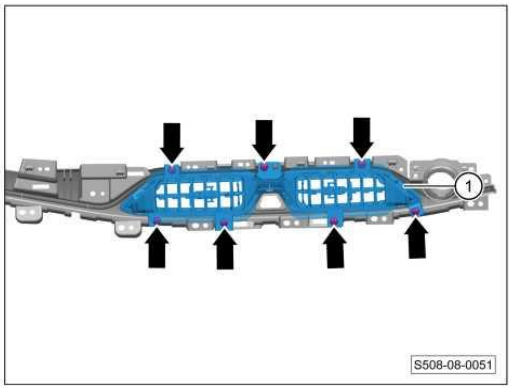
Disassembly procedures

1 Remove the instrument panel central trim strip assembly (right). Refer to 9.8.3.12 Removal and installation of instrument panel central trim strip assembly (right)

2 Remove the PEPS switch. Refer to 8.28.6.2 Removal and installation of ENGINE START STOP button

3 Remove the hazard warning switch. Refer to 8.3.5.19 Removal and installation of hazard warning switch

4 Remove the instrument panel central trim strip assembly (right). Refer to 9.8.3.13 Removal and installation of instrument panel central trim strip assembly (right)



5 Remove the central air vent assembly

a. Disengage the fixing screws (see arrow) of central air vent assembly.

b. Disengage the connecting clips between the central air outlet assembly and the central trim ring instrument panel, and remove the central air vent assembly ①.

Tip:

As the connecting clips between the central air vent assembly and the central trim ring instrument panel is easily damaged, it is recommended to replace the central trim ring instrument panel with central air vent assembly.

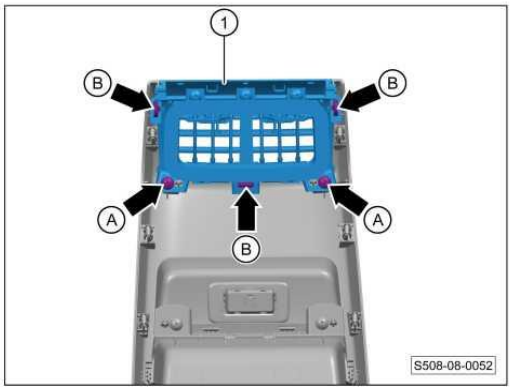
Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.5.4.4 Removal and Installation of rear air-to-face vent assembly

Disassembly procedures

1 Remove the control box rear cover assembly. Refer to 9.9.3.4 Removal and installation of rear cover assembly of control box



2 Remove the rear air-to-face vent assembly

a. Unscrew the fixing screws (see arrow A) of rear air-to-face vent assembly.

b. Disengage the fixing clips (see arrow B) and remove the rear air-to-face vent assembly ①.

Installation procedures

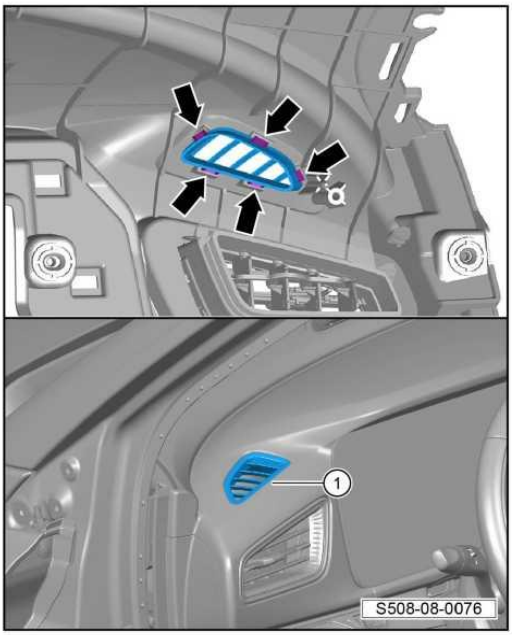
The installation procedure is to be performed basically in the reverse order:

6.5.4.5 Removal and installation of side defrosting outlet

Disassembly procedures

Tip:

The removal and installation of the side defrosting port (left) is described here, and the removal and installation of the side defrosting port (right) can be roughly referred to the left side.



1 Removal of the side defrosting port (left)

a. Disengage the fixing clips (see the arrows) and remove the side defrosting port (left).

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.5.4.6 Removal and installation of front defrosting panel assembly

Disassembly procedures

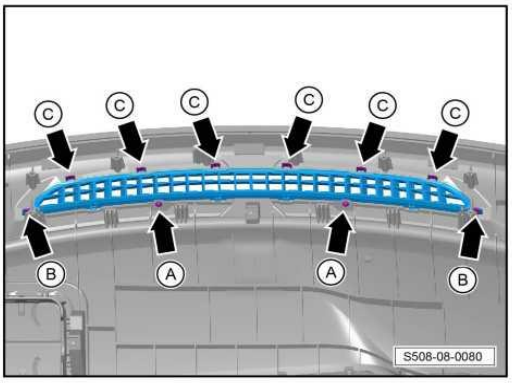
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

4 Remove the ventilation pipeline assembly. Refer to 6.5.4.9 Removal and installation of ventilation pipeline assembly

5 Removal of the central defrosting pipe assembly. See 6.5.4.10 Removal and installation of the central defrosting pipe assembly



6 Remove the front defrosting panel assembly

a. Unscrew the fixing screws (see arrow A) of front defrosting panel assembly.

b. Disengage the fixing clips (see arrows B and C) and remove the front defrosting panel assembly.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

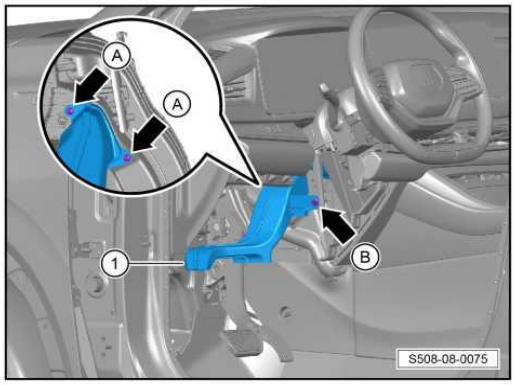
6.5.4.7 Removal and Installation of front left air-to-footwell pipeline assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel lower left cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel lower left cover assembly



4 Remove the front left air-to-footwell pipeline assembly

a. Unscrew the fixing screws (see arrow A) and bolts (see arrow B), and remove the front left air-to-footwell pipeline assembly ①.

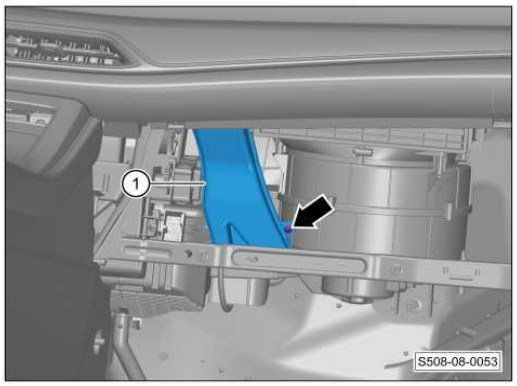
Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.5.4.8 Removal and Installation of front right air-to-footwell pipeline assembly

Disassembly procedures

1 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly



2 Remove the front right air-to-footwell pipeline assembly

a. Unscrew the fixing screw (see arrow) and remove the front right air-to-footwell pipeline component ①.

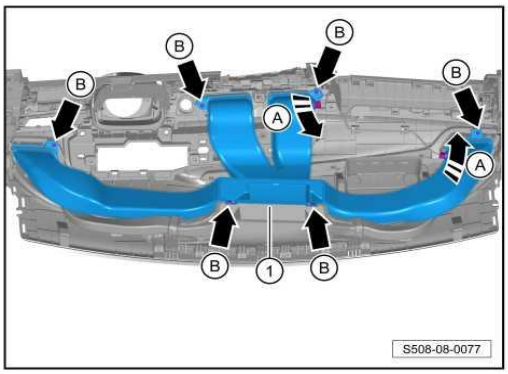
Installation procedures

The installation procedure is to be performed basically in the reverse order:

Disassembly procedures

1 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

2 Remove the ventilation pipeline assembly



a. Rotate in the direction of arrow A to disconnect the anion generator from the ventilation pipeline assembly ①.

b. Unscrew the fixing screws (see arrow B) and remove the ventilation pipeline assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.5.4.10 Removal and installation of central defrosting air duct assembly

Disassembly procedures

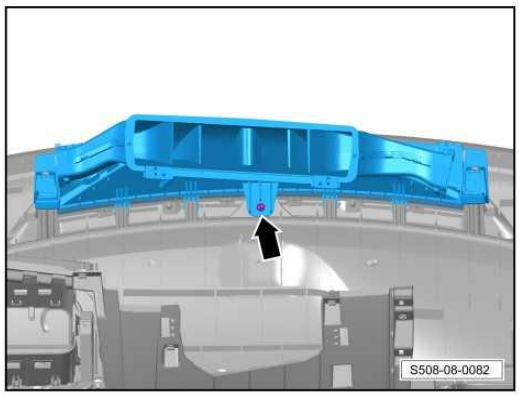
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

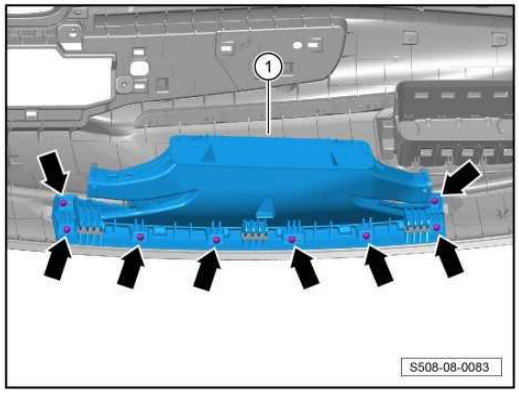
4 Remove the ventilation pipeline assembly. Refer to 6.5.4.9 Removal and installation of ventilation pipeline assembly

5 Removal of the left/right defrosting pipe assembly. See 6.5.4.11 Removal and installation of the left/right defrosting pipe assembly



6 Remove the central defrosting pipe assembly.

a. Unscrew the fixing screws (see arrow) of the central defrosting pipe assembly.



b. Unscrew the fixing screws (see the arrows) and remove the central defrosting air duct assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.5.4.11 Removal and installation of front defrosting air duct assembly

Disassembly procedures

Tip:

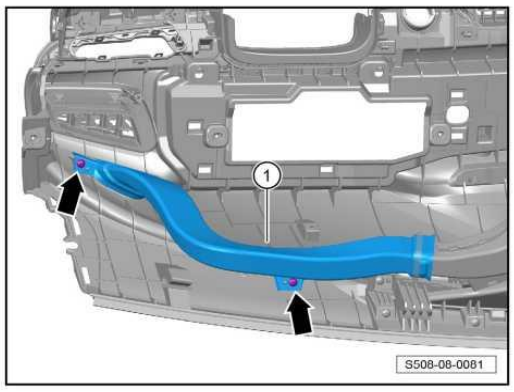
The removal and installation of the defrosting pipe assembly (left) is described here, and the removal and installation of the defrosting pipe assembly (right) can be roughly referred to the left side.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

4 Remove the ventilation pipeline assembly. Refer to 6.5.4.9 Removal and installation of ventilation pipeline assembly



5 Remove the defrosting pipe assembly (left).

a. Unscrew the fixing screw (see the arrow) and remove the defrosting pipe assembly (left) ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.5.4.12 Removal and Installation of front section of rear air-to-footwell pipeline

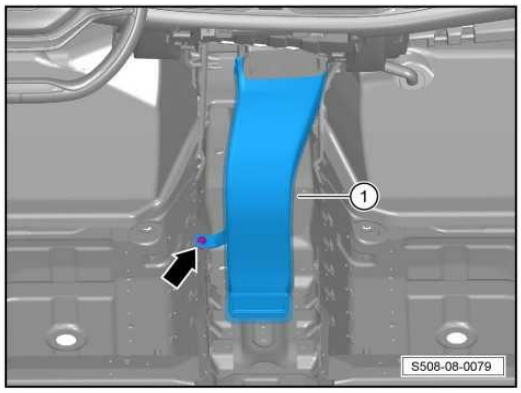
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear air-to-face pipeline assembly 1. Refer to 6.5.4.14 Removal and installation of rear air-to-face pipeline assembly 1

4 Remove the rear section of rear air-to-footwell pipeline. Refer to 6.5.4.13 Removal and installation of rear section of rear air-to-footwell pipeline



5 Remove the front section of rear air-to-footwell pipeline

a. Unscrew the fixing bolts (see the arrows) and remove the front section ① of rear air-to-footwell pipe.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

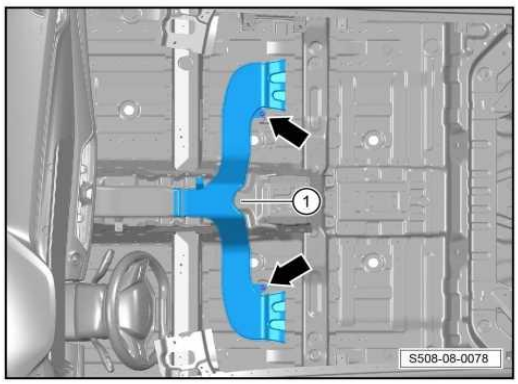
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear air-to-face pipeline assembly 1. Refer to 6.5.4.14 Removal and installation of rear air-to-face pipeline assembly 1

4 Remove the left/right front seat and backrest assembly. Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

5 Remove the left/right A-pillar lower interior trim panel assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly

6 Remove the left/right front door sill assembly. Refer to 9.14.2.18 Removal and installation of front door sill assembly



7 Remove the rear section of rear air-to-footwell pipeline

a. Lift the front floor carpets on the driver's side and the front passenger's side.

b. Unscrew the fixing nuts (see the arrows) and remove the rear section ① of rear air-to-footwell pipe.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

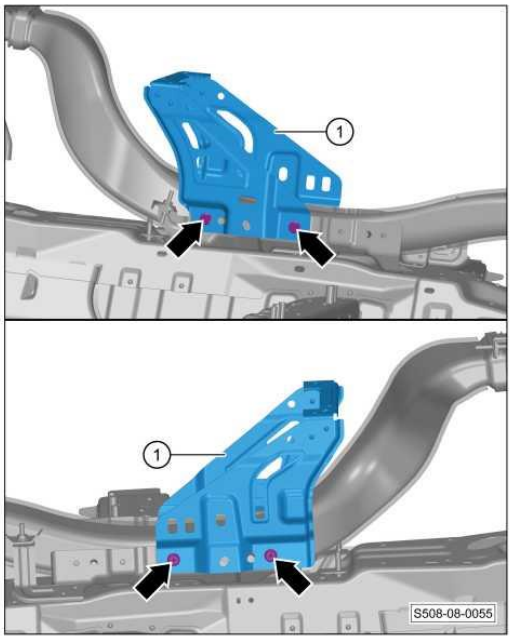
6.5.4.14 Removal and installation of rear air-to-face pipeline assembly 1

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

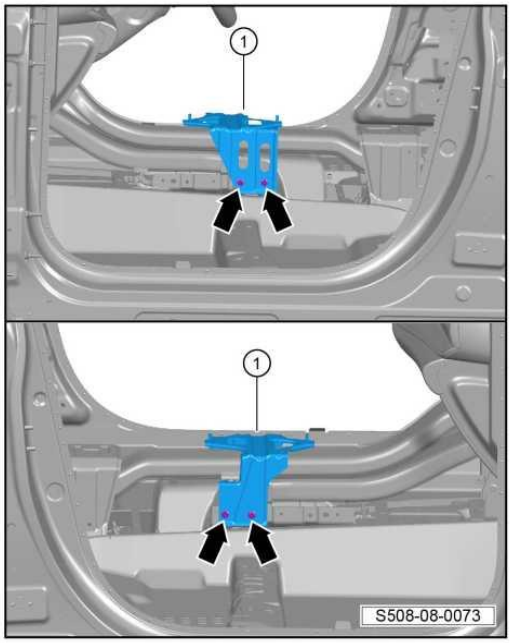
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

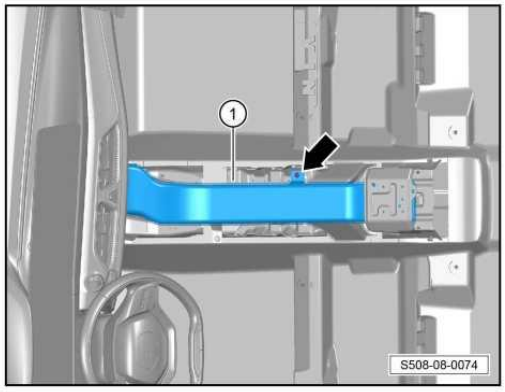


4 Remove the rear air-to-face assembly 1

a. Unscrew the fixing bolts (see arrow) and remove the gear selector/shift lever mounting bracket assembly ①.



b. Unscrew the fixing bolts (see the arrows) and remove the T-BOX support assembly ①.



c. Unscrew the fixing bolts (see arrow) and remove rear air-to-face pipeline assembly 1 ①.

- Tightening torque of bolt: 6±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

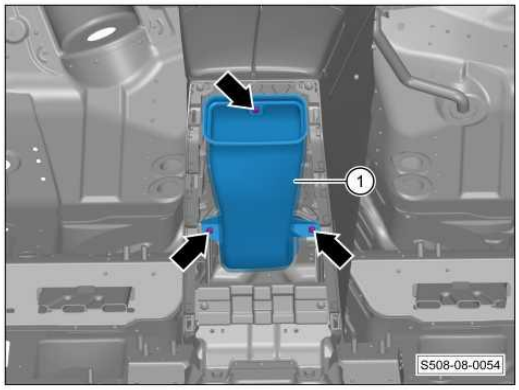
6.5.4.15 Removal and installation of rear air-to-face pipeline assembly 2

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box rear cover assembly. Refer to 9.9.3.4 Removal and installation of rear cover assembly of control box



4 Rear air-to-face pipeline assembly 2

a. Unscrew the fixing screws (see arrow) and remove rear air-to-face pipeline 2 ①.

- Tightening torque of screw: 3±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.6 Controller device components

6.6.1 Specification

6.6.1.1 Fastener specifications

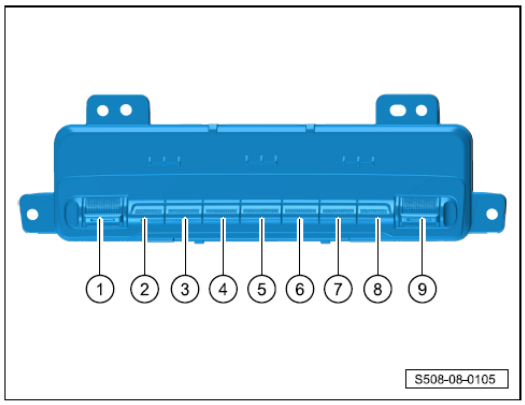
Tightening position	Specification	Tightening torque: N·m
A/C control panel assembly and large panel trim strip of control box	Cross recessed pan head self-tapping screw	3±1

6.6.2 System description

6.6.2.1 System description

Component name	Installation position	Component function
Ambient temperature sensor	It is located behind the front bumper.	It can collect the exterior temperature which will be displayed on the instrument, and is a condition for automatic control of the A/C.
Room temperature sensor	It is located behind the trim panel under the steering wheel.	It can collect the interior temperature, and is a condition for automatic control of the A/C.
PM2.5 sensor assembly	It is located under the instrument panel.	It can effectively detect the outside air quality, which is one of the conditions for cyclic switching between automatic internal and external circulation.
Anion generator anode	It is located under the instrument panel.	It can effectively decompose harmful gases such as formaldehyde and benzene in the vehicle and various bacteria and viruses, reduce driving fatigue, relieve mental stress and protect physical health.

A/C control panel assembly



- Description of A/C Control Panel Buttons

S/N	Description of buttons
1	Temperature button
2	OFF button
3	Automatic A/C ON button
4	A/C ON button
5	Mode button
6	Front windshield defrosting button
7	Rear defrosting button
8	Internal/External circulation button
9	Air volume up/down button

Tail door glass defrost switch

– When the lift gate glass is defrosted and the engine is started, press the rear defrosting button to turn on the working indicator. In case of subsequent non-operation, this function will be automatically turned off after fifteen minutes. Once the visibility of rear windshield and rearview mirror is restored, they can be closed to save battery power.

– Once the visibility of rear windshield and rearview mirror is restored, they can be closed to save battery power.

Intake mode control

– When the internal/external circulation button is pressed, the indicator light will be on and the intake will be set as internal circulation. If it is not operated any more, it will automatically switch to external circulation for 30s every 30 minutes and then return to internal circulation. The indicator light will not go out during switching. When the button is pressed again, the indicator light will go out and the intake will be set as external circulation. When driving in a dusty or foggy environment and when fast cooling or heating is needed, this mode should be selected.

– When the heating mode involves defrosting and air-to-footwell modes, please adopt external circulation

mode for intake to reduce the possibility of fogging (frosting) on interior windows. When the defrosting effect is poor, turn on A/C when necessary.

Note:

Using the internal air circulation mode for a long time may result in poor ventilation in the vehicle and fogging of windows. Please do not apply internal circulation mode for a long time

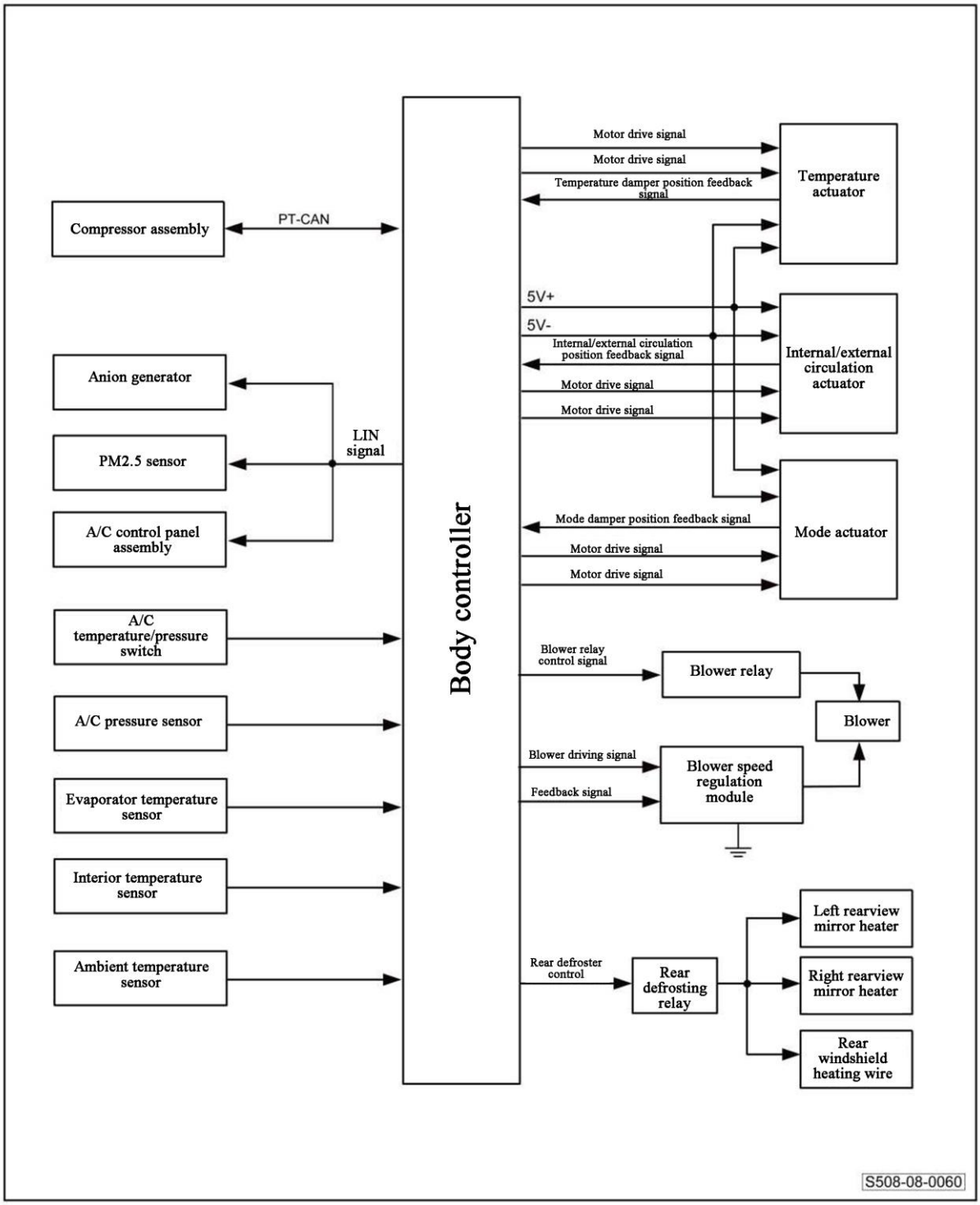
A/C switch

– Start the vehicle, press A/C On button and the A/C system turns on. To turn off the A/C, press this switch again. In order to obtain a good A/C effect, the windows should be closed when using the A/C.

6.6.3 Electrical schematic diagram

6.6.3.1 Electrical schematic diagram

Electrical Schematic Diagram of A/C System

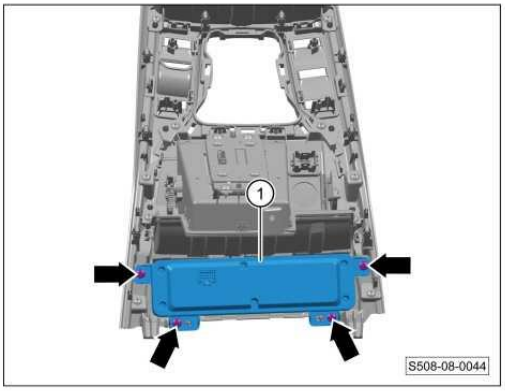


6.6.4 Removal and installation

6.6.4.1 Removal and installation of A/C control panel assembly

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



2 Remove A/C control panel assembly

a. Unscrew the fixing screws (see arrows) , and remove the A/C control panel assembly ①.

- Tightening torque of screw: 3±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation is completed, check whether the A/C control panel assembly functions normally.

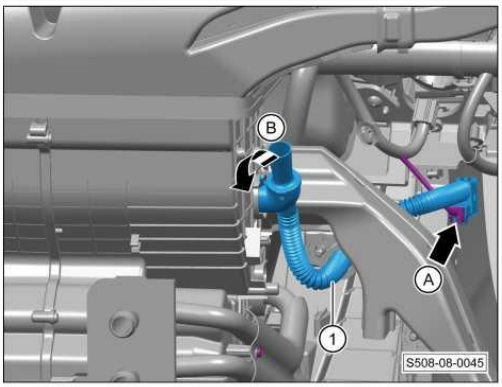
6.6.4.2 Removal and installation of room temperature sensor

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel lower left cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel lower left cover assembly



4 Remove the room temperature sensor

a. Disconnect the connector (see arrow A) of room temperature sensor assembly ①.

b. Rotate the room temperature sensor in direction of arrow B and remove it ①.

Installation procedures

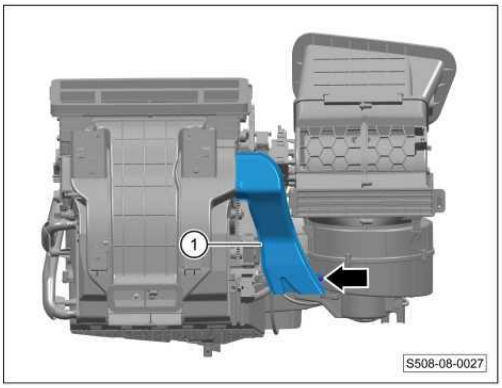
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation is completed, check whether the room temperature sensor functions normally.

6.6.4.3 Removal and installation of evaporator temperature sensor

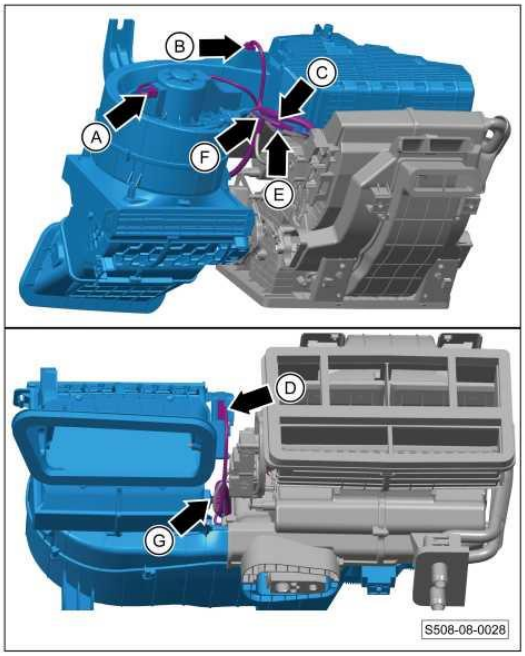
Disassembly procedures

1 Remove the HVAC assembly. Refer to 6.2.6.1 Removal and installation of HVAC assembly



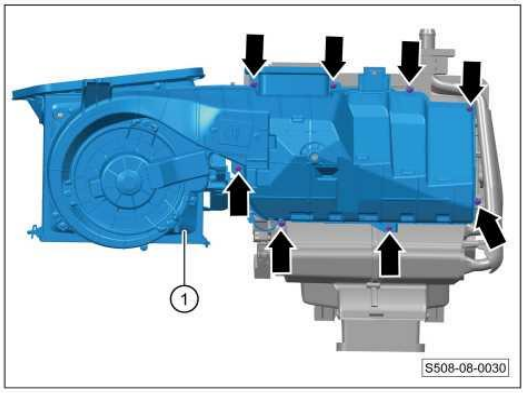
2 Remove the evaporator temperature sensor

a. Unscrew the fixing screw (see arrow) and remove the front right air-to-footwell pipeline component ①.

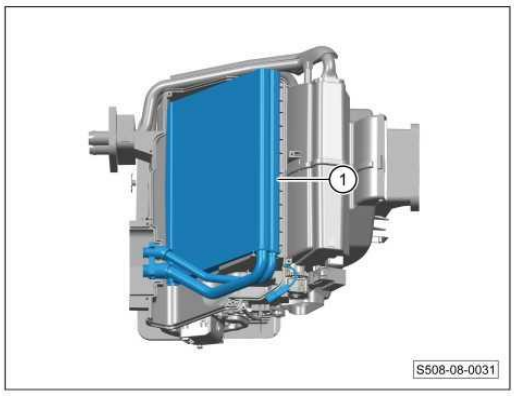


b. Disconnect the A/C harness connectors (see arrows A, B, C and D).

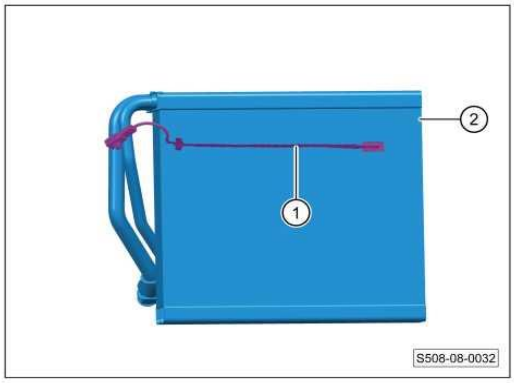
c. Disconnect the fixing clips (see arrows E, F and G) of harness.



d. Unscrew the fixing screws (see arrow) of the lower housing and remove the lower housing assembly ①.



e. Take out the evaporator core with evaporator temperature sensor assembly ①.



f. Separate the evaporator temperature sensor ① from the evaporator core ② and take out the evaporator temperature sensor ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

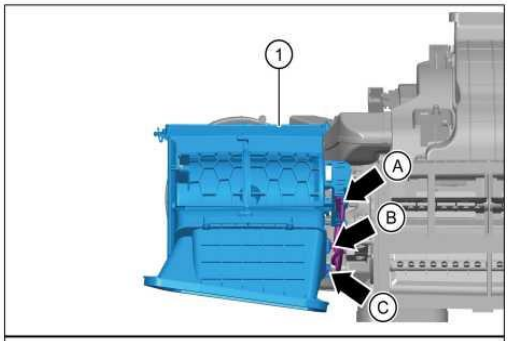
– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

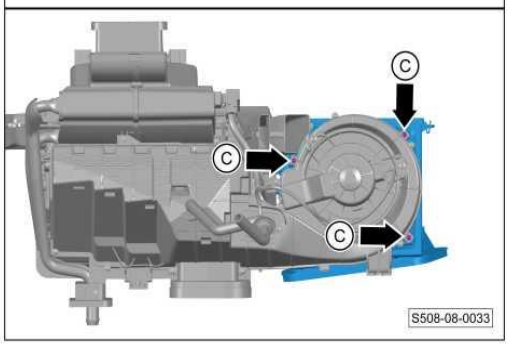
– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

6.6.4.4 Removal and installation of internal/external circulation actuator

Disassembly procedures

1 Remove the HVAC assembly. Refer to 6.2.6.1 Removal and installation of HVAC assembly



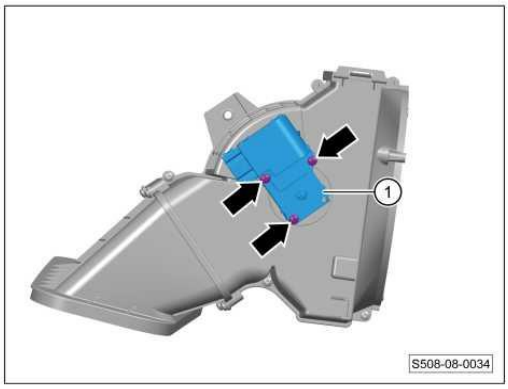


2 Remove the internal/external circulation actuator

a. Disconnect the connector (see arrow A).

b. Disengage the fixing clip (see arrow B).

c. Unscrew the fixing screws (see arrow C) and take out the fresh air damper assembly ①.



d. Unscrew the fixing screws (see arrow) and take out the interior/exterior circulation actuator ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

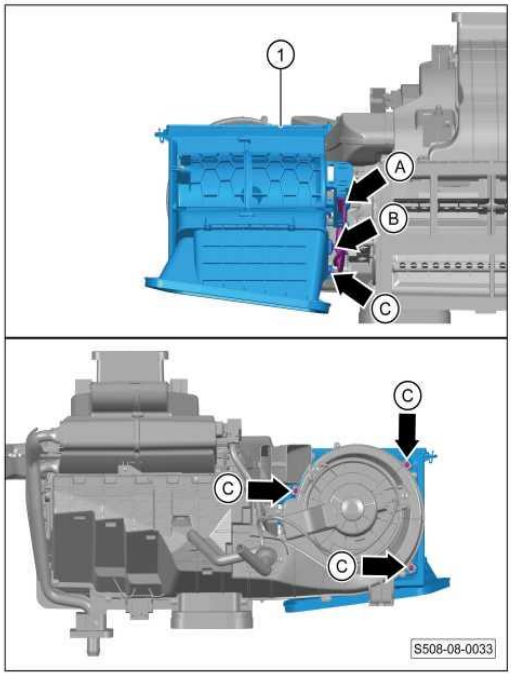
– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

– After installation is completed, check whether the interior/exterior circulation actuator functions normally.

6.6.4.5 Removal and installation of mode actuator

Disassembly procedures

1 Remove the HVAC assembly. Refer to 6.2.6.1 Removal and installation of HVAC assembly

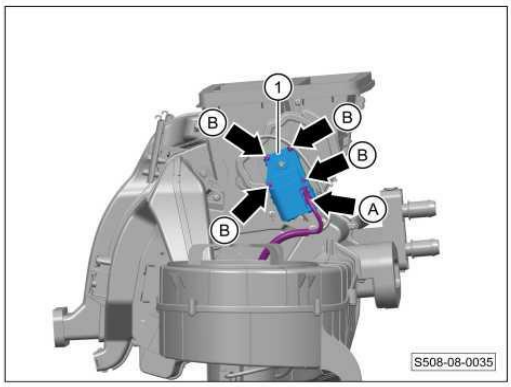


2 Remove the mode actuator

a. Disconnect the connector (see arrow A).

b. Disengage the fixing clip (see arrow B).

c. Unscrew the fixing screws (see arrow C) and take out the fresh air damper assembly ①.



d. Disconnect the connector (see arrow A) of mode actuator.

e. Unscrew the fixing screws (see arrow B) and take out the mode actuator ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

– After installation is completed, check whether the mode actuator functions normally.

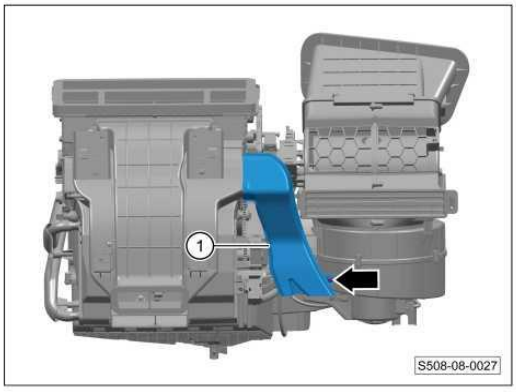
6.6.4.6 Removal and installation of temperature actuator

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

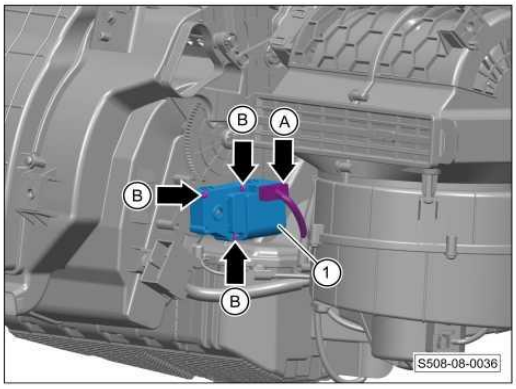
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the HVAC assembly. Refer to 6.2.6.1 Removal and installation of HVAC assembly



4 Remove the temperature actuator

a. Unscrew the fixing screw (see arrow) and take out the front right air-to-footwell air pipeline component ①.



b. Disconnect the connector (see arrow A) of temperature actuator.

c. Unscrew the fixing screws (see arrow B) and remove the temperature actuator ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, vacuumize the A/C system. Refer to 6.2.6.13 Vacuumizing of A/C system

– Fill A/C compressor lubricating oil. Refer to 6.2.6.14 Recycling/filling compressor lubricating oil

– Fill the refrigerant. Refer to 6.2.6.12 Recycling/filling refrigerant

– After installation is completed, check whether the temperature actuator functions normally.

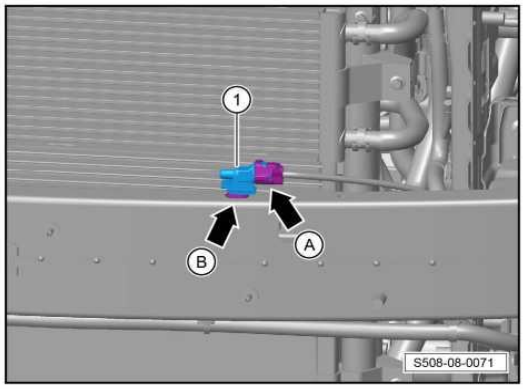
6.6.4.7 Removal and installation of ambient temperature sensor

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the ambient temperature sensor

a. Disconnect the connector (see arrow A).

b. Disengage the fixing clip (see arrow B), and remove the ambient temperature sensor ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

6.6.4.8 Removal and installation of PM2.5 sensor body assembly

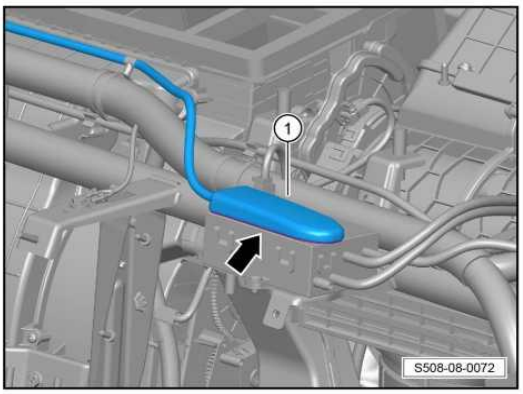
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

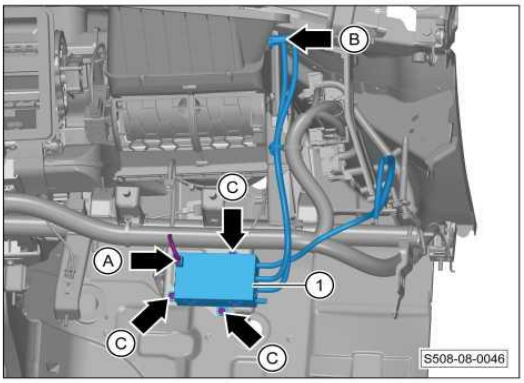
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

4 Remove the PM2.5 sensor body assembly



a. Remove the double-sided adhesive tape (see the arrow) and remove the two-in-one antenna ①.



b. Disconnect the connector (see arrow A) of PM2.5 sensor body assembly ①.

c. Disengage the air connecting hose from the HVAC assembly (see arrow B).

d. Unscrew the fixing screws (see arrows C), remove the PM2.5 sensor body assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

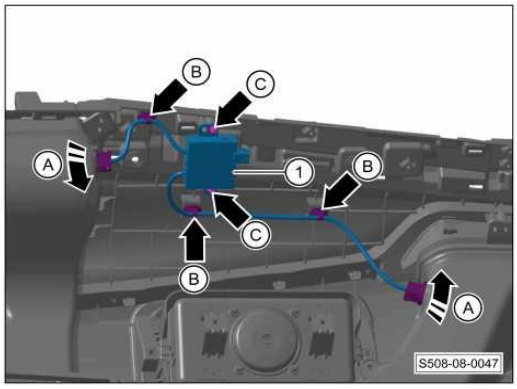
6.6.4.9 Removal and installation of anion generator assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly



4 Remove the anion generator assembly

a. Rotate in direction of arrow A and disconnect the connector of anion generator assembly ①.

b. Disengage the fixing clip (see arrow B) of the harness.

c. Unscrew the fixing screws (see arrow C) and remove the anion generator assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

Safety Protection System

7.1 Safety restraint system (SRS) 4

7.1.1 Specification 4

7.1.1.1 Fastener specifications 4

7.1.2 System overview 5

7.1.2.1 System overview 5

7.1.3 System working principle 8

7.1.3.1 System working principle 8

7.1.4 Component position 9

7.1.4.1 Component position 9

7.1.5 Electrical schematic diagram 10

7.1.5.1 Electrical schematic diagram 10

7.1.6 Diagnosis information and steps . 6

7.1.6.1 Diagnostic instructions 6

7.1.6.2 Visual inspection 6

7.1.6.3 ECU terminal 8

7.1.6.4 DTC list 9

7.1.6.5 DTC: C12001B, C120011 10

7.1.6.6 DTC: C12011B, C120111 10

7.1.6.7 DTC: C12021B, C120211 10

7.1.6.8 DTC: C12031B, C120311 10

7.1.6.9 DTC: C12041B, C120411 11

7.1.6.10 DTC: C12051B, C120511 12

7.1.6.11 DTC: C12061B, C120611 12

7.1.6.12 DTC: C12071B, C120711 14

7.1.6.13 DTC: C122213, C122211 15

7.1.6.14 DTC: C122313, C122311 15

7.1.6.15 DTC: C122113, C122111 15

7.1.6.16 DTC: C122013, C122011 15

7.1.6.17 DTC: U007488 17

7.1.6.18 DTC: U010087 17

7.1.6.19 DTC: U012287 17

7.1.6.20 DTC: U01229 19

7.1.6.21 DTC: U012887 19

7.1.6.22 DTC: U029387 21

7.1.6.23 DTC: U013189 21

7.1.6.24 DTC: B111717, B111716 23

7.1.6.25 DTC: C122911, C122A11 23

7.1.6.26 DTC: C122D00, C123049 26

7.1.7 Removal and installation 28

7.1.7.1 Removal and installation of airbag ECU 30

7.1.7.2 Removal and installation of driver seat airbag module 30

7.1.7.4 Removal and installation of front side airbag module 30

7.1.7.5 Removal and installation of side curtain airbag assembly 31

7.1.7.6 Removal and installation of front impact sensor assembly 31

7.1.7.7 Removal and installation of side impact sensor assembly 32

7.2 Pre-tightening type seat belt system 32

7.2.1 Specification 33

7.2.1.1 Fastener specifications 33

7.2.2 System overview 34

7.2.2.1 System overview 34

7.2.3 System working principle 36

7.2.3.1 System working principle 36

7.2.4 Component position 38

7.2.4.1 Component position 38

7.2.5 Electrical schematic diagram 38

7.2.5.1 Electrical schematic diagram 38

7.2.6 Removal and installation 38

7.2.6.1 Removal and installation of front seat belt body assembly 42

7.2.6.2 Removal and installation of front seat belt height adjuster 43

7.2.6.3 Removal and installation of front seat belt buckle assembly 43

7.2.6.4 Removal and installation of second-row seat belt body assembly 44

7.2.6.5 Removal and installation of second-row seat belt body assembly (middle) 44

7.2.6.6 Removal and installation of second-row single buckle component (five-seat)..... 46

7.2.6.7 Removal and installation of second-row single buckle component (seven-seat)..... 48

7.2.6.8 Removal and installation of second-row double buckle component (five-seat)..... 48

7.2.6.9 Removal and installation of third-row seat belt body assembly.... 51

7.2.6.10 Removal and installation of third-row double buckle component (seven-seat) 54

7.1 Safety restraint system (SRS)

7.1.1 Specification

7.1.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection of the front passenger airbag module and the instrument body	Cross recessed pan head self-tapping screw	3±1
Connection of the front passenger airbag module and the steering support member assembly	Cross recessed hexagon head flange bolt	8±1
Connection of the airbag ECU and the middle channel reinforcement	Hexagon head bolt c/w plain washer cluster M6×16	6±1
Connection of the front collision sensor assembly and the frame front section assembly	Cross recessed hexagon head flange screw M6×20	8±1
Installation of the side collision sensor assembly and the B-pillar inner panel	Cross recessed hexagon head flange bolt	8±1
Side curtain airbag assembly	Cross recessed hexagon head flange bolt	8±1

7.1.2 System overview

7.1.2.1 System overview

The safety restraint system (SRS) is the most important auxiliary safety protection system in a car. When the vehicle collides with obstacles violently, the airbag will be immediately inflated and become a gas cushion, or the pretensioner will be triggered to fasten the seat belt to reduce the impact of the collision on the passengers/driver and absorb the collision energy, thus lessen the extent of passengers/driver injury.

In the event of a collision, if the severity is lower than that as specified, the airbags will not be triggered.

In the event of a severe collision, if the intensity exceeds the limited value, the airbag electronic control unit will rapidly connect the ignition circuit of the appropriate airbag and trigger the gas generator in the airbag. A large amount of gas generated will rapidly inflate the airbag. After a collision, the airbag will automatically release gas, which will neither hinder occupants from escaping, nor affect their view. The airbag electronic control unit is equipped with a reserve power. The reserved power could ignite the "powder" in the airbag at the moment of collision even if the main power is disconnected. Meanwhile, a collision trigger device monitors continuously and automatically, and ensures that the whole system is in the standby state at any time.

Description

- After SRS is triggered, please don't immediately touch the inflation device, because it is very hot.
- After the airbag completely deployed, it immediately starts deflating, so it won't interfere with your visibility.
- After SRS is triggered, you can see smoke fog. Actually this is a kind of powder on the surface of the airbag and has no harm to human body. However, if it stays in your eye or on your skin, please wash it off timely.
- A triggered airbag won't be triggered again.
- After the airbag is triggered, make sure that the airbag electronic control unit and other parts are replaced timely. They can't be reused.

Experiments and practices have proved that, if the vehicle is equipped with airbags, the extent of injury caused to the driver and passengers in case of a frontal collision will be greatly reduced; if the side airbag curtain is equipped, it will be inflated to reduce injury caused by a side collision.

The SRS system consists of a trigger device, an inflation device and airbags. The trigger device consists of sensors, electronic control devices, a reserve power and a monitoring device.

Airbag sensor

The airbag sensors include a central sensor inside the airbag electronic control unit, driver side collision sensor and front passenger side collision sensor. It is used to detect collision deceleration and collision intensity and acts as the parameter used by the electronic control unit (ECU) to calculate if an action command shall be sent.

Inflation device

Inflation device and airbags are integrated and installed in the steering wheel and the inflation device consists of gas generator, gunpowder, gas and housing. After a collision, detonator ignites gunpowder to ignite solid fuel and generate gas, which is filtered and inflated to the airbag to make the airbag inflate instantly.

Airbag

An airbag includes: driver airbag, front passenger airbag, side airbag and side airbag curtain.

Airbags are equipped at both the driver's side and the front passenger's side. When a frontal collision exceeds a certain set limit, they will protect the driver and front passenger. An "occupant detection sensor" is installed on the front passenger seat. When the airbag electronic control unit detects no load on the front passenger seat, the airbag on the front passenger side will not be triggered in case of a collision.

Airbag electronic control unit

Airbag electronic control unit is the control center of the SRS. The electronic control unit receives input signal from sensors, determines whether to activate the airbag and conducts self-diagnosis against malfunctions.

Seat belt tensioner

Seat belt tensioners are connected with the SRS airbags to further increase the effectiveness of seat belts. In case of a collision, the tensioners will retract seat belts immediately to fix the occupants securely on the seat.

Self-diagnosis

The SRS system has a self-diagnosis function. When the airbag electronic control unit is powered on, it will activate the diagnostic program immediately. The diagnostic program will inspect sensors, detonator, power, network and other circuits. In case of a fault, a DTC is given and the airbag warning light flashes. It will be totally finished after completion of a self-check. When the airbag electronic control unit is powered on, periodic connection diagnosis will be carried out. If the system operates normally, the SRS indicator turns on and off after approximately 6s.

Description

- If the indicator is not on or not off after 6s, or on during driving, it indicates that the system has a fault. The system must be inspected and repaired as soon as possible.
- For better maintenance convenience, DTCs related to the fault cause will be stored in the fault memory and can be read with a vehicle diagnostic scanner.

Proper use of airbags

– Airbags must be used with seat belts. Airbags belong to the auxiliary collision protection device and can obtain the optimal effect only when it works with seat belts; therefore, the driver and passengers must fasten their seat belts while the vehicle is moving.

– Eliminate the airbag fault in time. If any fault of the SRS is found, it must be eliminated in time and the vehicle must not be operated with a fault; otherwise, it will cause two serious consequences. On the one hand, in case of a severe collision where airbags are needed to be triggered and inflated, the airbags however cannot work. On the other hand, when the vehicle is moving safely and normally, the airbags may be inflated suddenly when they shall not work, which may cause unnecessary accidental injury to the driver and passengers, even an accident.

– Do not collide with the airbag sensor intentionally. The airbag sensor is very sensitive to a collision; therefore during repair, when the sensor is possibly exposed to a collision, remove the sensor to prevent unnecessary triggering of the airbag. After completion of repair, reinstall the sensor.

– The SRS system has a self-diagnosis function. When the airbag electronic control unit is powered on, it will activate the diagnostic program immediately. The diagnostic program will inspect sensors, detonator, power, network and other circuits. In case of a fault, a DTC is given and the airbag warning light flashes. It will be totally finished after completion of a self-check. When the airbag electronic control unit is powered on, periodic connection diagnosis will be carried out. If the system operates normally, the SRS indicator turns on and then off after approximately 6s.

– Keep all parts of the SRS according to specifications. Since there are gunpowder, detonator and other flammables and explosives in the airbag, transportation and storage must be conducted in strict accordance with specifications; otherwise, it will cause serious consequences.

Safety measures when operating the airbag

Notes

The explosive and inflammable filler of airbag contains toxic substance. There is danger if handled improperly.

– All the inspection, removal, installation and maintenance work must be carried out by trained personnel

only.

– The inspection of the airbag must be conducted with provided tools for inspection and measuring, or there might be unexpected triggering of the airbag.

– Only the operation methods described in this Maintenance Manual are allowed. Especially, the removal and disassembling of airbag are prohibited.

– Replace the faulty parts with new original ones.

– Disconnect the battery terminal before working on the SRS. There must be a one-minute interval after the battery terminal is disconnected. When the SRS is being connected to the power, no one is allowed to remain in the vehicle.

– Prior to taking out (touching) the airbag, the operator must carry out electrostatic discharging. This can be done by touching water pipes or grounded metal parts such as metal brackets.

– Immediately install the airbag unit after it is taken out of the shipping container.

– If the installation is suspended, put the airbag unit back into the shipping container.

– Do not place the airbags at will.

– The removed airbag shall be stored with one side of the impact absorption device facing upward.

– If the airbag has fallen to a hard floor or is damaged in other ways, it shall not be used again.

– In order to avoid affecting the functioning of side airbags, ordinary protective seat covers are not allowed for models equipped with side airbags.

– If there are damages (such as cracks, scorches and holes) to the seat cover, new original parts and seat cover should be replaced for safety concerns.

Airbag disposal

– In accordance with state laws and regulations, recycle the airbag that has not been triggered in the original packaging! For any questions, please contact sales center and manufacturer.

– The triggered airbag can be discarded according to enterprise waste regulations.

7.1.3 System working principle

7.1.3.1 System working principle

Working principle

The passive safety system includes the driver airbag, front passenger airbag, driver seat side airbag, front passenger seat side airbag, left/right curtain airbag and front row left/right pretensioner seat belt. When the triggering conditions of frontal collision are met, the driver and front passenger airbags and seat belts will be detonated; when the triggering conditions of side collision are met, the side airbag, side curtain airbag and seat belt will be detonated.

Triggering mechanism

The system detects the direction and intensity of collision according to the two collision sensors installed on the side of the vehicle, and judges whether the collision is severe through algorithms to decide whether to deploy the front airbag, pre-tighten the seat belt or side airbag, so as to protect all passengers in the vehicle.

Auxiliary functions

The system provides the seat belt reminder function for the driver's seat and front passenger seat, reminding the occupants to fasten the seat belts via audio alarm and alarm light to provide normal protection with airbags.

Deployment principles of airbag and seat belt

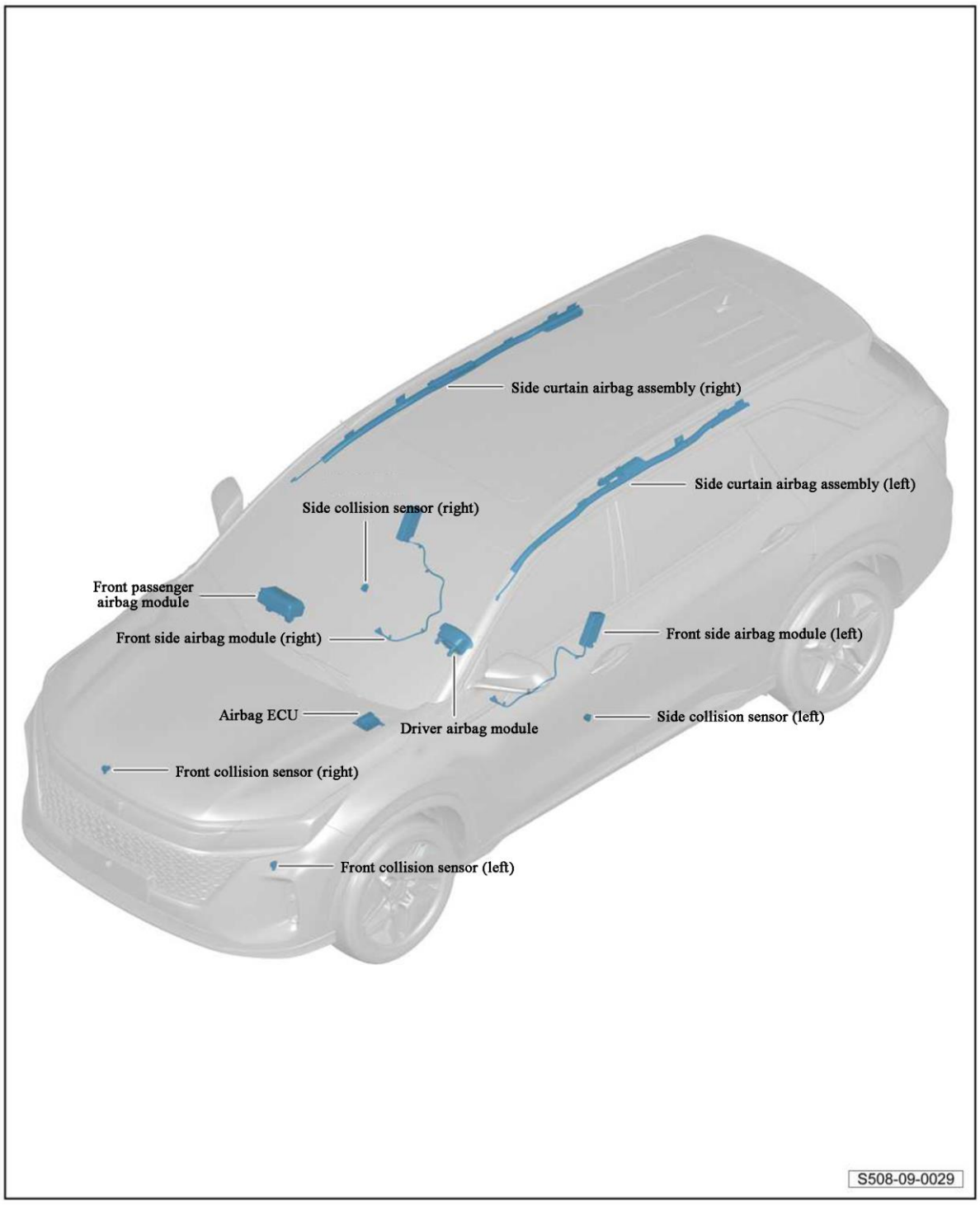
In case of a forward collision, the front collision sensor and the side collision sensor and the airbag control unit will detect a collision signal and send a command to deploy the frontal airbags and seat belts. Similarly, in case of a side collision by another vehicle, the side impact sensor and the airbag control unit will detect a collision signal and send a command to deploy the side airbags, curtain airbags and seat belts.

The airbags and seat belts will only be deployed when the collision speed exceeds the specified limit. This is because even if the airbags and seat belts do not deploy during low-speed collision, the occupants will not be injured. Instead, the deployment may cause unnecessary trouble to the occupants and incur high repair costs.

7.1.4 Component position

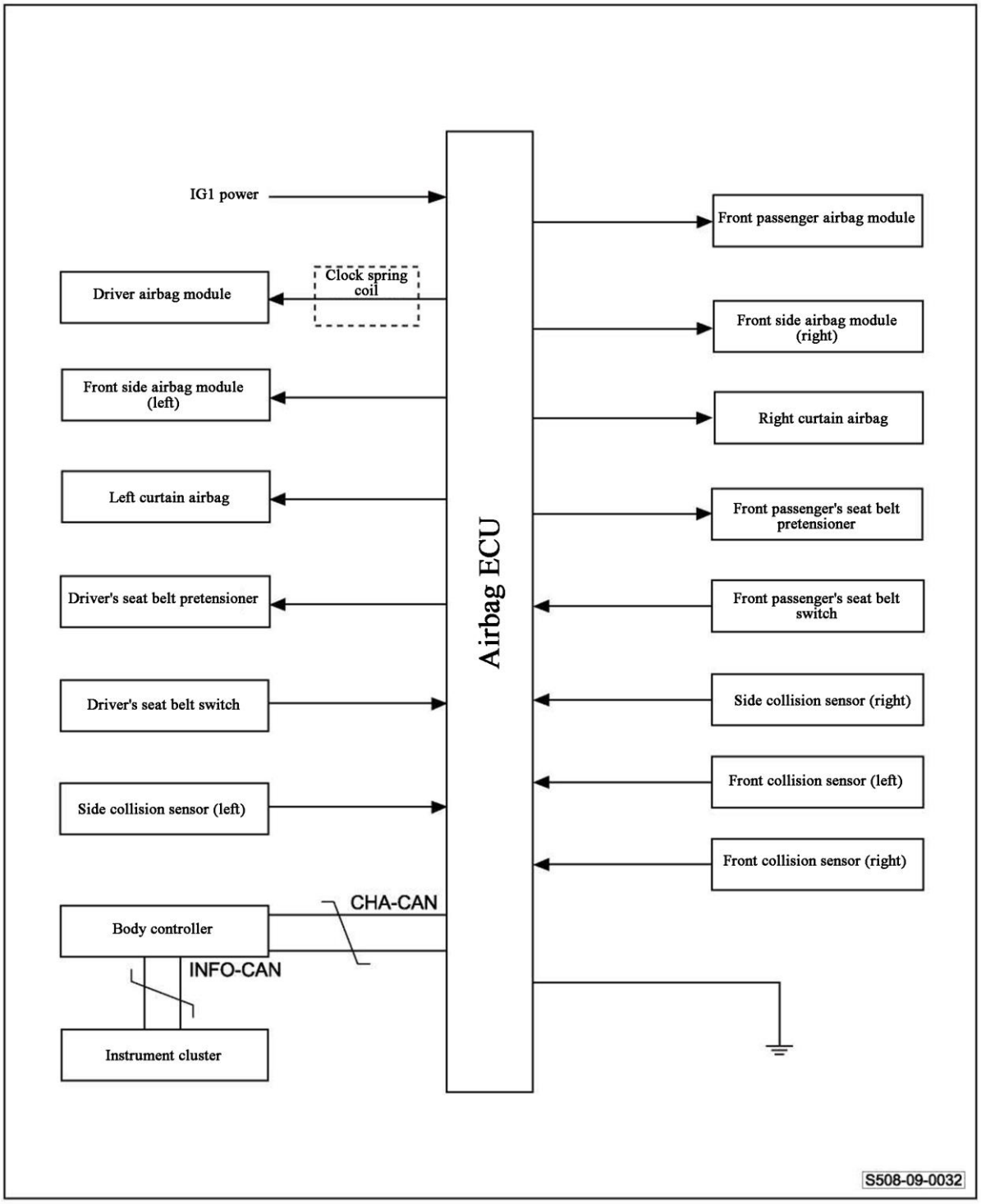
7.1.4.1 Component position

Component position



7.1.5 Electrical schematic diagram

7.1.5.1 Electrical schematic diagram



7.1.6 Diagnosis information and steps

7.1.6.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD diagnosis interface of the vehicle. By comparing the data sheet provided by Airbag ECU with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

7.1.6.2 Visual inspection

- Confirmation of fault symptom

The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

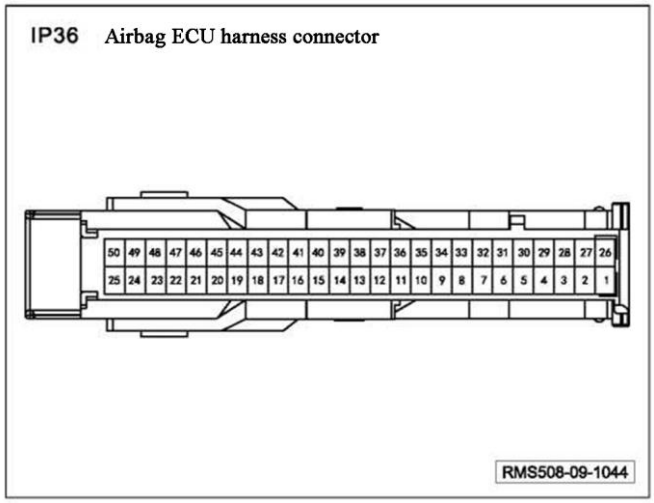
A Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

B Gently shake the connector in the vertical and horizontal directions.

C Gently shake the harness in the vertical and horizontal directions.

7.1.6.3 ECU terminal

Airbag ECU harness connector (IP36)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/YG	Driver side curtain airbag +	—	—
2	0.35/BrY	Driver side airbag -	—	—
3	0.35/BrG	Passenger side curtain airbag +	—	—
4	0.35/YB	Front passenger side airbag -	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
10	0.35/LBr	Front collision (left) -	—	—
11	0.35/BIG	Front collision (left) +	—	—
12	0.35/YR	Side collision (left) -	—	—
13	0.35/BIG	Side collision (right) +	—	—
14	0.35/LBr	Side collision (right) -	—	—
16	0.35/LGr	Front collision (right) +	—	—
17	0.35/YR	Front collision (right) -	—	—
18	0.35/Lg	Chassis (CH)CAN-H	—	—
19	0.35/LgW	Chassis (CH)CAN-L	—	—
20	0.35/B	Ground	—	—
21	0.35/RBI	IG	—	—
24	0.35/YW	Driver side curtain airbag -	—	—
25	0.35/GW	Driver side airbag +	—	—
26	0.35/W	Front passenger seat belt pretensioner +	—	—
27	0.35/RB	Front passenger front airbag -	—	—
28	0.35/YW	Drive airbag-	—	—
29	0.35/GrY	Driver seat belt pretensioner +	—	—
30	0.35/BIY	Collision signal	—	—
31	0.35/BrY	Driver's seat belt buckle	—	—
32	0.35/G	Front passenger seat belt buckle	—	—
37	0.35/LGr	Side collision (left) +	—	—
43	0.35/GrG	Driver seat belt pretensioner -	—	—
44	0.35/YB	Drive airbag+	—	—
45	0.35/Gr	Front passenger seat belt pretensioner -	—	—
46	0.35/RW	Front passenger front airbag +	—	—
49	0.35/GrB	Passenger side curtain airbag -	—	—
50	0.35/YBI	Front passenger side airbag +	—	—

7.1.6.4 DTC list

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
C12001B	Driver front airbag is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120011	Driver front airbag is shorted to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
C120012	Driver front airbag is shorted to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12001A	The resistance of driver front airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12011B	Front passenger front airbag not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120111	Front passenger front airbag short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120112	Front passenger front airbag short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12011A	The resistance of front passenger front airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12021B	Driver seat belt pretensioner is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120211	Driver seat belt pretensioner is shorted to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120212	Driver seat belt pretensioner short to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12021A	Driver seat belt pretensioner resistance is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12031B	Front passenger seat belt pretensioner is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120311	Front passenger seat belt pretensioner is shorted to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120312	Front passenger seat belt pretensioner short to power	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding	Check the wire harness, check related modules, and replace the ECU

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	supply		channel fault	
C12031A	Front passenger seat belt pretensioner resistance is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12041B	Driver side airbag is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120411	Driver side airbag is shorted to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120412	Driver side airbag is shorted to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12041A	Driver side airbag resistance is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12051B	Front passenger side airbag is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120511	Front passenger side airbag is shorted to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120512	Front passenger side airbag is shorted to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12051A	Front passenger side airbag resistance is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12061B	Left side curtain airbag is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120611	Left side curtain airbag is shorted to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120612	Left side curtain airbag is shorted to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12061A	The resistance of left side curtain	The airbag may not respond to the	Wire harness fault, related module fault,	Check the wire harness, check related modules,

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	airbag resistance is 0	ignition command	ECU corresponding channel fault	and replace the ECU
C12071B	Right side curtain airbag is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120711	Right side curtain airbag is shorted to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120712	Right side curtain airbag is shorted to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12071A	The resistance of right side curtain airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12081B	Left knee airbag not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120811	Left knee airbag short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120812	Left knee airbag short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12081A	The resistance of left knee airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12091B	Right knee airbag not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120911	Right knee airbag short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120912	Right knee airbag short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12091A	The resistance of right knee airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120A1B	The rear left row	The airbag may	Wire harness fault,	Check the wire harness,

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	seat belt pretensioner does not exist.	not respond to the ignition command	related module fault, ECU corresponding channel fault	check related modules, and replace the ECU
C120A11	The rear left row seat belt pretensioner short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120A12	The rear left row seat belt pretensioner short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120A1A	The resistance of rear left row seat belt pretensioner is 0.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120B1B	The rear right row seat belt pretensioner does not exist.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120B11	The rear right row seat belt pretensioner short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120B12	The rear right row seat belt pretensioner short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120B1A	The resistance of rear right row seat belt pretensioner is 0.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120C1B	The left middle row side airbag module is not connected.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120C11	The left middle row side airbag module short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120C12	The left middle row side airbag module short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120C1A	The resistance of left middle row side airbag module is 0.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120D1B	The right middle row side airbag	The airbag may not respond to the	Wire harness fault, related module fault,	Check the wire harness, check related modules,

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	module is not connected.	ignition command	ECU corresponding channel fault	and replace the ECU
C120D11	The right middle row side airbag module short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120D12	The right middle row side airbag module short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120D1A	The resistance of right middle row side airbag module is 0.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120E1B	Front left side curtain airbag not exist	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120E11	Front left side curtain airbag short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120E12	Front left curtain airbag short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120E1A	The resistance of front left side curtain airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120F1B	Front right side curtain airbag not exist	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120F11	Front right side curtain airbag short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120F12	Front right curtain airbag short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C120F1A	The resistance of front right side curtain airbag resistance is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12101B	The driver secondary front airbag is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
C121011	The driver secondary frontal airbag short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C121012	The driver secondary frontal airbag short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12101A	The resistance of driver secondary front airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12111B	The front passenger secondary front airbag is not connected	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C121111	The secondary frontal airbag of the front passenger short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C121112	Front passenger secondary frontal airbag short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12111A	The resistance of frontal passenger secondary front airbag is 0	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12121B	The left middle row seat belt pretensioner does not exist.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C121211	The left middle row seat belt pretensioner short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C121212	The left middle row seat belt pretensioner short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12121A	The resistance of left middle row seat belt pretensioner is 0.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12131B	The right middle row seat belt pretensioner does	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding	Check the wire harness, check related modules, and replace the ECU

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	not exist.		channel fault	
C121311	The right middle row seat belt pretensioner short-circuited to ground	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C121312	The right middle row seat belt pretensioner short-circuited to power supply	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C12131A	The resistance of right middle row seat belt pretensioner is 0.	The airbag may not respond to the ignition command	Wire harness fault, related module fault, ECU corresponding channel fault	Check the wire harness, check related modules, and replace the ECU
C122213	Left side impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122211	Left side impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122113	Front right frontal impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122111	Front right frontal impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122313	Right side impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122311	Right side impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122013	Front left frontal impact sensor not	ECU may not receive sensor	Harness DTC, corresponding sensor	Check the harness, check related modules, and

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
	connected	data normally, affecting the ignition-recording function of SRS	DTC and ECU corresponding channel fault	replace the ECU
C122011	Front left frontal impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122413	Rear left side impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122411	Rear left side impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122613	Rear left impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122611	Rear left impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122513	Rear right side impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122511	Rear right side impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122813	Rear right impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
C122811	Rear right impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122713	Rear middle impact sensor not connected	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122711	Rear middle impact sensor short-circuited to ground	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122911	Sensor first line short-circuited	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122A11	Sensor second line short-circuited	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122B11	Sensor third line short-circuited	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C122C11	Sensor fourth line short-circuited	ECU may not receive sensor data normally, affecting the ignition-recording function of SRS	Harness DTC, corresponding sensor DTC and ECU corresponding channel fault	Check the harness, check related modules, and replace the ECU
C12224A	Left side impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor
C12214A	Front right impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
C12234A	Right side impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor
C12204A	Front left impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor
C12244A	Rear left side impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor
C12264A	Rear left impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor
C12254A	Rear right side impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor
C12228A	Rear right impact sensor configuration error	Sensor writing configuration error, unable to enable the sensor properly	Sensor programming configuration parameter error	Replace the sensor
C124413	The front passenger airbag switch not connected	Front passenger airbag protection function cannot be enabled or disabled externally	Sensor programming configuration parameter error	Replace the sensor
C124411	The front passenger airbag switch short-circuited to ground	Front passenger airbag protection function cannot be enabled or disabled externally	Sensor programming configuration parameter error	Replace the sensor
C122D00	OCS system fault	-	-	/
C123049	Config_Error	Functions related to airbag ignition cannot work normally	EEPROM damaged	Rewrite the configuration file and replace ECU
C123100	Factory_Lock	Unable to continue using SRS system	-	It requires factory decryption
C123200	Fire_Lock	Unable to	-	Not recoverable

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
		continue using SRS system		
B111716	Low supply voltage	Electronic components may not work normally	The power supply is abnormal.	Check the power supply, check relevant modules and replace ECU
B111717	Power supply voltage too high	Electronic components may not work normally	The power supply is abnormal.	Check the power supply, check relevant modules and replace ECU
C123500	ECU internal element fault	ECU cannot function normally.	ECU internal DTC	Replace the ECU
C123600	ECU internal element fault	ECU cannot function normally.	ECU internal DTC	Replace the ECU
C123700	ECU internal element fault	ECU cannot function normally.	ECU internal DTC	Replace the ECU
C123800	ECU internal element fault	ECU cannot function normally.	ECU internal DTC	Replace the ECU
C123900	ECU internal element fault	ECU cannot function normally.	ECU internal DTC	Replace the ECU
C123A00	ECU internal element fault	ECU cannot function normally.	ECU internal DTC	Replace the ECU
U007488	Chassis CAN Controller Bus Off	Node is missing, data record may be incomplete	Wire harness fault, connector fault, relevant ECU fault	Check whether the node is working
U012287	Lost communication with ESP	Node is missing, data record may be incomplete	Wire harness fault, connector fault, relevant ECU fault	Check whether the node is working
U012291	Lost communication with BCM	Node is missing, data record may be incomplete	Wire harness fault, connector fault, relevant ECU fault	Check whether the node is working
U012887	Lost communication with EPB	Node is missing, data record may be incomplete	Wire harness fault, connector fault, relevant ECU fault	Check whether the node is working
U029387	Lost communication with VCU	Node is missing, data record may be incomplete	Wire harness fault, connector fault, relevant ECU fault	Check whether the node is working
U010087	Lost communication with EMS	Node is missing, data record may be incomplete	Wire harness fault, connector fault, relevant ECU fault	Check whether the node is working
U013189	Lost communication with IVI	Node is missing, data record may be incomplete	Wire harness fault, connector fault, relevant ECU fault	Check whether the node is working

7.1.6.5 DTC: C12001B, C120011.....

DTC	DTC definition
C12001B	Driver front airbag is not connected
C120011	Driver front airbag is shorted to ground
C120012	Driver front airbag is shorted to power supply
C12001A	The resistance of driver front airbag is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

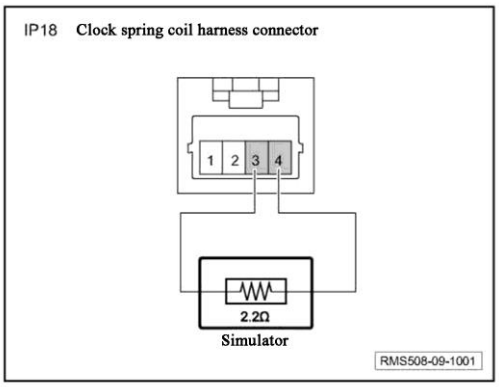
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the clock spring coil harness connector IP18.

D Connect the simulator to the clock spring coil harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and clear the DTC.

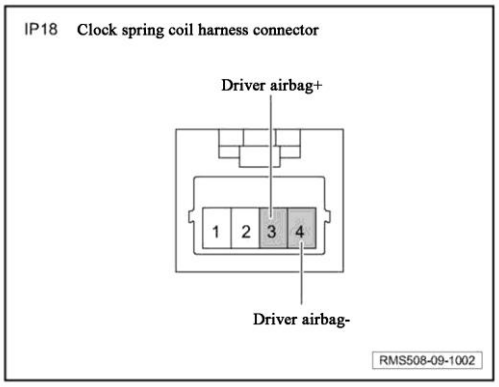
H Read the DTC again.

I Check whether the same DTC is displayed.

No — Go to Step 6.

Yes

Step 3	Check whether the airbag (driver side) circuit is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the clock spring coil harness connector IP18.

D Disconnect airbag ECU harness connector IP36.

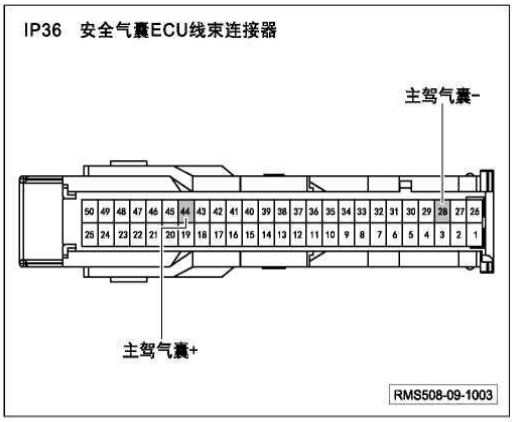
E Measure the resistance between terminal 3 of the clock spring coil harness connector IP18 and terminal 44 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 4 of the clock spring coil harness connector IP18 and terminal 28 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

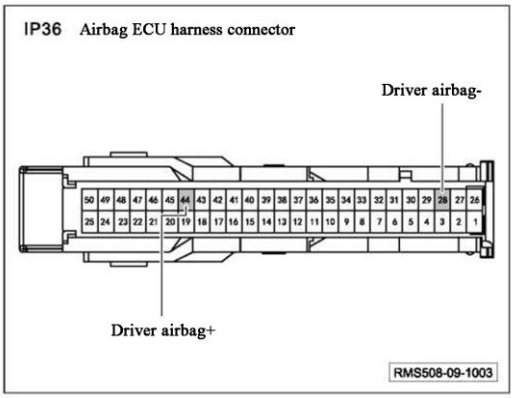
G Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 4	Check whether the airbag (driver side) circuit is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the clock spring coil harness connector IP18.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 28/44 of the airbag ECU harness connector IP36 and body ground.

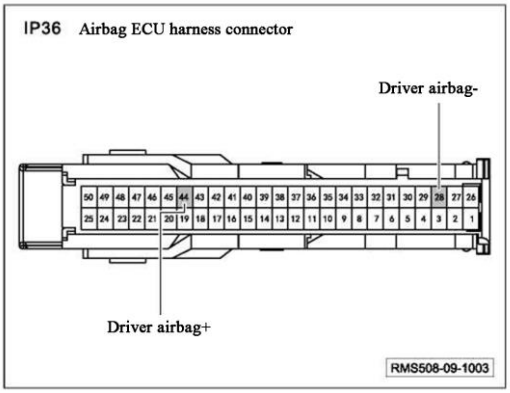
Standard resistance value: 10kΩ or higher

F Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 5	Check whether the airbag (driver side) circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the clock spring coil harness connector IP18.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 28/44 of the airbag ECU harness connector IP36 and

body ground.

Standard voltage value: 0V

H Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the circuit between the clock spring coil and the airbag (driver side).

A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the clock spring coil harness connector and the airbag (driver side) harness connector.

D Measure the resistance between the clock spring coil harness connector and airbag (driver side) harness connector.

Standard resistance value: <1Ω

E Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 7	Replace the airbag (driver side).

A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Replace the airbag (driver side).

D Check whether the fault has been eliminated after replacing the airbag (driver side).

Yes — The system works normally.

No

Step 8	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes — The system works normally.

Next

Step 9	The diagnosis is over.

7.1.6.6 DTC: C12011B, C120111.....

DTC	DTC definition
C12011B	Front passenger front airbag not connected
C120111	Front passenger front airbag short-circuited to ground
C120112	Front passenger front airbag short-circuited to power supply

C12011A	The resistance of front passenger front airbag is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

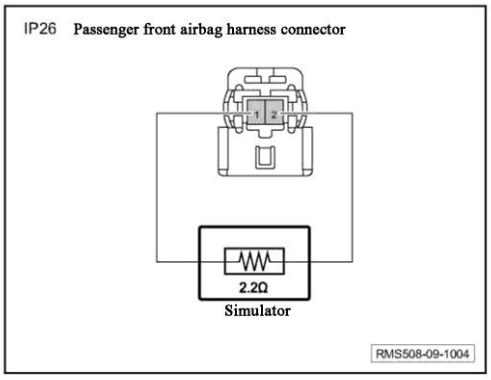
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the passenger front airbag harness connector IP26.

D Connect the simulator to the passenger front airbag harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and clear the DTC.

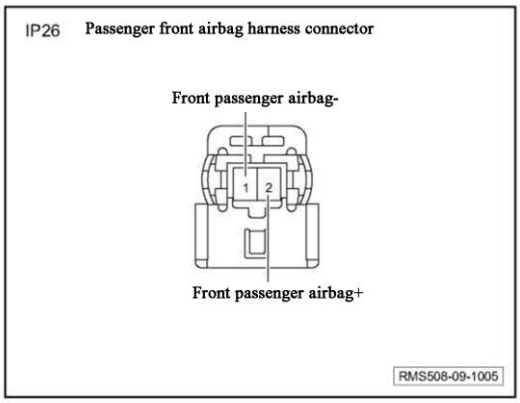
H Read the DTC again.

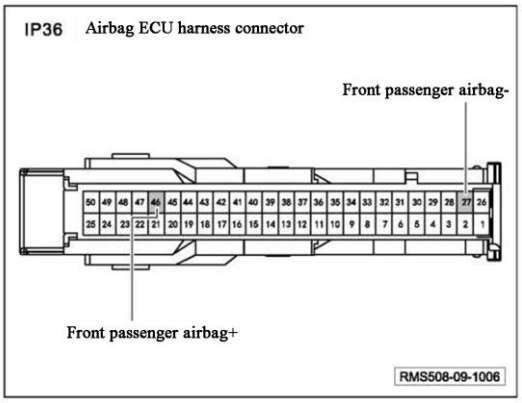
I Check whether the same DTC is displayed.

No — Replace the passenger front airbag.

Yes

Step 3	Check whether the passenger front airbag is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the passenger front airbag harness connector IP26.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 1 of the passenger front airbag harness connector IP26 and terminal 27 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 2 of the passenger front airbag harness connector IP26 and terminal 46 of the airbag ECU harness connector IP36.

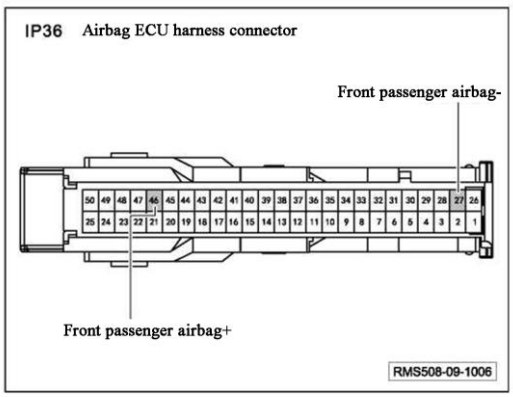
Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

No	Repair or replace the harness.

Yes

Step 4	Check whether the passenger front airbag is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the passenger front airbag harness connector IP26.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 46 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 27 of the airbag ECU harness connector IP36 and body ground.

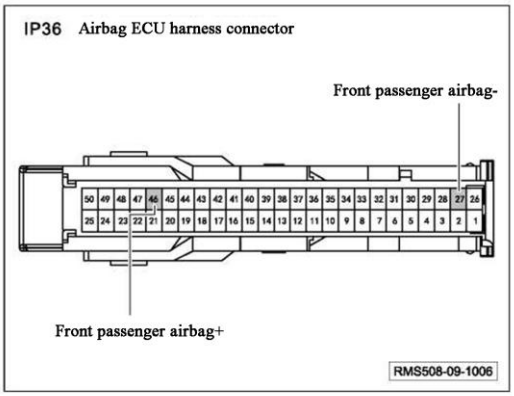
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No	Repair or replace the harness.

Yes

Step 5	Check whether the passenger front airbag is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the passenger front airbag harness connector IP26.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 46 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 27 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.7 DTC: C12021B, C120211.....

DTC	DTC definition
C12021B	Driver seat belt pretensioner is not connected
C120211	Driver seat belt pretensioner is shorted to ground
C120212	Driver seat belt pretensioner short to power supply
C12021A	Driver seat belt pretensioner resistance is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read

and record the DTC.

C Clear the DTC.

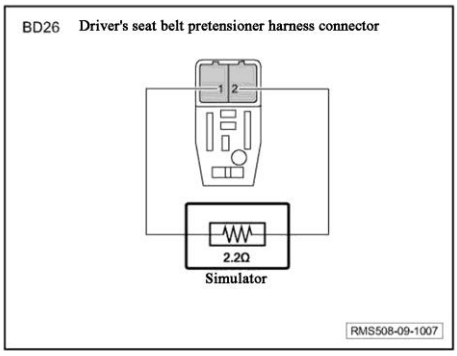
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2 Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver seat belt pretensioner harness connector BD26.

D Connect the simulator to the driver seat belt pretensioner harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and clear the DTC.

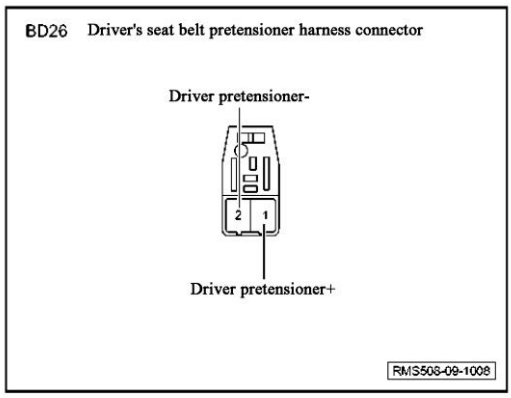
H Read the DTC again.

I Check whether the same DTC is displayed.

No → Replace the driver's seat belt pretensioner (left front seat belt body assembly).

Yes

Step 3	Check whether the driver seat belt pretensioner is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver seat belt pretensioner harness connector BD26.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 1 of the driver's seat belt pretensioner harness connector BD26 and terminal 29 of the airbag ECU harness connector IP36.

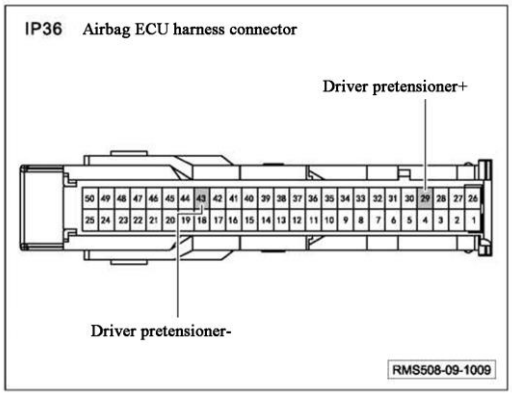
F Measure the resistance between terminal 2 of the driver's seat belt pretensioner harness connector BD26 and terminal 43 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

G Confirm if the resistance conforms to the

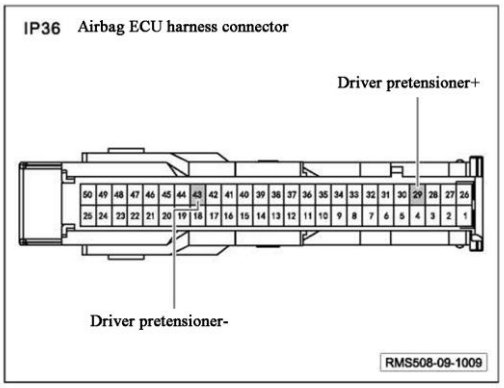
standard value

No → Repair or replace the harness.



Yes

Step 4	Check whether the driver seat belt pretensioner is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver seat belt pretensioner harness connector BD26.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 29 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 43 of the airbag ECU harness connector IP36 and body ground.

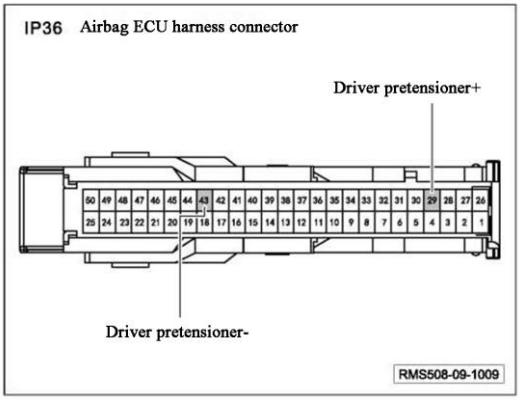
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 5	Check whether the driver seat belt pretensioner is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver seat belt pretensioner harness connector BD26.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 29 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 43 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.8 DTC: C12031B, C120311.....

DTC	DTC definition
C12031B	Front passenger seat belt pretensioner is not connected
C120311	Front passenger seat belt pretensioner is shorted to ground
C120312	Front passenger seat belt pretensioner short to power supply
C12031A	Front passenger seat belt pretensioner resistance is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

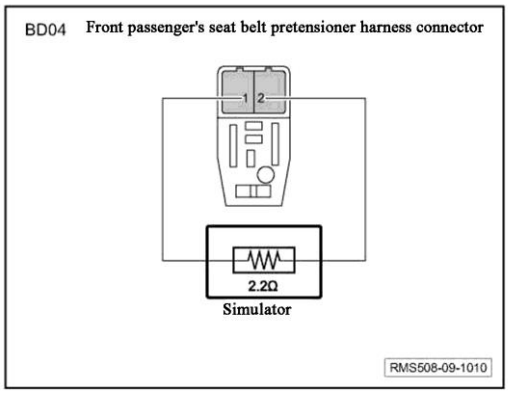
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger seat belt pretensioner harness connector BD04.

D Connect the simulator to the front passenger seat belt pretensioner harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and clear the DTC.

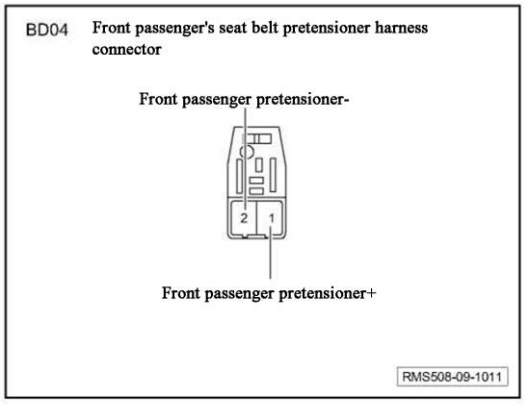
H Read the DTC again.

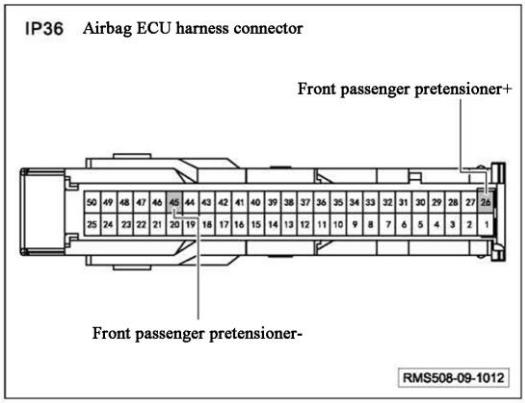
I Check whether the same DTC is displayed.

No	Replace the front passenger seat belt pretensioner (right front seat belt body assembly).

Yes

Step 3	Check whether the front passenger seat belt pretensioner is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger seat belt pretensioner harness connector BD04.

D Disconnect airbag ECU harness connector IP36.

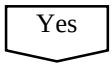
E Measure the resistance between terminal 1 of the passenger seat belt pretensioner harness connector BD04 and terminal 26 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 2 of the passenger seat belt pretensioner harness connector BD04 and terminal 45 of the airbag ECU harness connector IP36.

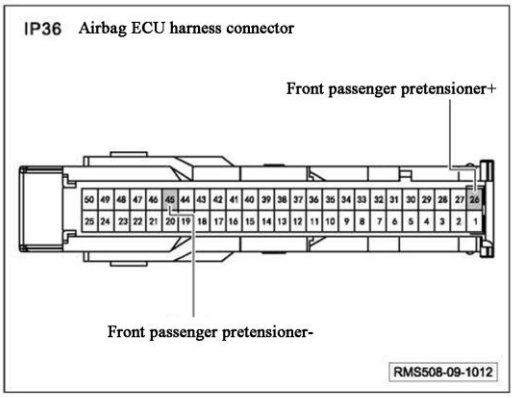
Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

No	Repair or replace the harness.


Yes

Step 4	Check whether the front passenger seat belt pretensioner is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger seat belt pretensioner harness connector BD04.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 26 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 45 of the airbag ECU harness connector IP36 and body ground.

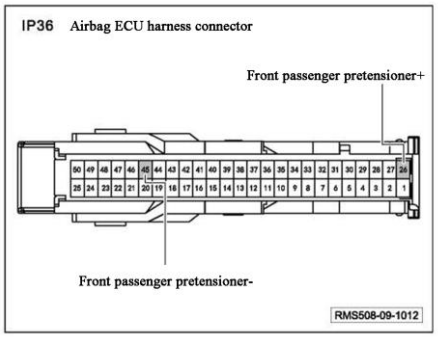
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

I No>	Repair or replace the harness.

Yes

Step 5	Check whether the front passenger seat belt pretensioner is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger seat belt pretensioner harness connector BD04.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 26 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 45 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

I No>	Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

	B	Is the fault eliminated after replacing the airbag ECU?	
			The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.9 DTC: C12041B, C120411.....

DTC	DTC definition
C12041B	Driver side airbag is not connected
C120411	Driver side airbag is shorted to ground
C120412	Driver side airbag is shorted to power supply
C12041A	Driver side airbag resistance is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

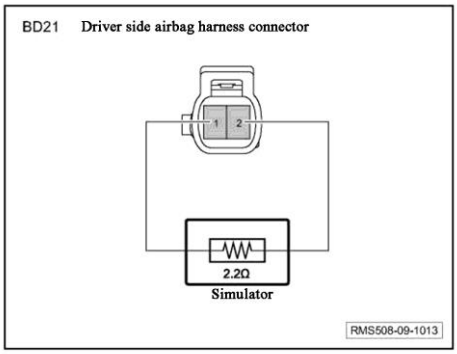
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver side airbag harness connector BD21.

D Connect the simulator to the driver side airbag harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

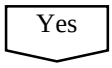
F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and clear the DTC.

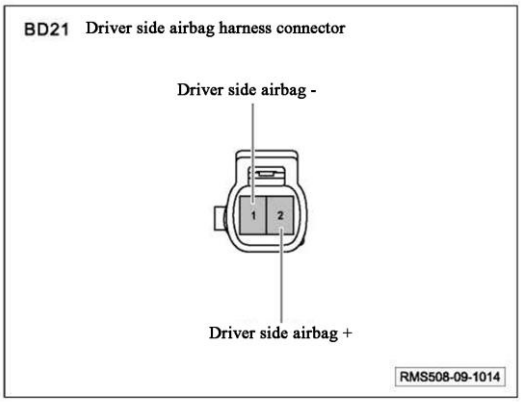
H Read the DTC again.

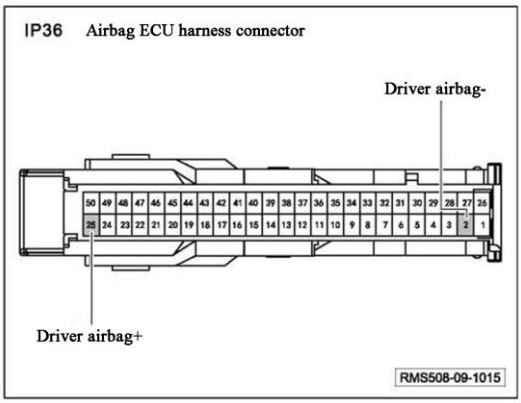
I Check whether the same DTC is displayed.

No — Replace the driver side airbag (left front side airbag module).


Yes

Step 3	Check whether the deployment circuit of the driver side airbag is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver side airbag harness connector BD21.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 1 of the driver side airbag harness connector BD21 and terminal 2 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 2 of the driver side airbag harness connector BD21 and terminal 25 of the airbag ECU harness connector IP36.

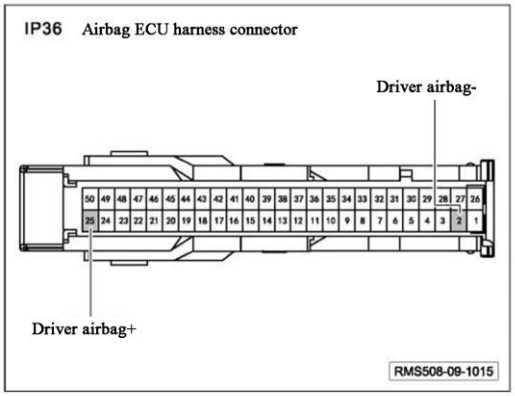
Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 4	Check whether the deployment circuit of the driver side airbag is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver side airbag harness connector BD21.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 25 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 2 of the airbag ECU harness connector IP36 and body ground.

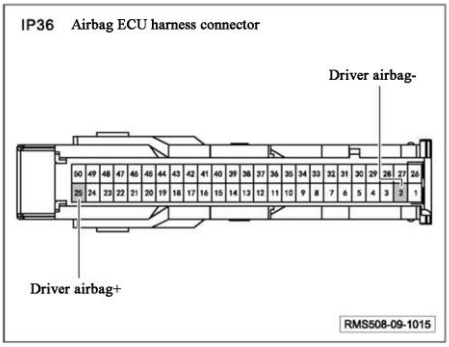
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 5	Check whether the driver side airbag deployment circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver side airbag harness connector BD21.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 25 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 2 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.10 DTC: C12051B, C120511.....

DTC	DTC definition
C12051B	Front passenger side airbag is not connected
C120511	Front passenger side airbag is shorted to ground
C120512	Front passenger side airbag is shorted to power supply
C12051A	Front passenger side airbag resistance is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

	C	Clear the DTC.

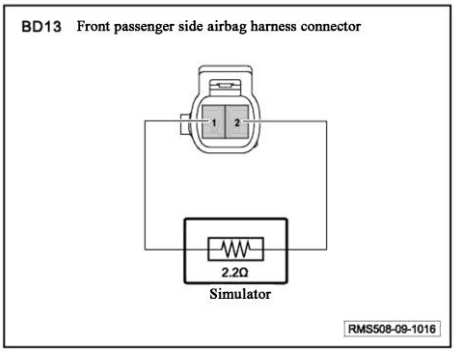
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger side airbag harness connector BD13.

D Connect the simulator to the front passenger side airbag harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and clear the DTC.

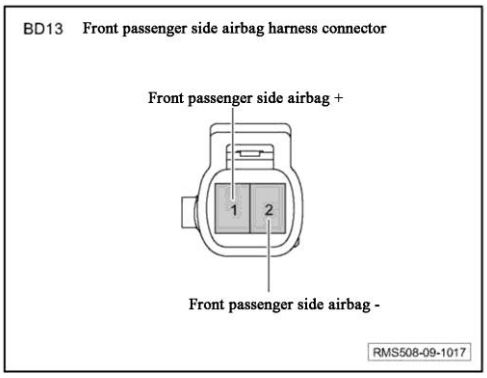
H Read the DTC again.

I Check whether the same DTC is displayed.

No — Replace the front passenger side airbag (right front side airbag module).

Yes

Step 3	Check whether the front passenger side airbag deployment circuit is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger side airbag harness connector BD13.

D Disconnect airbag ECU harness connector IP36.

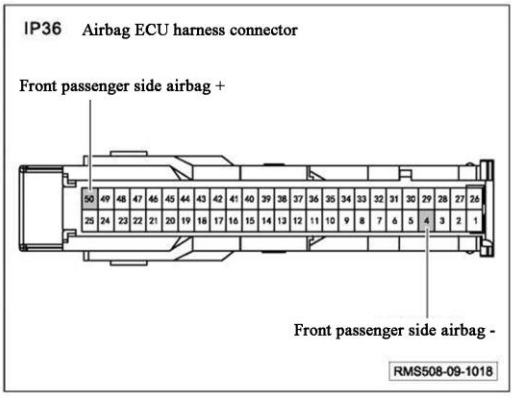
E Measure the resistance between terminal 1 of the front passenger side airbag harness connector BD13 and terminal 50 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 2 of the front passenger side airbag harness connector BD13 and terminal 4 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

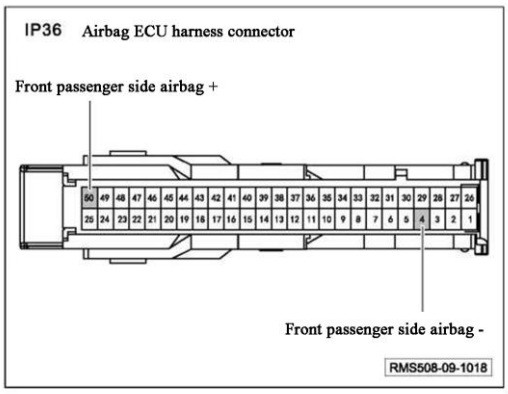
G Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.



Yes

Step 4	Check whether the front passenger side airbag deployment circuit is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger side airbag harness connector BD13.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 50 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 4 of the airbag ECU harness connector IP36 and body ground.

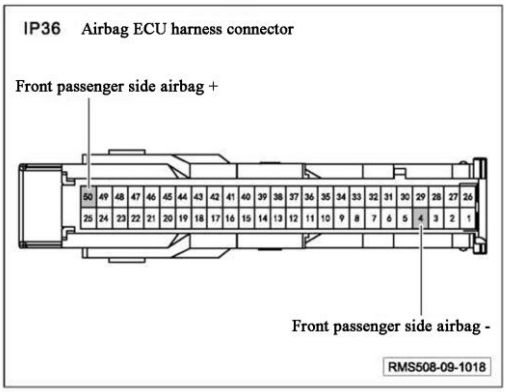
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 5	Check whether the front passenger side airbag deployment circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger side airbag harness connector BD13.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 50 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 4 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.11 DTC: C12061B, C120611.....

DTC	DTC definition
C12061B	Left side curtain airbag is not connected
C120611	Left side curtain airbag is shorted to ground
C120612	Left side curtain airbag is shorted to power supply
C12061A	The resistance of left side curtain airbag resistance is 0
C120E1B	Front left side curtain airbag not exist
C120E11	Front left side curtain airbag short-circuited to ground
C120E12	Front left curtain airbag short-circuited to power supply
C120E1A	The resistance of front left side curtain airbag is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

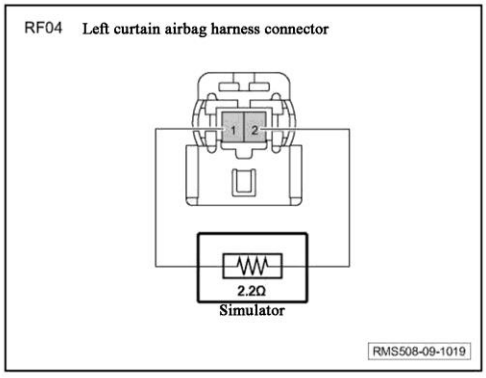
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the left curtain airbag harness connector RF04.

D Connect the simulator to left curtain airbag harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and clear the DTC.

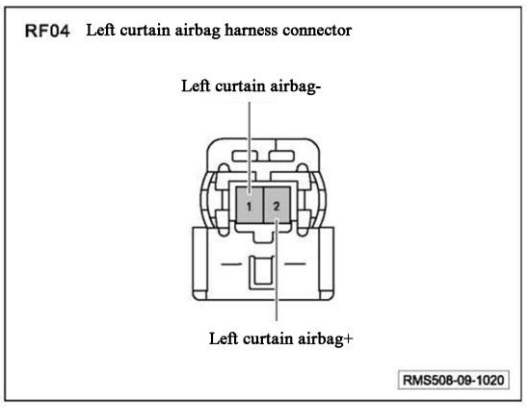
H Read the DTC again.

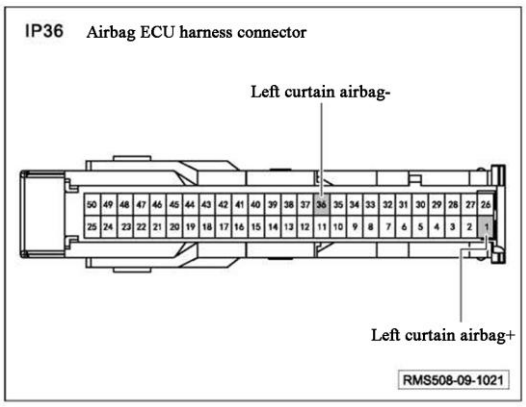
I Check whether the same DTC is displayed.

No — Replace the left curtain airbag.

Yes

Step 3	Check whether the left curtain airbag deployment circuit is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the left curtain airbag harness connector RF04.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 1 of the left curtain airbag harness connector RF04 and terminal 24 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 2 of the left curtain airbag harness connector RF04 and terminal 1 of the airbag ECU harness connector IP36.

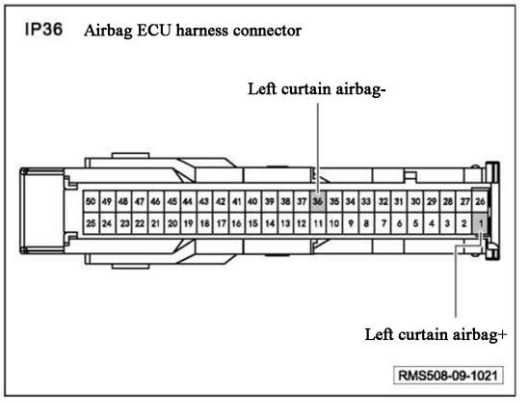
Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 4	Check whether the left curtain airbag deployment circuit is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the left curtain airbag harness connector RF04.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 1 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 24 of the airbag ECU harness connector IP36 and body ground.

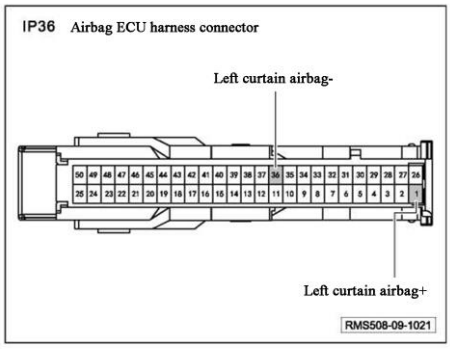
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 5	Check whether the left curtain airbag deployment circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the left curtain airbag harness connector RF04.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 1 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 24 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.12 DTC: C12071B, C120711.....

DTC	DTC definition
C12071B	Right side curtain airbag is not connected
C120711	Right side curtain airbag is shorted to ground
C120712	Right side curtain airbag is shorted to power supply
C12071A	The resistance of right side curtain airbag is 0
C120F1B	Front right side curtain airbag not exist
C120F11	Front right side curtain airbag short-circuited to ground
C120F12	Front right curtain airbag short-circuited to power supply
C120F1A	The resistance of front right side curtain airbag resistance is 0

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

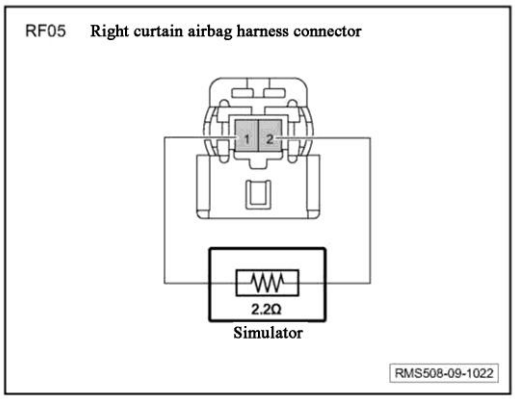
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Use the simulator to test.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the right curtain airbag harness connector RF05.

D Connect the simulator to right curtain airbag harness connector.

Simulator resistance: 2.2 Ω

E Install the battery negative terminal.

F Connect the diagnostic scanner to OBD interface.

G Turn the start switch to the "ON" position and

clear the DTC.

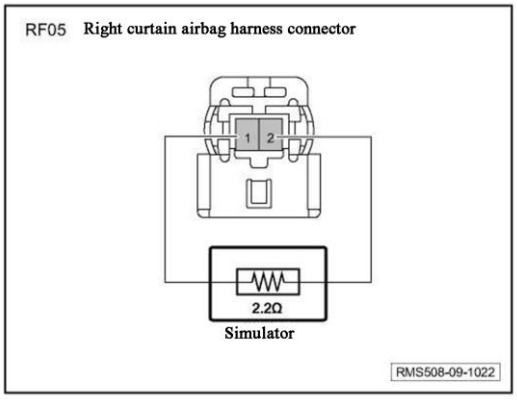
H Read the DTC again.

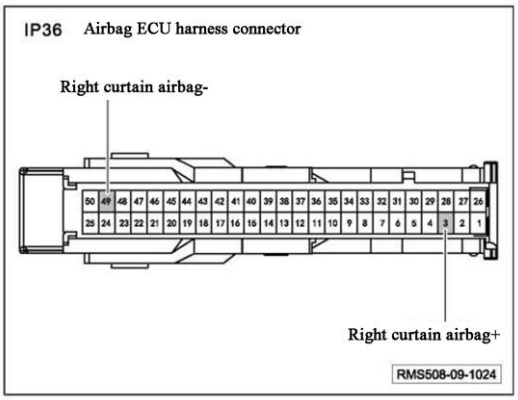
I Check whether the same DTC is displayed.

No → Replace the right curtain airbag.

Yes

Step 3	Check whether the right curtain airbag deployment circuit is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the right curtain airbag harness connector RF05.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 1 of the right curtain airbag harness connector RF05 and terminal 49 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 2 of the right curtain airbag harness connector RF05 and terminal 3 of the airbag ECU harness connector IP36.

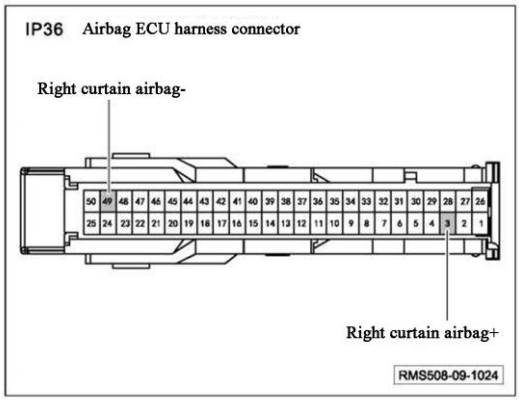
Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

I No> Repair or replace the harness.

Yes

Step 4	Check whether the right curtain airbag deployment circuit is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the right curtain airbag harness connector RF05.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 49 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 3 of the airbag ECU harness connector IP36 and body ground.

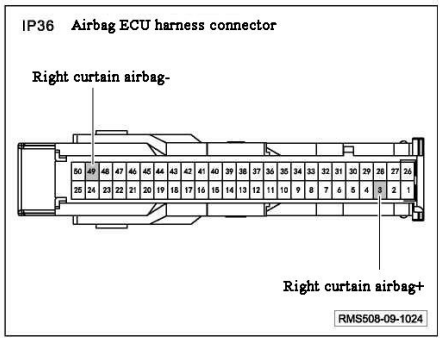
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No	Repair or replace the harness.

Yes

Step 5	Check whether the right curtain airbag deployment circuit is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the right curtain airbag harness connector RF05.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 49 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 3 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.13 DTC: C122213, C122211.....

DTC	DTC definition
C122213	Left side impact sensor not connected
C122211	Left side impact sensor short-circuited to ground
C12224A	Left side impact sensor configuration error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

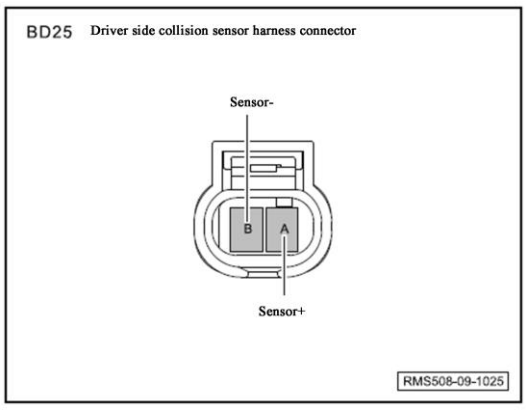
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the driver side collision sensor is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver side collision sensor harness connector BD25.

D Disconnect airbag ECU harness connector IP36.

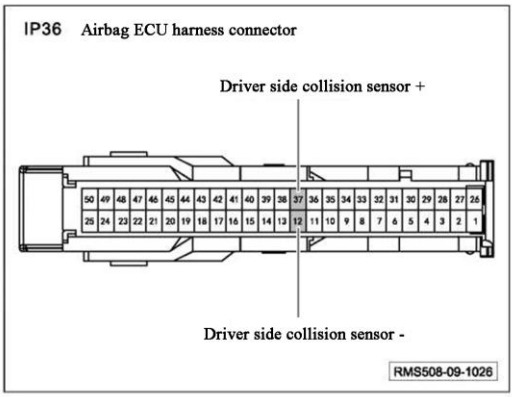
E Measure the resistance between terminal A of the driver side impact sensor harness connector BD25 and terminal 37 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal B of the driver side impact sensor harness connector BD25 and terminal 12 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

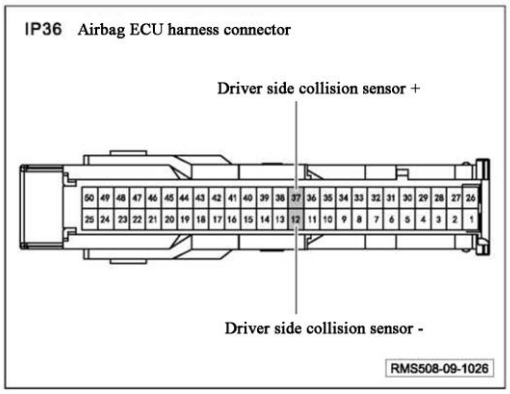
G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.



Yes

Step 3	Check whether the driver side collision sensor is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver side collision sensor harness connector BD25.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 37 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 12 of the airbag ECU harness connector IP36 and body ground.

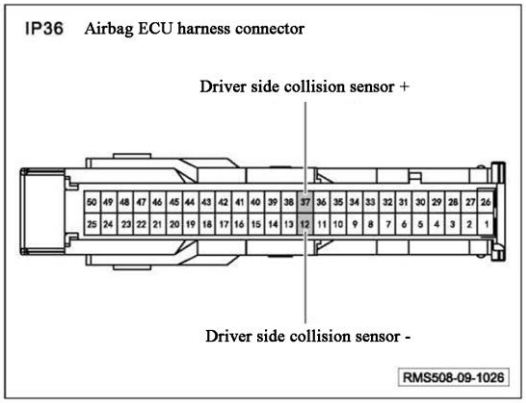
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 4	Check whether the driver side collision sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the driver side collision sensor harness connector BD25.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 37 of the

airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 12 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Replace the driver side collision sensor.

A Replace the driver side collision sensor.

B Is the fault eliminated after replacing the driver side collision sensor?

Yes → The system works normally.

No

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis ends.

7.1.6.14 DTC: C122313, C122311.....

DTC	DTC definition
C122313	Right side impact sensor not connected
C122311	Right side impact sensor short-circuited to ground
C12234A	Right side impact sensor configuration error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

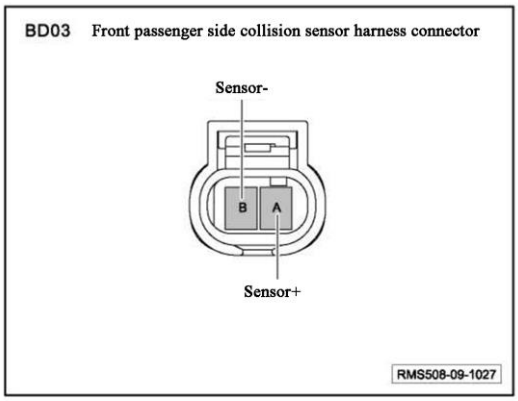
D Read the DTC again.

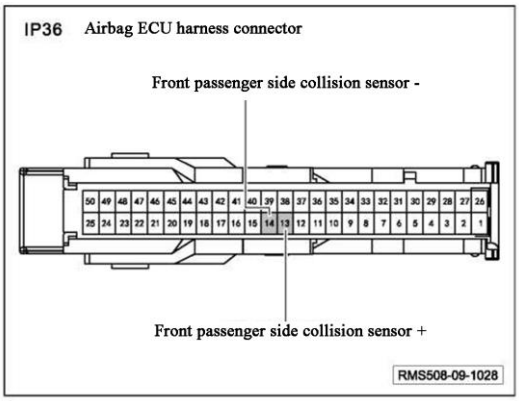
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the front passenger side collision sensor is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger side collision sensor harness connector BD03.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal A of the front passenger side impact sensor harness connector BD03 and terminal 13 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal B of the front passenger side impact sensor harness connector BD03 and terminal 10 of the airbag ECU harness connector IP14.

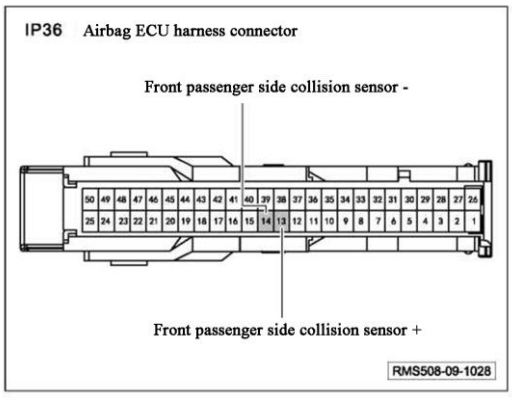
Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check whether the front passenger side collision sensor is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger side collision sensor harness connector BD03.

D Disconnect airbag ECU harness connector IP36.

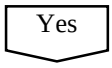
E Measure the resistance between terminal 13 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 14 of the airbag ECU harness connector IP36 and body ground.

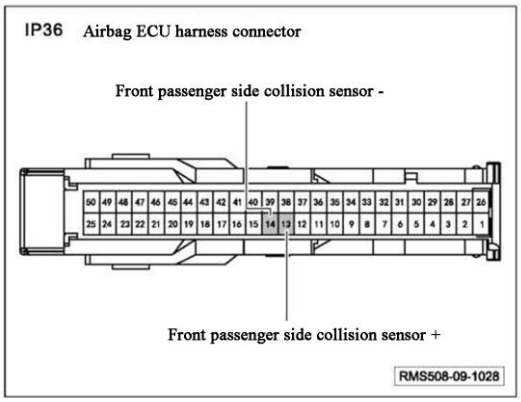
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.


Yes

Step 4	Check whether the front passenger side collision sensor is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front passenger side collision sensor harness connector BD03.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 13 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 14 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Replace the front passenger side collision sensor.

A Replace the front passenger side collision sensor.

B Is the fault eliminated after replacing the front passenger side collision sensor?

Yes → The system works normally.

No

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.15 DTC: C122113, C122111.....

DTC	DTC definition
C122113	Front right frontal impact sensor not connected
C122111	Front right frontal impact sensor short-circuited to

	ground
C12214A	Front right impact sensor configuration error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

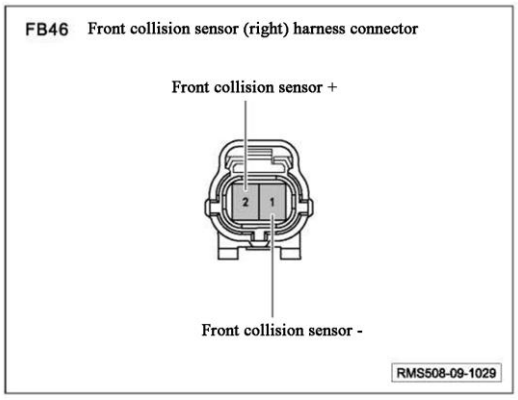
D Read the DTC again.

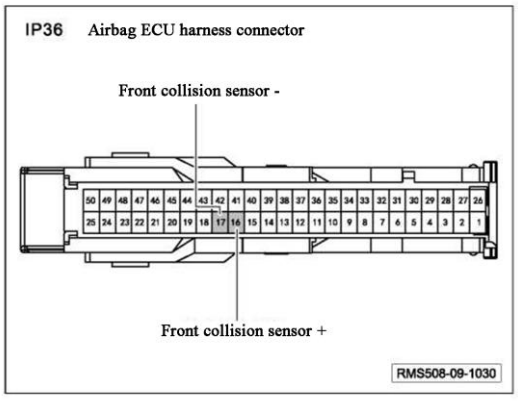
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of the front impact sensor (right) is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front collision sensor (right) harness connector FB46.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 1 of the front collision sensor (right) harness connector FB46 and terminal 17 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 2 of the front collision sensor (right) harness connector FB46 and terminal 16 of the airbag ECU harness connector IP36.

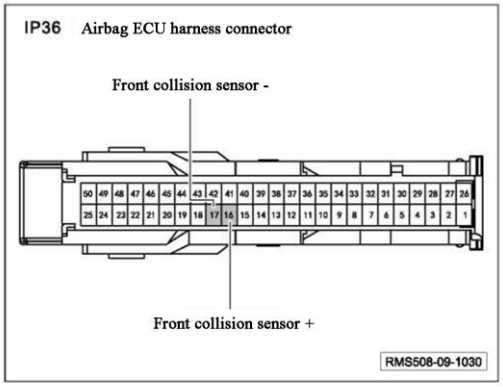
Standard resistance value: <1Ω

G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 3	Check whether the circuit of the front impact sensor (right) is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front collision sensor (right) harness connector FB46.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 17 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 16 of the airbag ECU harness connector IP36 and body ground.

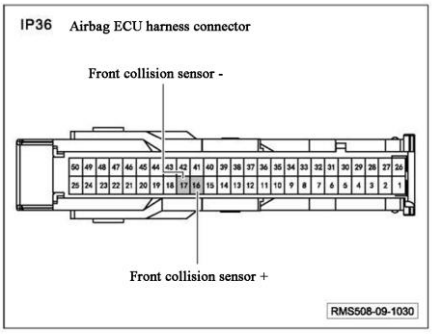
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 4	Check whether the circuit of the front impact sensor (right) is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect the front collision sensor (right) harness connector FB46.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 17 of the airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 16 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No — Repair or replace the harness.

Yes

Step 5	Replace the front collision sensor (right).

A Replace the front collision sensor (right).

B Check whether the fault has been eliminated after replacing the front collision sensor(right).

Yes → The system works normally.

No

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.16 DTC: C122013, C122011.....

DTC	DTC definition
C122013	Front left frontal impact sensor not connected
C122011	Front left frontal impact sensor short-circuited to ground
C12204A	Front left impact sensor configuration error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

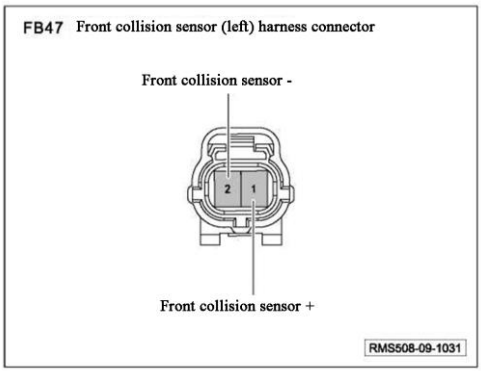
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of the front impact sensor (left) is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect front collision sensor (left) harness connector FB47.

D Disconnect airbag ECU harness connector IP36.

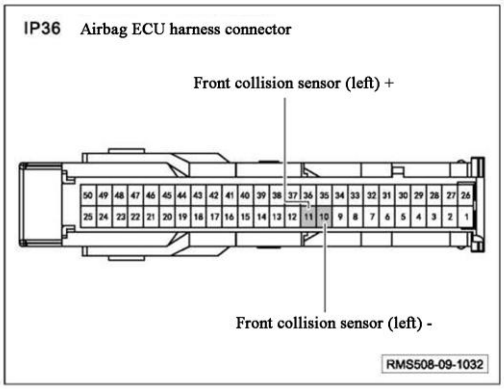
E Measure the resistance between terminal 2 of the front collision sensor (left) harness connector BD47 and terminal 10 of the airbag ECU harness connector IP36.

F Measure the resistance between terminal 1 of the front collision sensor (left) harness connector FB47 and terminal 11 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

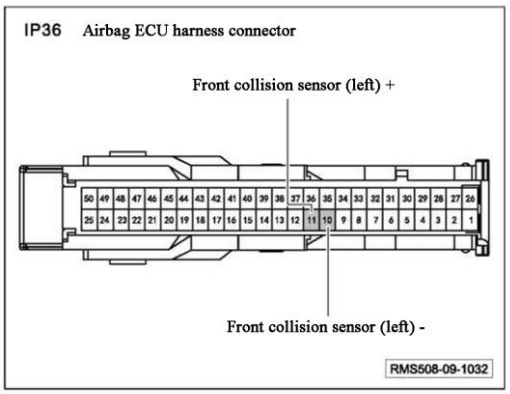
G Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.



Yes

Step 3	Check whether the circuit of the front impact sensor (left) is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect front collision sensor (left) harness connector FB47.

D Disconnect airbag ECU harness connector IP36.

E Measure the resistance between terminal 11 of the airbag ECU harness connector IP36 and body ground.

F Measure the resistance between terminal 10 of the airbag ECU harness connector IP36 and body ground.

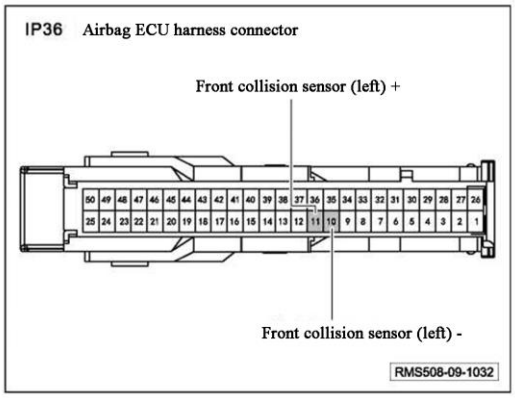
Standard resistance value: 10kΩ or higher

G Confirm if the resistance conforms to the standard value

No — Repair or replace the harness.

Yes

Step 4	Check whether the circuit of the front impact sensor (left) is short-circuited to power supply.



A Turn the start switch to "OFF" position.

B Disconnect the battery negative terminal and wait for at least 15 seconds.

C Disconnect front collision sensor (left) harness connector FB47.

D Disconnect airbag ECU harness connector IP36.

E Install the battery negative terminal.

F Put the Start switch to “ON” position.

G Measure the voltage between terminal 11 of the

airbag ECU harness connector IP36 and body ground.

H Measure the voltage between terminal 10 of the airbag ECU harness connector IP36 and body ground.

Standard voltage value: 0V

I Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Replace the front collision sensor (left).

A Replace the front collision sensor (left).

B Check whether the fault has been eliminated after replacing the front collision sensor(left).

Yes → The system works normally.

No

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.6.17 DTC: U007488

DTC	DTC definition
U007488	CAN Controller Bus Off

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

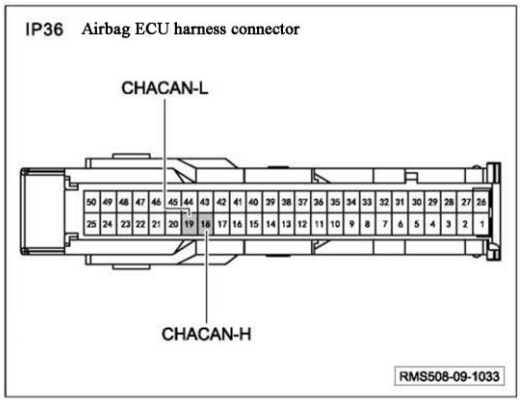
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Measure the resistance of circuit between terminal 18 and terminal 19 of the airbag ECU harness connector IP36.

Standard resistance value: about 120Ω

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

7.1.6.18 DTC: U010087

DTC	DTC definition
U010087	Lost communication with EMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

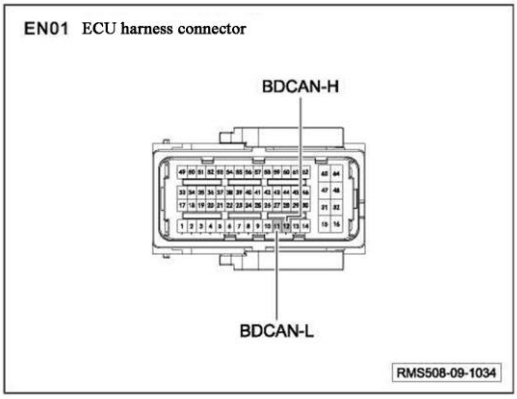
D Read the DTC again.

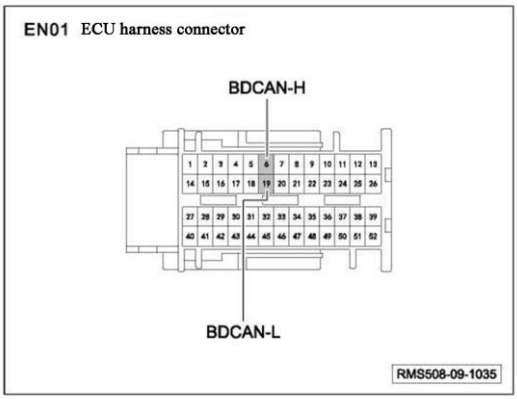
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the engine ECU and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect ECU harness connector EN01.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 11 of the ECU harness connector EN01 and terminal 19 of the body controller harness connector IP47.

E Measure the resistance between terminal 12 of the ECU harness connector EN01 and terminal 6 of the body controller harness connector IP47.

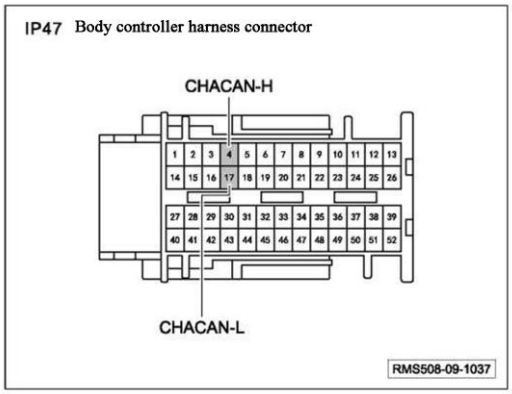
Standard resistance value: <1Ω

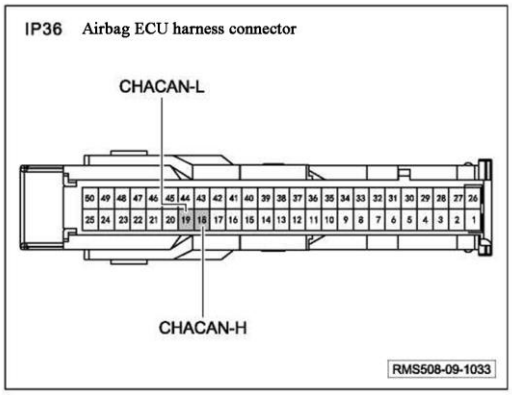
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and airbag ECU.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect airbag ECU harness connector IP36.

D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 18 of the airbag ECU harness connector IP36.

E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 19 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of ECU.

A Check whether the power supply ground wire of ECU is normal.

No	Repair or replace the harness.

Yes

Step 5	Replace the ECU

A Replace the ECU

B Is the fault eliminated after replacing the ECU?

Yes	The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

7.1.6.19 DTC: U012287

DTC	DTC definition
U012287	Lost communication with ESP

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

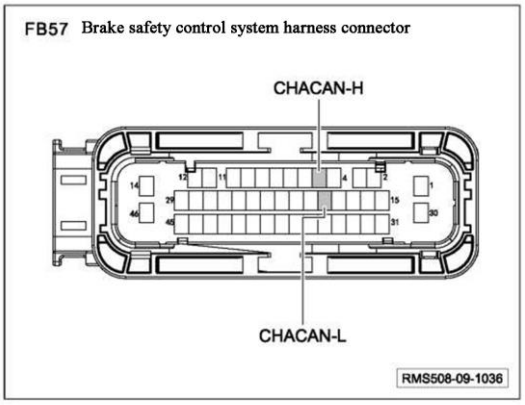
D Read the DTC again.

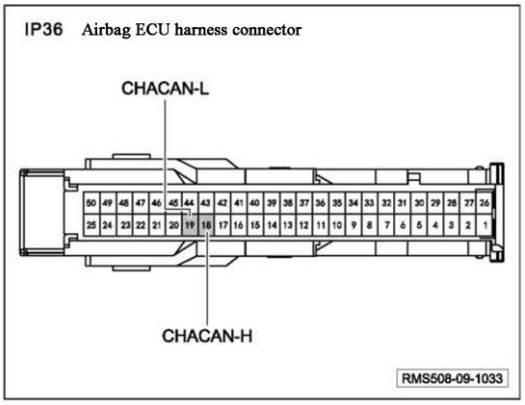
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the airbag ECU.





A Turn the start switch to "OFF" position.

B Disconnect the brake safety control system harness connector FB57.

C Disconnect airbag ECU harness connector IP36.

D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 18 of the airbag ECU harness connector IP36.

E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 19 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

7.1.6.20 DTC: U01229

DTC	DTC definition
U012291	Lost communication with BCM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

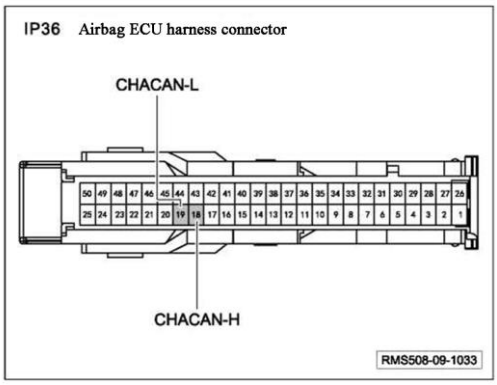
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the airbag ECU and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 18 of the airbag ECU harness connector IP36 and terminal 4 of the body controller harness connector IP47.

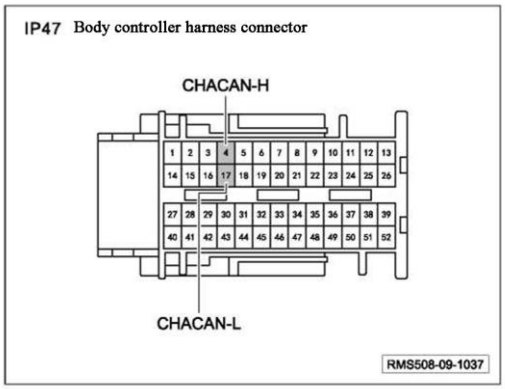
E Measure the resistance between terminal 19 of the airbag ECU harness connector IP36 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Check whether the fault has been eliminated after replacing the body control module.

Yes → The system works normally.

No

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

7.1.6.21 DTC: U012887

DTC	DTC definition
U012887	Lost communication with EPB

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

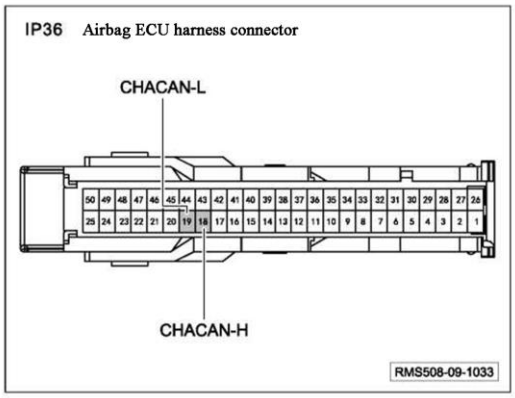
D Read the DTC again.

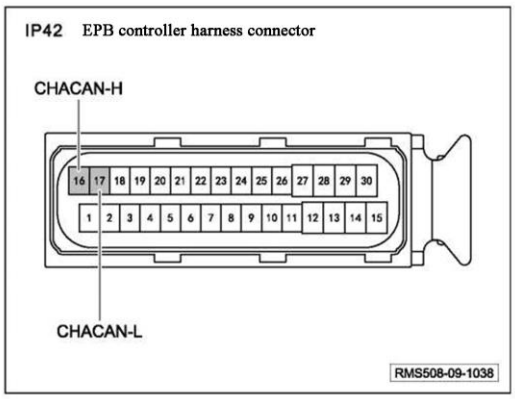
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between airbag ECU and EPB controller.





A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect EPB controller harness connector IP42.

D Measure the resistance between terminal 18 of the airbag ECU harness connector IP36 and terminal 16 of EPB controller harness connector IP42.

E Measure the resistance between terminal 19 of the airbag ECU harness connector IP36 and terminal 17 of EPB controller harness connector IP42.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3 Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the EPB controller.

A Replace the EPB controller.

B Check whether the fault has been eliminated after replacing the EPB controller.

Yes → The system works normally.

No

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

7.1.6.22 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

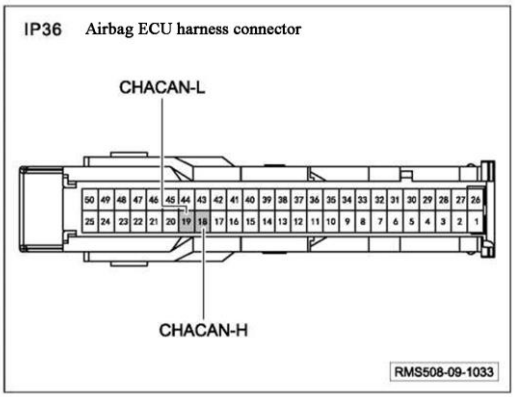
D Read the DTC again.

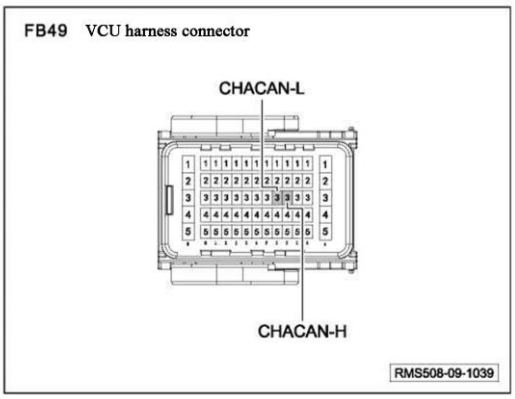
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between airbag ECU and VCU.





A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Disconnect the VCU harness connector FB49.

D Measure the resistance between terminal 18 of the airbag ECU harness connector IP36 and terminal 3 of the VCU harness connector FB49.

E Measure the resistance between terminal 19 of the airbag ECU harness connector IP36 and terminal D3 of the body domain controller harness connector FB49.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No — Repair or replace the harness.

Yes

Step 4	Replace the VCU.

A Replace the VCU.

B Check whether the fault has been eliminated after replacing the VCU.

Yes — The system works normally.

No

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes — The system works normally.

Next

Step 6	The diagnosis is over.

7.1.6.23 DTC: U013189

DTC	DTC definition
U013189	Lost communication with IVI

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

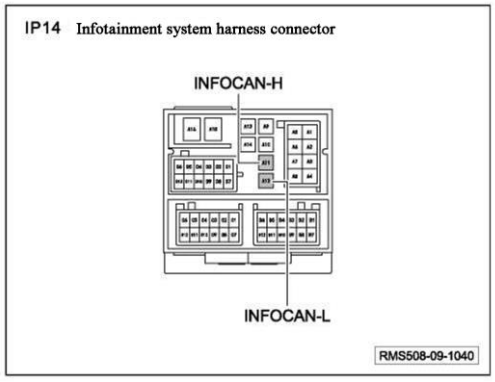
D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the entertainment system host and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the entertainment system host harness connector IP14.

C Disconnect body controller harness connector IP47

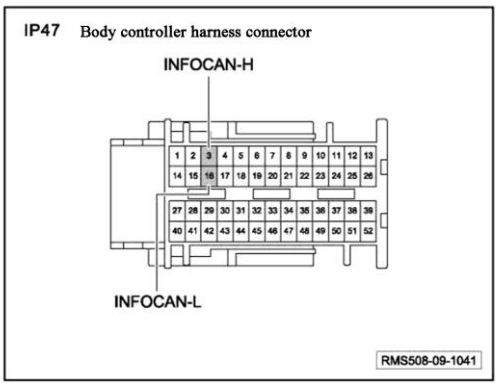
D Measure the resistance between terminal A11 of the entertainment system host harness connector IP14 and terminal 3 of the body controller harness connector IP47.

E Measure the resistance between terminal A12 of the entertainment system host harness connector IP14 and terminal 16 of the body controller harness connector IP47.

Standard resistance value: <1Ω

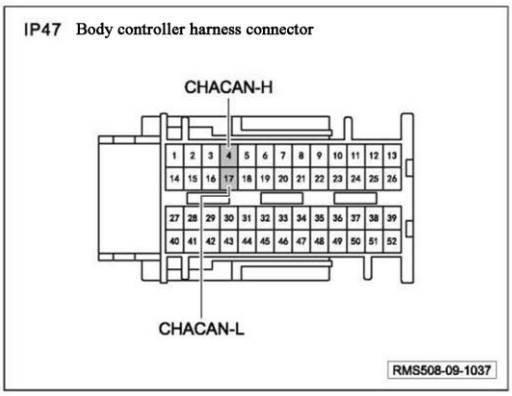
F Confirm whether the resistance conforms to the standard.

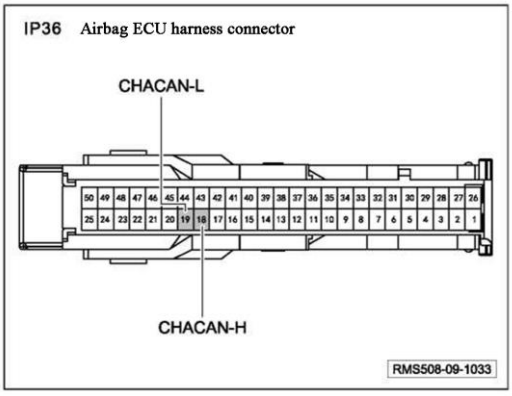
No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and airbag ECU.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect airbag ECU harness connector IP36.

D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 18 of the airbag ECU harness connector IP36.

E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 19 of the airbag ECU harness connector IP36.

Standard resistance value: <1Ω

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

7.1.6.24 DTC: B111717, B111716

DTC	DTC definition
B111717	Too high battery voltage
B111716	Too low battery voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.

Standard voltage value: 11~14V

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the airbag ECU fuse IF28.

A Check whether the fuse IF28 is blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuit of the fuse IF28.

A Check whether the fuse IF28 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

C Replace blown fuses with fuses of rated current.

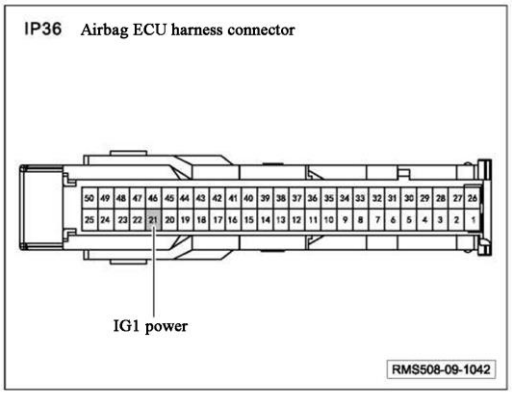
Rated value of fuse: IF28 5A

D Confirm whether the airbag ECU works normally.

Yes → The system works normally.

No

Step 5	Check the airbag ECU power circuit.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 21 of the airbag ECU harness connector IP36 and body ground.

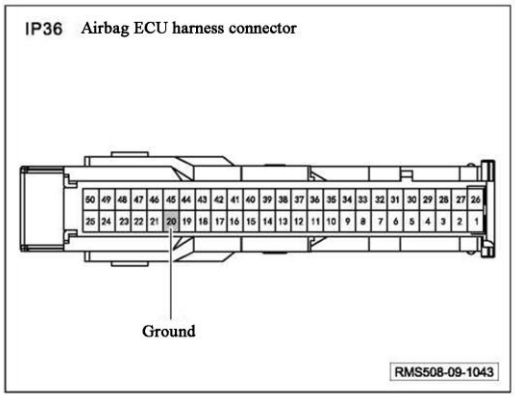
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the airbag ECU ground circuit.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Measure the resistance between terminal 20 of the airbag ECU harness connector IP36 and body ground.

Standard resistance value: <1Ω

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 7	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

7.1.6.25 DTC: C122911, C122A11.....

DTC	DTC definition
C122911	Sensor first line short-circuited
C122A11	Sensor second line short-circuited
C122B11	Sensor third line short-circuited
C122C11	Sensor fourth line short-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the connecting circuit of the collision sensor.

A Check whether the connecting lines of the front collision sensor (left/right) and side collision sensor (driver's side/front passenger's side) are short-circuited.

Yes → Repair or replace the faulty wiring harness.

No

Step 3	Replace the impact sensor.

A Replace the impact sensor.

B Is the fault eliminated after replacing the impact sensor?

Yes → The system works normally.

No

Step 4	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

7.1.6.26 DTC: C122D00, C123049.....

DTC	DTC definition
C122D00	OCS system fault
C123049	Config_Error
C123100	Factory_Lock
C123200	Fire_Lock
C123500	ECU internal element fault
C123600	ECU internal element fault
C123700	ECU internal element fault
C123800	ECU internal element fault
C123900	ECU internal element fault
C123A00	ECU internal element fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the airbag ECU connector.

A Check the airbag ECU connector for looseness, poor contact, bending, corrosion, contamination, deterioration or damage.

Yes — Repair or replace the harness or connector.

No

Step 3	Perform the airbag ECU flashing procedure.

A Connect the diagnosis tester to OBD interface.

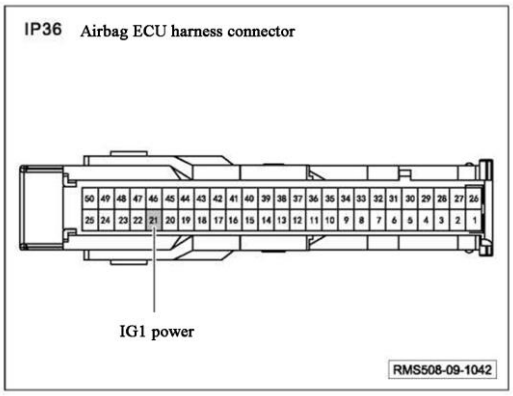
B Put the start switch to "ON" position, and perform the airbag ECU flashing procedure as prompted by the diagnostic scanner.

C Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 4	Check the airbag ECU power circuit.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 21 of the airbag ECU harness connector IP36 and body ground.

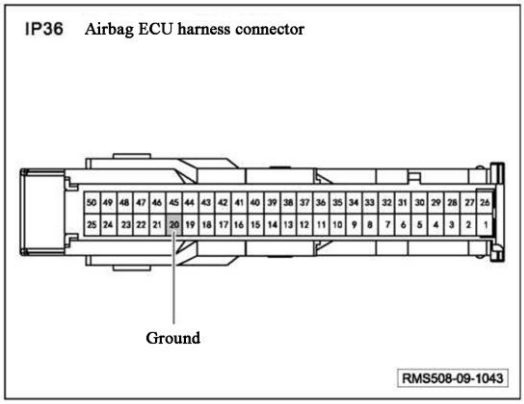
Standard voltage value: 11~14V

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the airbag ECU ground circuit.



A Turn the start switch to "OFF" position.

B Disconnect airbag ECU harness connector IP36.

C Measure the resistance between terminal 20 of the airbag ECU harness connector IP36 and body ground.

Standard resistance value: <1Ω

D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 6	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

7.1.7 Removal and installation

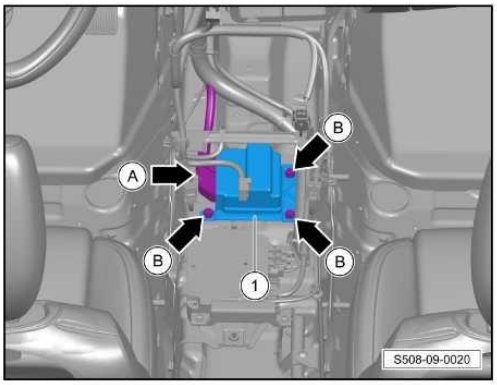
7.1.7.1 Removal and installation of airbag ECU

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly



4 Remove the airbag ECU

a. Disconnect the connector (see arrow A).

b. Unscrew the fixing bolt (see arrow B) and take out airbag ECU ①.

- Tightening torque of bolt (see arrow B): 6±1Nm

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

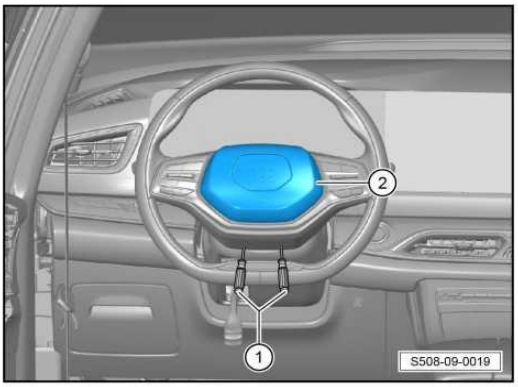
– After replacing the airbag ECU, use a diagnostic scanner for after-sales matching of airbag ECU. Refer to 1.4.2.6 After-sales matching after module replacement

7.1.7.2 Removal and installation of driver seat airbag module

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

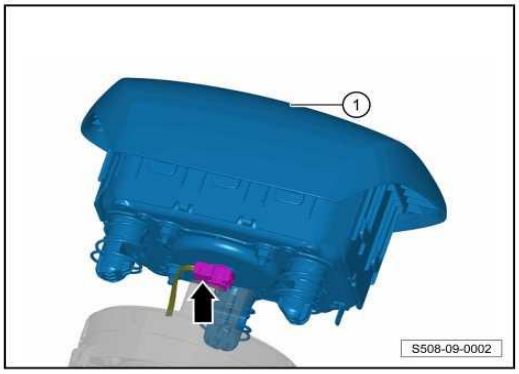
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the driver airbag module

a. Insert a straight screwdriver ① into the removal hole of driver seat airbag module, and push open the fixing snap spring of driver seat airbag module.

b. Remove the driver seat airbag module ②.



c. Disconnect the connector (see the arrow) and take out the driver seat airbag module ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

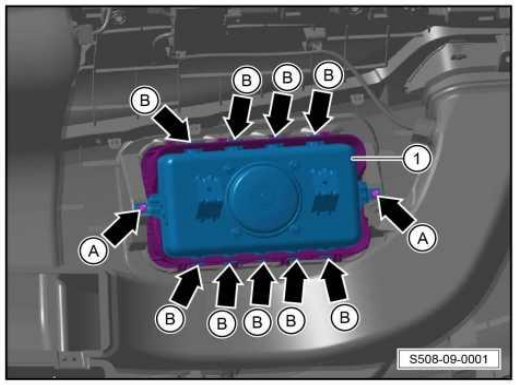
– After installation, check the SRS with the vehicle diagnostic scanner.

Disassembly procedures

Tip:

Before repairing the protection system, electrostatic discharging must be conducted as static electricity may trigger the airbag unintentionally. The discharging could be realized by touching the body for a short time.

1 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly



2 Remove the front passenger airbag module

a. Unscrew the fixing screws (see arrow A) of front passenger airbag module.

b. Disengage the fixing clip (see arrow B) and remove the front passenger seat airbag module ①.

• Tightening torque of screw (see arrow A): 3±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, check the SRS with the vehicle diagnostic scanner.

7.1.7.4 Removal and installation of front side airbag module

Disassembly procedures

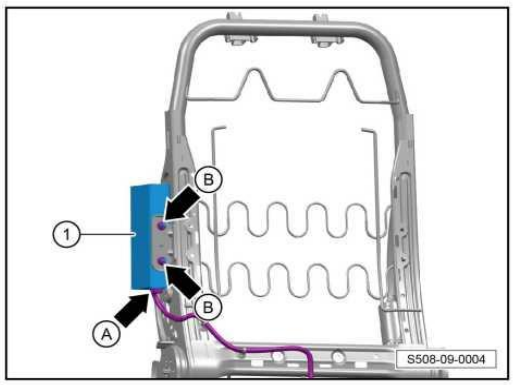
Notes

Before repairing the protection system, electrostatic discharging must be conducted as static electricity may trigger the airbag unintentionally. The discharging could be realized by touching the body for a short time.

Tip:

The removal and installation procedures are only for the front left side airbag module, which can be basically referred to for the front right one.

1 Remove the front seat backrest foam and foam covering assembly. Refer to 8.8.3.5 Removal and installation of front seat backrest foam and foam covering assembly



2 Remove the front side airbag module.

a. Disconnect the connector (see arrow A) of front row side airbag module ①.

b. Unscrew the fixing nut (see arrow B) and take out the front side airbag module ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, check the SRS with the vehicle diagnostic scanner.

7.1.7.5 Removal and installation of side curtain airbag assembly

Disassembly procedures

Notes

Before repairing the protection system, electrostatic discharging must be conducted as static electricity may trigger the airbag unintentionally. The discharging could be realized by touching the body for a short time.

Tip:

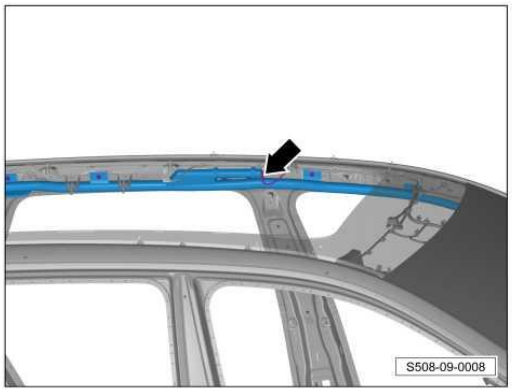
The removal and installation procedures are only for

the left curtain airbag assembly, which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

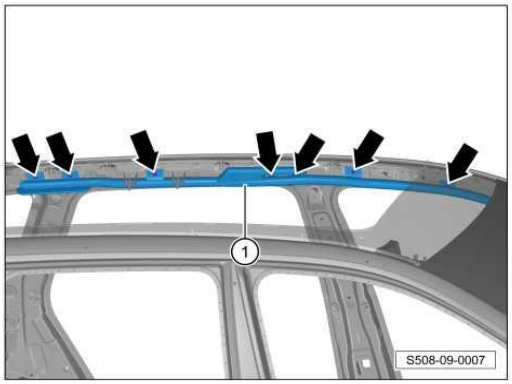
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the roof panel assembly. Refer to 9.14.2.3 Removal and installation of roof panel assembly



4 Remove the side curtain airbag assembly

a. Disconnect the connector (see the arrow) of the side curtain airbag assembly.



b. Unscrew the fixing bolts (see the arrows) and remove the side curtain airbag assembly ①.

- Tightening torque of bolt: 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, check the SRS with the vehicle diagnostic scanner.

7.1.7.6 Removal and installation of front impact sensor assembly

Disassembly procedures

Tip:

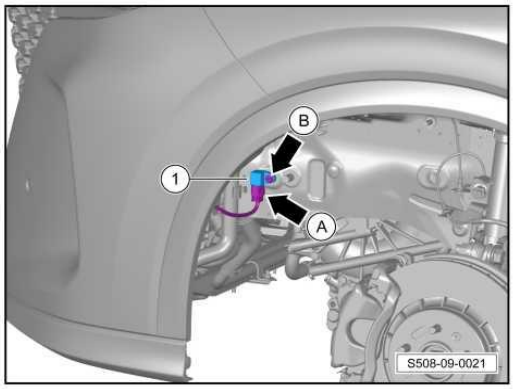
The removal and installation procedures are only for the front collision sensor (left), which can be basically referred to for the front collision sensor (right).

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

4 Remove the front wheel hub trim (left). Refer to 9.15.2.3 Removal and installation of front hub trim



5 Remove the front impact sensor assembly

a. Disconnect the connector (see arrow A) of front impact sensor assembly.

b. Unscrew the fixing bolt (see arrow B) and remove the front impact sensor assembly ①.

- Tightening torque of bolt (see arrow B): 8±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

7.1.7.7 Removal and installation of side impact sensor assembly

Disassembly procedures

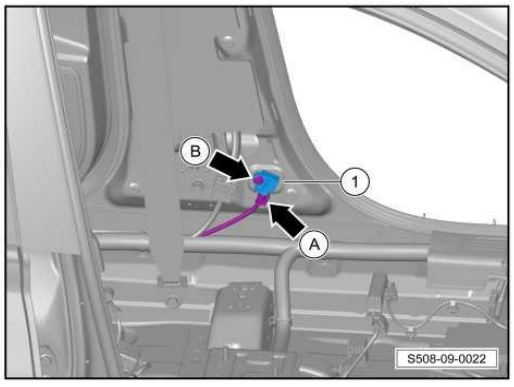
Tip:

The removal and installation procedures are only for the side collision sensor (left), which can be basically referred to for the side collision sensor (right).

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the B-pillar lower interior trim panel assembly. Refer to 9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly



4 Remove the side impact sensor assembly

a. Disconnect the connector (see arrow A) of side impact sensor assembly.

b. Unscrew the fixing bolt (see arrow B) and remove the side impact sensor assembly ①.

- Tightening torque of bolt (see arrow B): 8±1 N·m

Installation procedures

The installation procedure is to be performed

basically in the reverse order:

7.2 Pre-tightening type seat belt system

7.2.1 Specification

7.2.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection of front seat belt height adjuster (right) and vehicle body	Hex flange bolt	50±3
Connection of front seat belt main body assembly and seat belt height adjuster	Hex flange nut	50±3
Connection of front seat belt main body assembly and vehicle body	Flange bolt	50±3
Connection of the lower fixing point of front-row safety belt and the body	Flange step bolt	50±3
Connection of second-row seat belt main body assembly and vehicle body	Flange bolt	50±3
Connection of third-row seat belt main body assembly and vehicle body	Hexagon head flange bolt M6×12	10±1
	Flange step bolt	50±3
Connection of front seat belt lock latch and vehicle body	Flange bolt	50±3
Connection of double-buckle component and vehicle body	Flange bolt	50±3
Connection of single-buckle component and vehicle body	Flange bolt	50±3

7.2.2 System overview

7.2.2.1 System overview

Seat belt

Seat belts are provided for the front, second-row and rear seats as a main method of occupant protection. The seat belt can keep the occupant in the compartment and gradually reduce the collision force in the following conditions:

- Front impact collision
- Rear impact collision
- Side impact collision
- Overturn collision

All vehicles are equipped with retractors with emergency locking feature. The seat belts have an automatic locking feature. The locking function is activated when the seat belt is pulled out completely and quickly from the retractor.

The locking function can prevent the seat belt from being pulled out beyond the allowable retracting position. It is recommended to fix the child seat with self-locking function. This function can be canceled when the seat belt is fully retracted into the retractor. After the locking function is canceled, the seat belt will be unlocked. After the locking function is canceled, the seat belt can be pulled out of the retractor. The vehicle is also equipped with a safety restraint system. Refer to "Description and Operation" in "Safety Restraint System".

Seat belt warning indicator

The driver seat, front passenger seat and rear seat belt indicators are located on the instrument cluster.

Child seat protection system

Warning!

It is not allowed to install a child seat on the front passenger seat. No child is allowed to seat on the front passenger seat. Be sure the child restraint position does not conflict with any additional requirements of the manufacturer. For details, please refer to the vehicle owner's manual and the user guide of the child restraint device.

The child seat can only be used for forward-facing seats. Child seats shall be installed and fixed according to the manufacturer's instructions. If the child seat has an upper strap, the seat needs to be anchored. If the seat belt is used to fix the child seat, then no passenger shall be allowed to sit on that seat.

Safety Rules for Seat Belt Retractor

Notes

- If the seat belt retractor is triggered in a vehicle collision, the seat belt assembly must be replaced.
- Only trained personnel can carry out inspection, assembly and repair work.
- Opening or repairing seat belt retractor is not allowed (otherwise there may be possible injury).
- It is not allowed to reinstall the seat belt retractor that has been severely collided or scraped on the ground onto the vehicle.
- Replace the seat belt retractor that has mechanical damages (dents and cracks).
- Immediately install the seat belt retractor after it is taken out of its shipping container.
- Do not use compressed air impact wrench to remove or install seat belt retractor.
- Do not place the seat belt retractor at will.
- Do not use grease, cleaning agent or similar substances to treat the seat belt retractor. The seat belt

retractor cannot withstand a high temperature of above 100°C.

Disposal of Seat Belt Retractor

– In accordance with state laws and regulations, recycle the seat belt retractor that has not been triggered in the original packaging orderly. For any questions, please contact our sales center or the manufacturer.

– Dispose the triggered seat belt retractor in accordance with enterprises' regulation on waste disposal.

7.2.3 System working principle

7.2.3.1 System working principle

Principle of seat belt system

The seat belt system consists of the first-row seat belt assembly RH/LH, second-row seat belt assembly RH/LH, second-row middle seat belt assembly (assembled in five-seat/seven-seat version), third-row seat belt assembly RH/LH, passenger detection sensor, two first-row seat belt buckles, two second-row seat belt buckles, one second-row middle seat belt buckle (assembled in five-seat/seven-seat version) and two third-row seat belt buckles. The occupant detection sensor is used to detect whether there is an occupant in the passenger seat. If there is no occupant, the occupant seat belt warning light will go off. The front seat belt switch is used to control the seat belt warning light and buzzer.

1. Driver's seat belt reminder

– When the vehicle speed is ＜ 10 km/h, if the driver's seat belt is not fastened, the driver's seat belt alarm indicator will light up and stay on.

– When the vehicle speed is ≥ 10 km/h, if the driver's seat belt is not fastened, the unfastened driver's seat belt indicator will flash with an audible alarm for 90 seconds. In the 90-second alarm process, if the driver's seat belt is fastened, the alarm will stop and the indicator will turn off; in the 90-second alarm process, if the vehicle speed is lower than 8km/h, the audible alarm will stop and the indicator will turn on normally. At this time, if the vehicle speed exceeds 10km/h, the instrument cluster will restart timing for alarming for 90 seconds. After 90 seconds, if the seat belt is still not fastened, the audible alarm will stop and the alarm indicator will stay on.

2. Fasten-seat-belt reminder for front passenger

– When the vehicle speed is ＜ 10 km/h, if there are people in the front passenger seat but the seat belt is not fastened, the front passenger seat belt alarm indicator will light up and stay on.

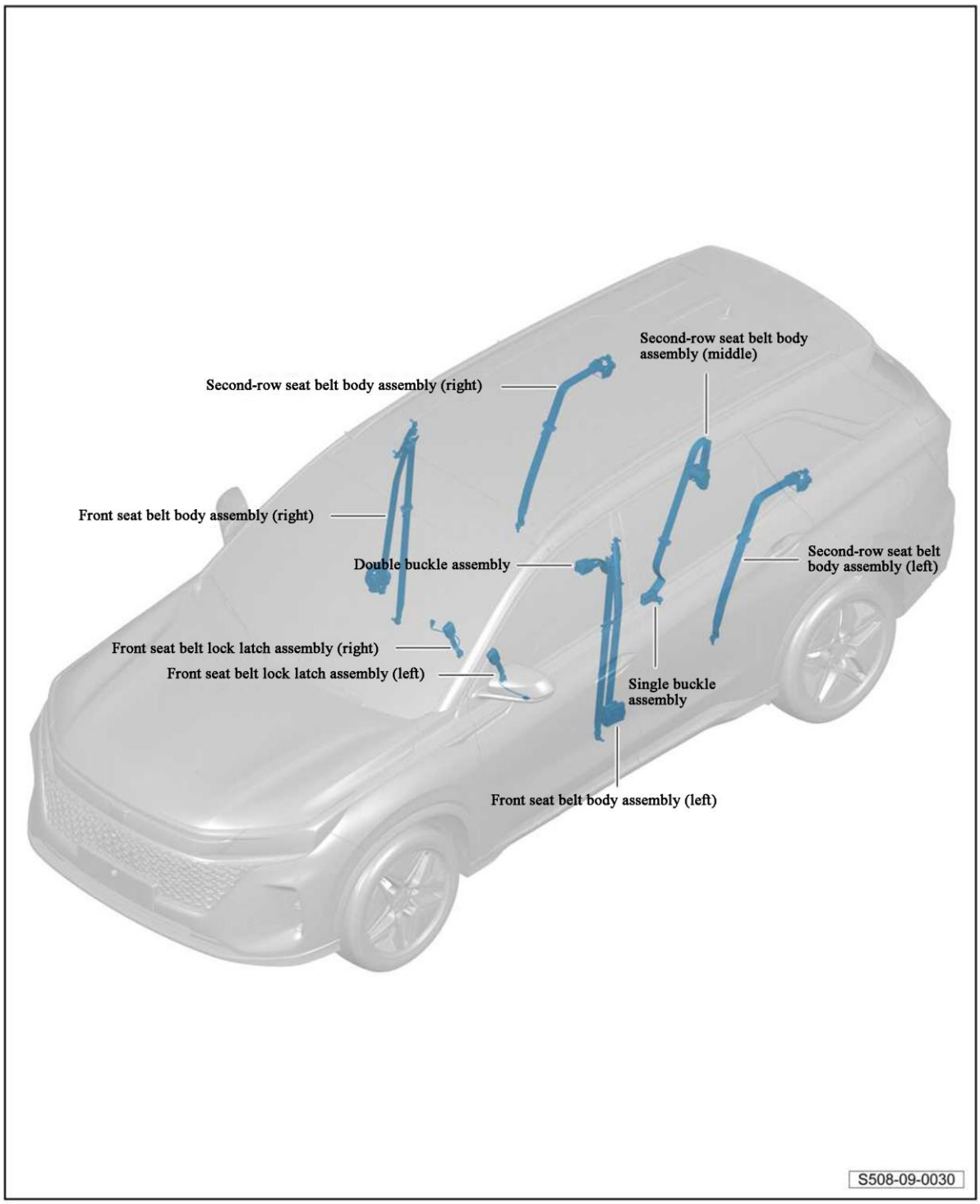
– When the vehicle speed is ≥ 10km/h, if there are people in the front passenger seat but the seat belt is not fastened, the unfastened seat belt indicator on the front passenger seat will flash with an audible alarm for 90 seconds.; During the 90-second alarm process, if the front passenger seat belt is fastened, the alarm will stop and the indicator will turn off; During the 90-second alarm process, if the vehicle speed is lower than 8km/h, the audible alarm will stop and the indicator will turn on normally. At this time, if the vehicle speed exceeds 10km/h, the instrument cluster will restart timing for alarming for 90 seconds. After 90 seconds, if the seat belt is still not fastened, the audible alarm will stop and the alarm indicator will stay on.

7.2.4 Component position

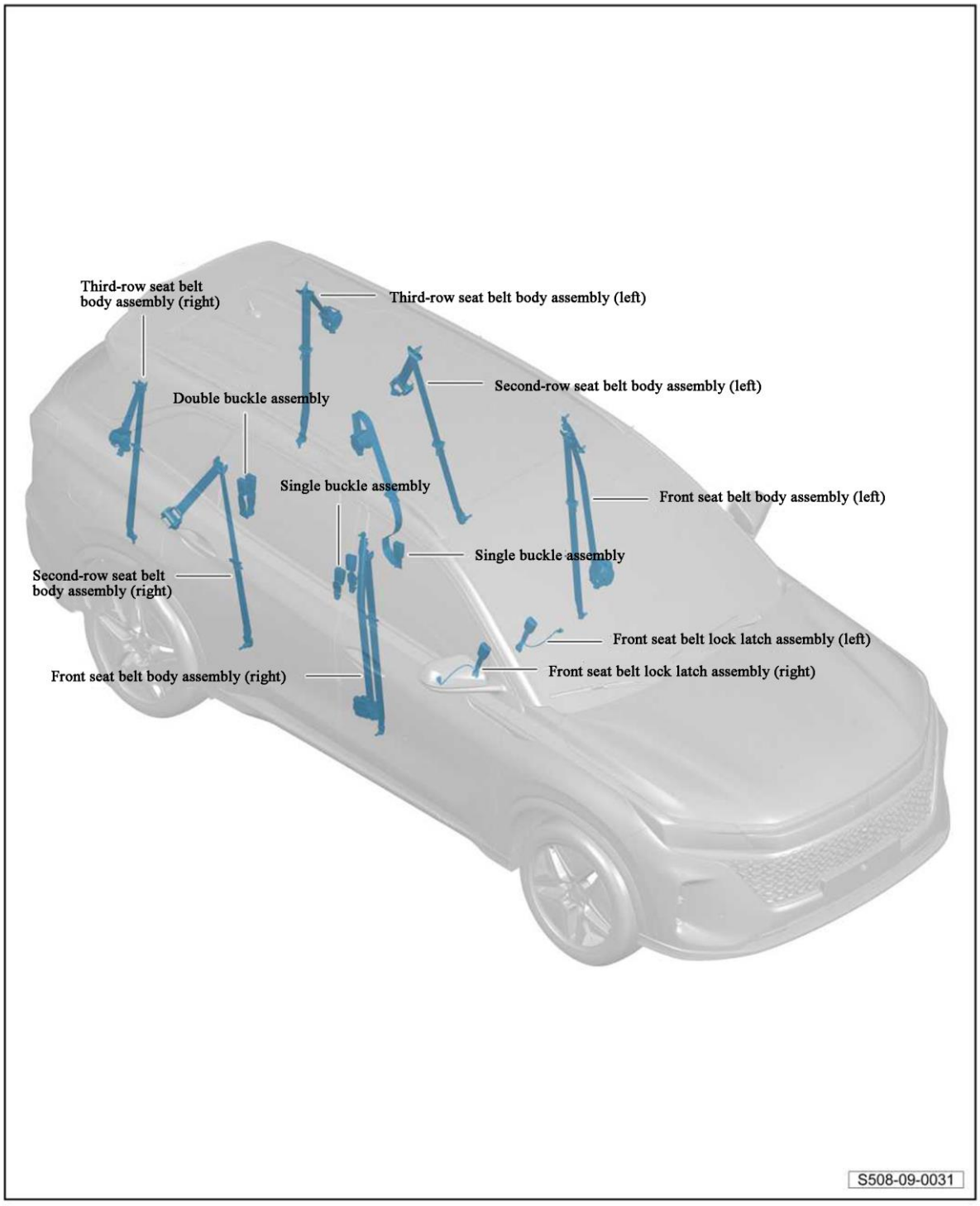
7.2.4.1 Component position

Component position

Five-seat model

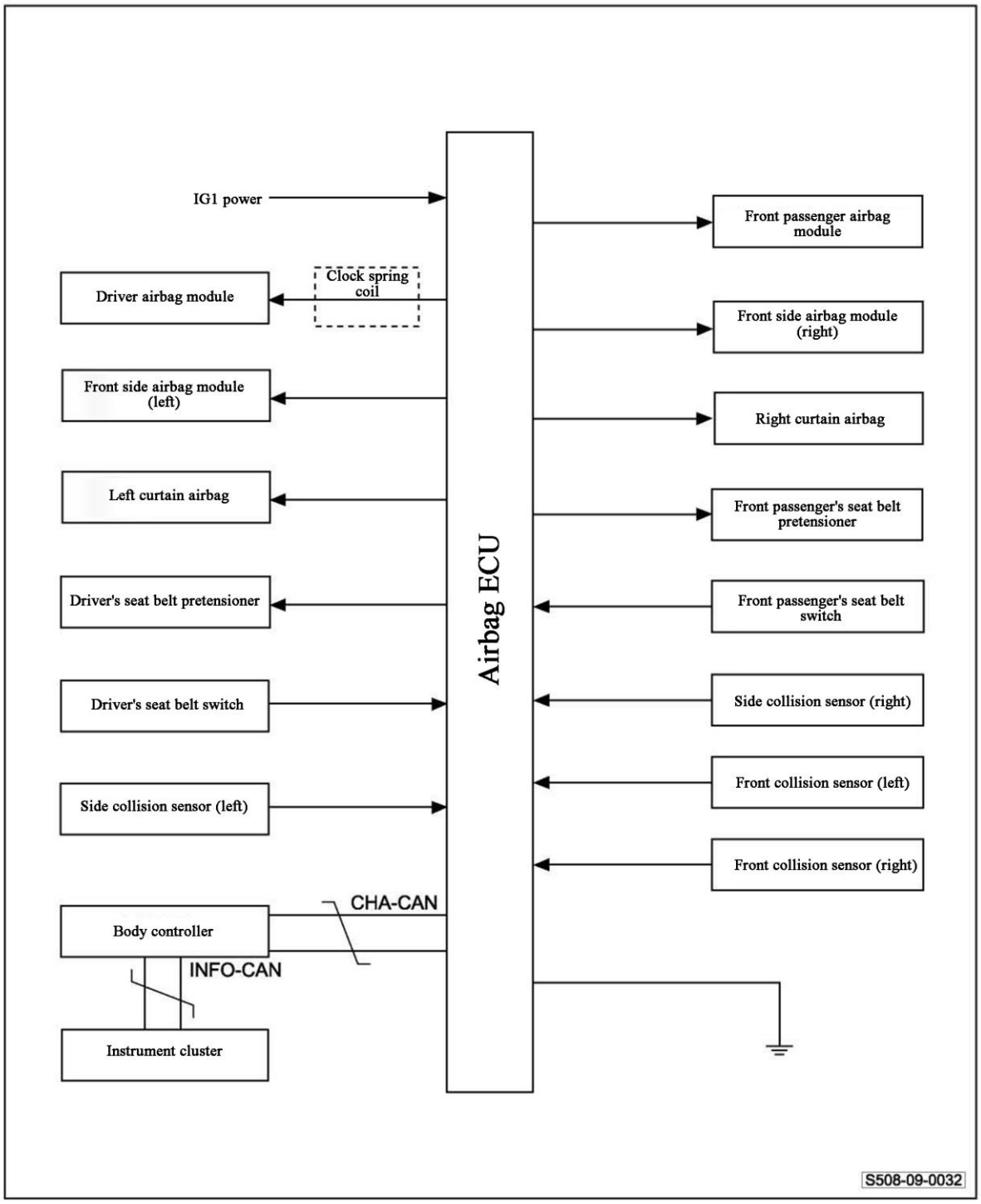


Seven-seat model



7.2.5 Electrical schematic diagram

7.2.5.1 Electrical schematic diagram



7.2.6 Removal and installation

7.2.6.1 Removal and installation of front seat belt body assembly

Disassembly procedures

Tip:

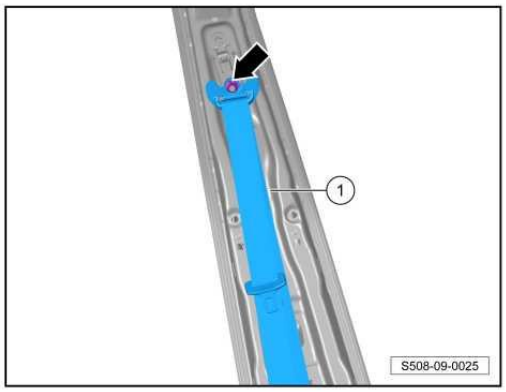
The removal and installation procedures are only for the front left seat belt body assembly, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the B-pillar lower interior trim panel assembly. Refer to 9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly

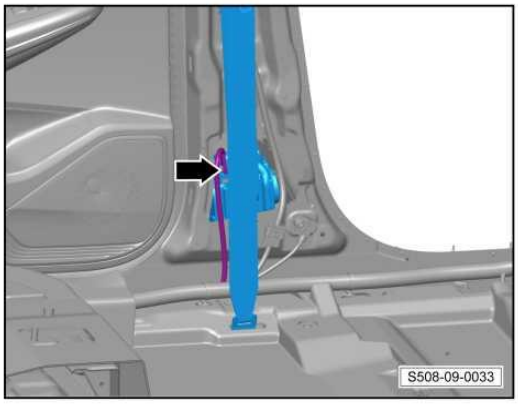
4 Remove the B-pillar upper interior trim panel assembly. Refer to 9.14.2.10 Removal and installation of B-pillar upper interior trim panel assembly



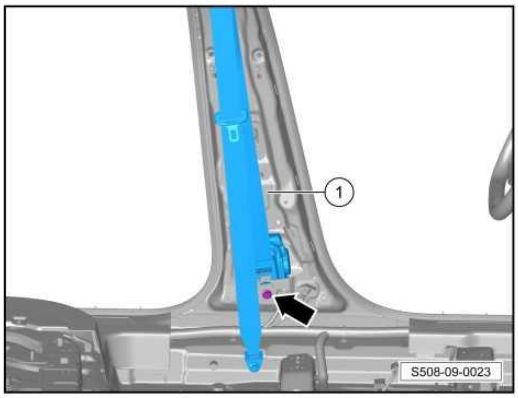
5 Remove the front seat belt body assembly

a. Unscrew the fixing nuts (see the arrows) of the front seat belt body assembly ①.

- Tightening torque of nut: 50±3 N·m



b. Disconnect the connector (see the arrow) of front seat belt body assembly.



c. Unscrew the fixing bolts (see the arrows) and remove the front seat belt body assembly ①.

- Tightening torque of bolt: 50±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

7.2.6.2 Removal and installation of front seat belt height adjuster

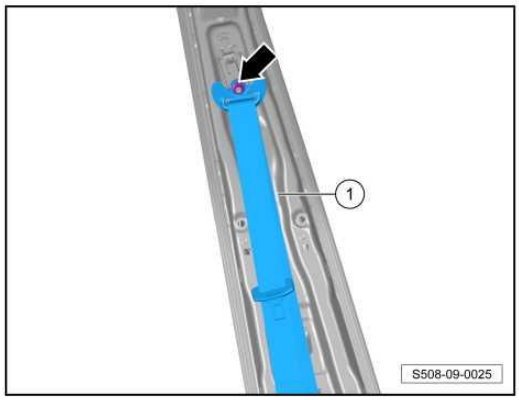
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left seat belt height adjuster, which can be basically referred to for the front right one.

1 Remove the B-pillar lower interior trim panel assembly. Refer to 9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly

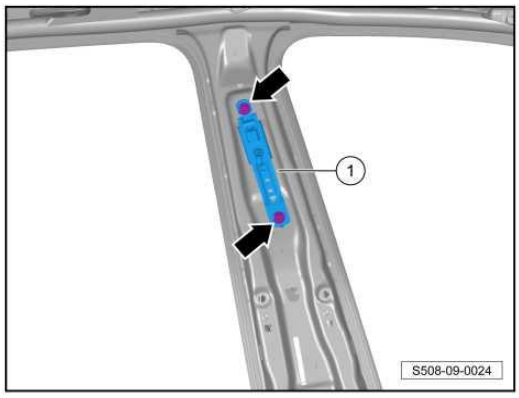
2 Remove the B-pillar upper interior trim panel assembly. Refer to 9.14.2.10 Removal and installation of B-pillar upper interior trim panel assembly



3 Remove the front seat belt height adjuster.

a. Unscrew the fixing nuts (see the arrows) of the front seat belt body assembly ①.

- Tightening torque of nut: 50±3 N·m



b. Unscrew the fixing bolts (see the arrows) and take out the front seat belt height adjuster ①.

- Tightening torque of bolt: 50±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

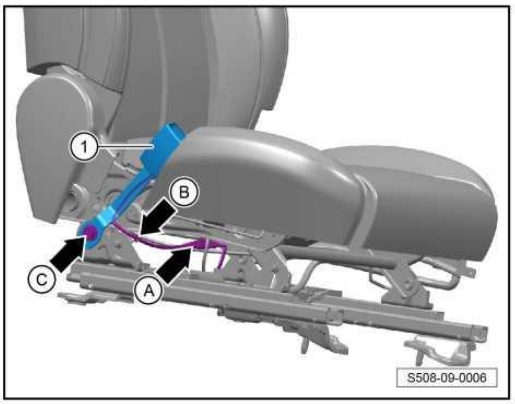
7.2.6.3 Removal and installation of front seat belt buckle assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left seat belt buckle assembly, which can be basically referred to for the front right one.

1 Remove the front seat and backrest assembly (left). Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly



2 Remove the front seat belt buckle assembly

a. Disconnect the connector (see arrow A) of the front seat belt buckle assembly ①.

b. Disengage the fixing clips (see arrow B) of the front seat belt buckle assembly harness.

c. Unscrew the fixing bolts (see the arrows), and remove the front seat belt lock catch assembly ①.

• Tightening torque of bolt (see arrow C): 50±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

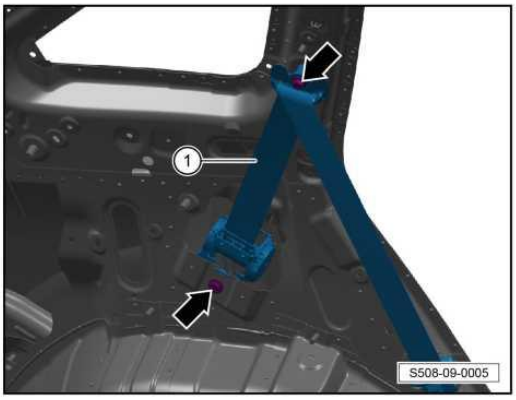
7.2.6.4 Removal and installation of second-row seat belt body assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the left second-row seat belt body assembly, which can be basically referred to for the right one.

1 Remove the rear side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly



2 Remove the second-row seat belt body assembly

a. Unscrew the fixing bolts (see the arrows), and take out the second-row seat belt body assembly ①.

- Tightening torque of bolt: 50±3 N·m

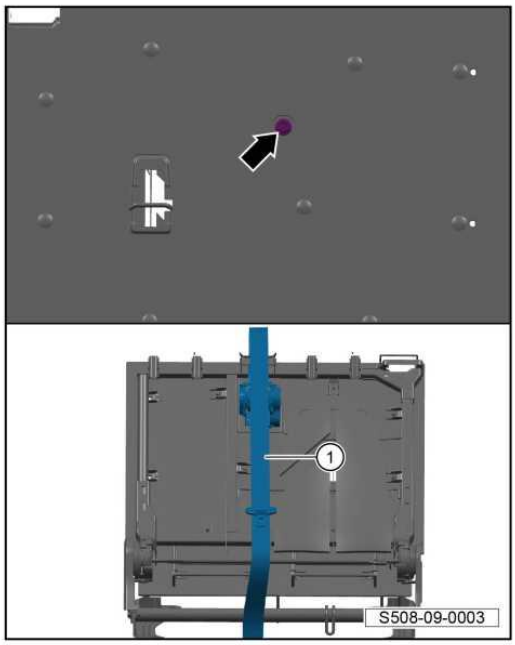
Installation procedures

The installation procedure is to be performed basically in the reverse order:

7.2.6.5 Removal and installation of second-row seat belt body assembly (middle)

Disassembly procedures

1 Remove the second-row seat back foam covering assembly. Refer to 9.11.3.1 Removal and installation of second-row seat back assembly.



2 Remove the second-row seat belt body assembly (middle)

a. Unscrew the fixing bolts (see the arrows) and remove the second-row seat belt body assembly (middle) ①.

- Tightening torque of bolt: 50±3 N·m

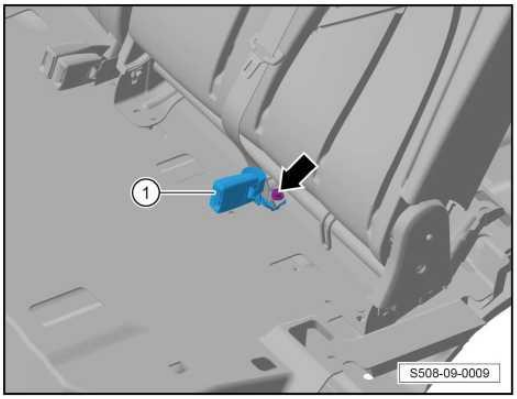
Installation procedures

The installation procedure is to be performed basically in the reverse order:

7.2.6.6 Removal and installation of second-row single buckle component (five-seat)

Disassembly procedures

1 Remove the rear seat cushion assembly. Refer to 9.11.3.2 Removal and installation of second-row seat cushion assembly



2 Remove the second-row single buckle component

a. Unscrew the fixing bolts (see the arrows) and take out the second-row single buckle component ①.

- Tightening torque of bolt: 50±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

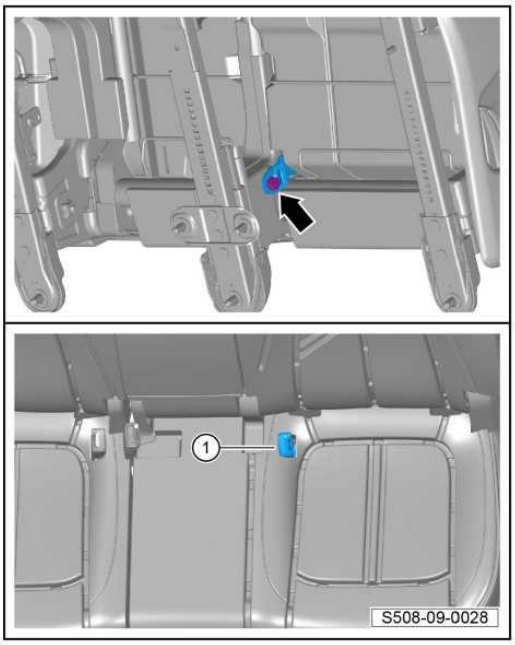
7.2.6.7 Removal and installation of second-row single buckle component (seven-seat)

Disassembly procedures

Tip:

The removal and installation procedures are only for the left second-row single buckle assembly (seven-seat), which can be basically referred to for other second-row single buckle assemblies (seven-seat).

1 Remove the 60/40 split seat assembly. Refer to 9.12.3.1 Removal and installation of 60/40 split seat assembly



2 Remove the second-row single buckle component

a. Unscrew the fixing bolts (see the arrows) and take out the second-row single buckle component ①.

- Tightening torque of bolt: 50±3 N·m

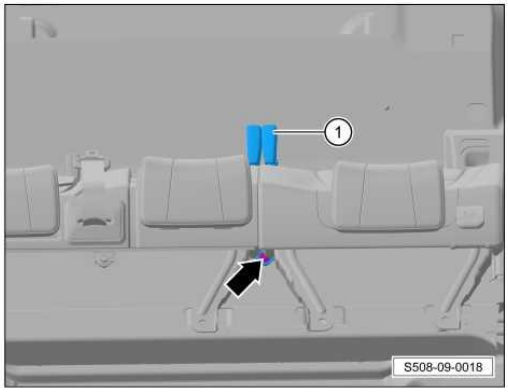
Installation procedures

The installation procedure is to be performed basically in the reverse order:

7.2.6.8 Removal and installation of second-row double buckle component (five-seat)

Disassembly procedures

1 Remove the rear seat cushion assembly. Refer to 9.11.3.2 Removal and installation of second-row seat cushion assembly



2 Remove the second-row double buckle component

a. Unscrew the fixing bolts (see the arrows) and take out the second-row double buckle component ①.

- Tightening torque of bolt: 50±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

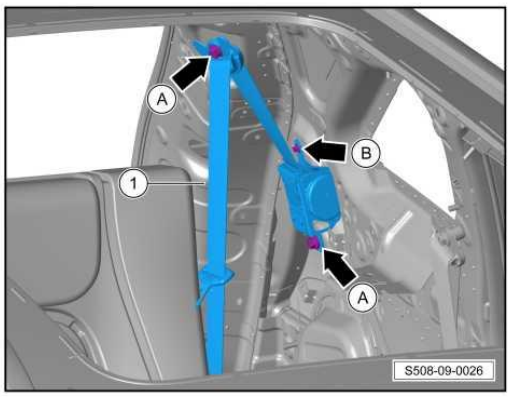
7.2.6.9 Removal and installation of third-row seat belt body assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the left third-row seat belt body assembly, which can be basically referred to for the right one.

1 Remove the rear side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly



2 Remove the third-row seat belt body assembly

a. Unscrew the fixing bolts (see arrows A and B) and take out the third-row seat belt body assembly ①.

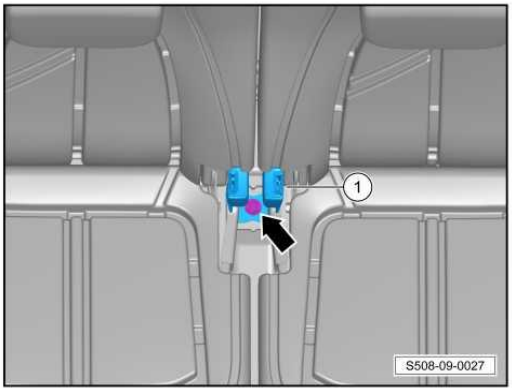
- Tightening torque of bolt (see arrow A): 50±3 N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

7.2.6.10 Removal and installation of third-row double buckle component (seven-seat)

Disassembly procedures



1 Remove the third-row double buckle component

a. Unscrew the fixing bolts (see the arrows) and take out the third-row double buckle component ①.

- Tightening torque of bolts (see the arrows): 50±3N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

Electrical Equipment

8.1 Warnings and notes 9
8.1.1 Warnings and notes 9
8.1.1.1 Warnings and notes 9
8.1.1.2 Preparations for operations related to hv electric control system 11
8.1.1.3 Warnings for operations related to hv electric control system 11
8.2 Intelligent multimedia system 14
8.2.1 Fastener specifications 14
8.2.1.1 Fastener specifications 14
8.2.2 System description 15
8.2.2.1 System description 15
8.2.3 Component position 16
8.2.3.1 Component position 16
8.2.4 Electrical schematic diagram 17
8.2.4.1 Electrical schematic diagram 17
8.2.5 Diagnosis information and steps 19
8.2.5.1 Diagnostic instructions 19
8.2.5.2 Visual inspection 19
8.2.5.3 ECU terminal 19
8.2.5.4 Data list 23
8.2.5.5 DTC list 23
8.2.5.6 DTC: B111716, B111717 31
8.2.5.7 DTC: U007688 35
8.2.5.8 DTC: U014087 & U016487 36
8.2.5.9 DTC: U013187 38
8.2.5.10 DTC: U010087 40
8.2.5.11 DTC: U012887 43
8.2.5.12 DTC: U023287 46
8.2.5.13 DTC: U015587 50
8.2.5.14 DTC: U012287 52
8.2.5.15 DTC: U023087 54
8.2.5.16 DTC: U010087 56
8.2.5.17 DTC: U029387 59
8.2.5.18 DTC: U010387 63
8.2.5.19 DTC: U019887 66
8.2.5.20 DTC: B180001 67
8.2.5.21 DTC: B180002 71
8.2.6 Removal and installation 73
8.2.6.1 Removal and installation of entertainment system assembly 73
8.2.6.2 Removal and installation of digital power amplifier 74
8.2.6.3 Removal and installation of front door low-pitched loudspeaker 76
8.2.6.4 Removal and installation of front door high-pitched loudspeaker 76
8.2.6.5 Removal and installation of rear door low-pitched loudspeaker 78
8.2.6.6 Removal and Installation of rear door high-pitched loudspeaker assembly 80
8.2.6.7 Removal and installation of front sky sound loudspeaker 81
8.2.6.8 Removal and installation of rear sky sound loudspeaker 82
8.2.6.9 Removal and installation of antenna assembly 83
8.2.6.10 Removal and installation of face recognition camera 84
8.2.6.11 Removal and installation of gearshift panel right switch component 86
8.3 Exterior lighting system 87
8.3.1 Specification 87
8.3.1.1 Bulb specifications 87
8.3.1.2 Fastener specifications 87
8.3.2 System principle 89
8.3.2.1 System description 89
8.3.3 Component position 90
8.3.3.1 Component position 90
8.3.4 Electrical schematic diagram 92
8.3.4.1 Electrical schematic diagram 92
8.3.5 Removal and installation 93
8.3.5.1 Removal and installation of combination headlight assembly 93
8.3.5.2 Removal and installation of grille light strip assembly 95
8.3.5.3 Removal and installation of lift gate rear combination light assembly 96
8.3.5.4 Removal and installation of rear bumper rear combination light assembly 98
8.3.5.5 Removal and installation of lift gate light strip assembly 99
8.3.5.6 Removal and installation of logo front assembly 101
8.3.5.7 Removal and installation of high/low beam bulb 103
8.3.5.8 Removal and installation of front turn signal bulb 105
8.3.5.9 Removal and installation of rear turn signal bulb (rear bumper side) 107
8.3.5.10 Removal and installation of front position light bulb 109
8.3.5.11 Removal and installation of rear position light bulb (rear bumper side) 111
8.3.5.12 Removal and installation of reversing light bulb 113
8.3.5.13 Removal and installation of break light bulb (rear bumper side) 115
8.3.5.14 Removal and installation of CHMSL 117
8.3.5.15 Removal and installation of rear fog light bulb 118
8.3.5.16 Removal and installation of license light assembly 120
8.3.5.17 Removal and installation of combination switch assembly 121
8.3.5.18 Removal and installation of small switch set .....

.....122
8.3.5.19 Removal and installation of hazard warning switch.....123
8.3.5.20 Removal and installation of clock spring coil 123
8.3.5.21 Adjustment of clock spring coil 125
8.3.5.22 Adjustment of combination headlight assembly 127

8.4 Interior lighting system 128
8.4.1 Specification.....128
8.4.1.1 Bulb specifications.....128
8.4.1.2 Fastener specifications.....128
8.4.2 System description.....129
8.4.2.1 System composition.....129
8.4.2.2 Description of interior lighting system functions.....129
8.4.3 Component position.....130
8.4.3.1 Component position.....130
8.4.4 Electrical schematic diagram.....131
8.4.4.1 Electrical schematic diagram.....131
8.4.5 Removal and installation.....132
8.4.5.1 Removal and installation of front reading light assembly.....132
8.4.5.2 Removal and installation of rear interior light assembly (small sunroof).....134
8.4.5.3 Removal and installation of rear interior light bulb (small sunroof).....135
8.4.5.4 Removal and installation of rear interior light assembly (panoramic sunroof).....136
8.4.5.5 Removal and installation of trunk light assembly.....137

8.5 Window glass.....139
8.5.1 Fastener specifications.....139
8.5.1.1 Fastener specifications.....139
8.5.2 System overview.....140
8.5.2.1 System Overview.....140
8.5.2.2 Learning of one-button window lifting function 140
8.5.3 Component position.....141
8.5.3.1 Component position.....141
8.5.4 Electrical schematic diagram.....142
8.5.4.1 Electrical schematic diagram.....142
8.5.5 Diagnosis information and steps.....143
8.5.5.1 Diagnostic instructions.....143
8.5.5.2 Visual inspection.....143
8.5.5.3 ECU terminals.....143
8.5.5.4 Active test.....156
8.5.5.5 Data list.....158
8.5.5.6 DTC list.....158
8.5.5.7 DTC: B111716, B111717.....162
8.5.5.8 DTC: U007688.....165
8.5.5.9 DTC: B221618, B221619.....166
8.5.5.10 DTC: B221718, B221719.....169
8.5.5.11 DTC: B221818, B221819.....173
8.5.5.12 DTC: B221918, B221919.....176
8.5.5.13 DTC: B222011, B222311.....178
8.5.5.14 DTC: B222111, B222411.....181
8.5.5.15 DTC: B222211, B222511.....184
8.5.5.16 DTC: U014087.....187
8.5.6 Removal and installation.....191
8.5.6.1 Removal and installation of electric window main switch.....191
8.5.6.2 Removal and installation of electric window auxiliary switch.....193
8.5.6.3 Removal and installation of front door glass.....195
8.5.6.4 Removal and installation of front door window regulator assembly.....196
8.5.6.5 Removal and installation of front door glass peripheral rubber strip.....197
8.5.6.6 Removal and installation of rear door glass.....198
8.5.6.7 Removal and installation of rear door window regulator assembly.....198
8.5.6.8 Removal and installation of rear door glass peripheral rubber strip.....200
8.5.6.9 Removal and installation of front door rear chute component.....202
8.5.6.10 Removal and installation of rear door rear chute component.....202

8.6 Rearview mirror.....205
8.6.1 System description.....205
8.6.1.1 System description.....205
8.6.2 Component position.....206
8.6.2.1 Component position.....206
8.6.3 Electrical schematic diagram.....207
8.6.3.1 Electrical schematic diagram.....207
8.6.4 Removal and installation.....208
8.6.4.1 Removal and installation of exterior rearview mirror assembly.....208
8.6.4.2 Removal and installation of interior rearview mirror assembly (manual anti-glare).....209
8.6.4.3 Removal and installation of interior rearview mirror assembly (automatic, anti-glare).....209
8.6.4.4 Removal and installation of exterior rearview mirror lens.....211
8.6.4.5 Removal and installation of adjustment motor assembly.....213
8.6.4.6 Removal and installation of power rearview mirror switch.....213

8.7 Wiper/washer system.....216
8.7.1 Specification.....216
8.7.1.1 Fastener specifications.....216
8.7.2 System description.....217
8.7.2.1 System description.....217
8.7.3 Component position.....218
8.7.3.1 Component position.....218
8.7.4 Exploded view.....219
8.7.4.1 Exploded view.....219
8.7.5 Electrical schematic diagram.....220
8.7.5.1 Electrical schematic diagram.....220
8.7.6 Removal and installation.....221
8.7.6.1 Removal and installation of washer water reservoir.....221

8.7.6.2 Removal and installation of washer water reservoir motor 222
8.7.6.3 Removal and installation of front washer jet assembly 224
8.7.6.4 Adjustment of front washer jet assembly 225
8.7.6.5 Removal and installation of front wiper arm and blade component 226
8.7.6.6 Removal and installation of front wiper blade 228
8.7.6.7 Removal and installation of front wiper motor and bracket assembly 228
8.7.6.8 Removal and installation of front wiper arm and blade component 230
8.7.6.9 Removal and installation of rear wiper blade 231
8.7.6.10 Removal and installation of rear wiper motor and bracket assembly 232
8.7.6.11 Removal and Installation of light/rain sensor 234
8.7.6.12 Removal and installation of front washer hose assembly 1 236
8.7.6.13 Removal and installation of front washer hose assembly 2 237
8.7.6.14 Removal and installation of rear washer hose assembly 1 238
8.7.6.15 Removal and installation of rear washer hose assembly 2 240

8.8 Instrument/driver's information system 242

8.8.1 Specification 242
8.8.1.1 Fastener specifications 242
8.8.2 Operation and description 243
8.8.2.1 System description 243
8.8.3 Component position 245
8.8.3.1 Component position 245
8.8.4 Electrical schematic diagram 246
8.8.4.1 Electrical schematic diagram 246
8.8.5 Diagnosis information and steps 247
8.8.5.1 Diagnostic instructions 247
8.8.5.2 Visual inspection 247
8.8.5.3 ECU terminals 247
8.8.5.4 Active test 249
8.8.5.5 Data list 251
8.8.5.6 DTC list 252
8.8.5.7 DTC: U007688, U100587 257
8.8.5.8 DTC: B111717 &B111716 259
8.8.5.9 DTC: U010087 261
8.8.5.10 DTC: U014087, U016487 264
8.8.5.11 DTC: U011D87 266
8.8.5.12 DTC: U019887 268
8.8.5.13 DTC: U015187 270
8.8.5.14 DTC: U023287 273
8.8.5.15 DTC: U012887 277
8.8.5.16 DTC: U029387 280
8.8.5.17 DTC: U029387, U031187 284
8.8.5.18 DTC: U029387, U031187 287
8.8.5.19 DTC: U01C087 289
8.8.5.20 DTC: U019987 291
8.8.5.21 DTC: U019987 294
8.8.5.22 DTC: U023087 296
8.8.5.23 DTC: U018687 298
8.8.6 Removal and installation 300
8.8.6.1 Removal and installation of instrument cluster assembly 300

8.9 Panoramic sunroof system 302

8.9.1 Specification 302
8.9.1.1 Fastener specifications 302
8.9.2 Description and operation 303
8.9.2.1 System description 303
8.9.3 Component position 304
8.9.3.1 Component position 304
8.9.4 Exploded view 305
8.9.4.1 Exploded view 305
8.9.5 Electrical schematic diagram 306
8.9.5.1 Electrical schematic diagram 306
8.9.6 Removal and installation 307
8.9.6.1 Removal and installation of front sunroof glass assembly 307
8.9.6.2 Removal and installation of rear sunroof glass assembly 309
8.9.6.3 Adjustment of sunroof glass 311
8.9.6.4 Removal and installation of glass motor assembly 312
8.9.6.5 Removal and installation of sunshade motor assembly 313
8.9.6.6 Removal and installation of sunshade assembly 314
8.9.6.7 Removal and installation of sunroof body assembly 316
8.9.6.8 Removal and installation of sunroof front left water drain hose assembly 319
8.9.6.9 Removal and installation of sunroof front right water drain hose assembly 319
8.9.6.10 Removal and installation of rear sunroof drain hose assembly 321
8.9.6.11 Removal and installation of sunroof switch 323

8.10 Small sunroof system 325

8.10.1 Specification 325
8.10.1.1 Fastener specifications 325
8.10.2 Description and operation 326
8.10.2.1 System description 326
8.10.3 Component position 327
8.10.3.1 Component position 327
8.10.4 Exploded view 328
8.10.4.1 Exploded view 328
8.10.5 Electrical schematic diagram 329
8.10.5.1 Electrical schematic diagram 329
8.10.6 Removal and installation 330
8.10.6.1 Removal and installation of sunroof body assembly 330
8.10.6.2 Removal and installation of sunroof motor assembly 331

8.10.6.3 Removal and installation of sunroof glass assembly 332
8.10.6.4 Adjustment of sunroof glass 333
8.10.6.5 Removal and installation of sunroof visor assembly 334
8.11 Central control door lock 335
8.11.1 Specification 335
8.11.1.1 Fastener specifications 335
8.11.2 System description 336
8.11.2.1 System description 336
8.11.3 Component position 337
8.11.3.1 Component position 337
8.11.4 Electrical schematic diagram 338
8.11.4.1 Electrical schematic diagram 338
8.11.5 Removal and installation 339
8.11.5.1 Removal and installation of front door lock body assembly 339
8.11.5.2 Removal and installation of rear door lock body assembly 340
8.11.5.3 Removal and installation of front door lockpin assembly 344
8.11.5.4 Removal and installation of lift gate lock body assembly (manual lift gate) 345
8.11.5.5 Removal and installation of lift gate lock body assembly (power lift gate) 346
8.11.5.6 Removal and installation of lift gate lockpin assembly 347
8.12 Power seat 348
8.12.1 System description 348
8.12.1.1 System description 348
8.12.2 Electrical schematic diagram 349
8.12.2.1 Electrical schematic diagram 349
8.12.3 Removal and installation 350
8.12.3.1 Removal and installation of driver's electric seat controller 350
8.12.3.2 Removal and installation of front seat horizontal motor 350
8.12.3.3 Removal and installation of front seat lifting motor 354
8.12.3.4 Removal and installation of front seat back motor 355
8.13 Defrosting system 357
8.13.1 System description 357
8.13.1.1 System description 357
8.13.2 Electrical schematic diagram 358
8.13.2.1 Electrical schematic diagram 358
8.13.3 Removal and installation 359
8.13.3.1 Removal and installation of exterior rearview mirror heater 359
8.13.3.2 Removal and installation of rear windshield defogging grill 359
8.13.3.3 Repair of rear windshield defogger braided wire 359
8.14 Horn 361
8.14.1 Specification 361
8.14.1.1 Fastener specifications 361
8.14.2 System description 362
8.14.2.1 System description 362
8.14.3 Component position 363
8.14.3.1 Component position 363
8.14.4 Electrical schematic diagram 364
8.14.4.1 Electrical schematic diagram 364
8.14.5 Removal and installation 365
8.14.5.1 Removal and installation of high-pitch electric horn 365
8.14.5.2 Removal and installation of low-pitch electric horn 367
8.15 Backup power source 368
8.15.1 System description 368
8.15.1.1 System description 368
8.15.2 Component position 369
8.15.2.1 Component position 369
8.15.3 Electrical schematic diagram 370
8.15.3.1 Electrical schematic diagram 370
8.15.4 Removal and installation 371
8.15.4.1 Removal and installation of onboard power supply 371
8.15.4.2 Removal and installation of USB charging port assembly 371
8.16 Mobile phone wireless charging system 373
8.16.1 System description 373
8.16.1.1 System description 373
8.16.2 Component position 375
8.16.2.1 Component position 375
8.16.3 Electrical schematic diagram 376
8.16.3.1 Electrical schematic diagram 376
8.16.4 Removal and installation 377
8.16.4.1 Removal and installation of mobile phone wireless charging module 377
8.17 Remote monitoring system (T-BOX) 378
8.17.1 Specification 378
8.17.1.1 Fastener specifications 378
8.17.2 System description 379
8.17.2.1 System description 379
8.17.3 Component position 380
8.17.3.1 Component position 380
8.17.4 Electrical schematic diagram 381
8.17.4.1 Electrical schematic diagram 381
8.17.5 Diagnosis information and steps 382
8.17.5.1 Diagnostic instructions 382
8.17.5.2 Visual inspection 382
8.17.5.3 ECU terminals 382
8.17.5.4 Data list 384
8.17.5.5 DTC list 386
8.17.5.6 DTC: B111716, B111717 390
8.17.5.7 DTC: U007688 392

8.17.5.8 DTC:B149009,B144055..... 393
8.17.5.9 DTC:B149511,B149613..... 394
8.17.5.10 DTC:B140331 395
8.17.5.11 DTC: U014687,U014087..... 397
8.17.5.12 DTC: U011187 398
8.17.5.13 DTC: U029387 402
8.17.5.14 DTC: U011087, U031187 406
8.17.5.15 DTC: U029987 409
8.17.5.16 DTC: U010087 411
8.17.5.17 DTC: U010387 414
8.17.5.18 DTC: U012687 417
8.17.5.19 DTC: U013187 419
8.17.5.20 DTC: U015187 423
8.17.5.21 DTC: U012887 426
8.17.5.22 DTC: U012287 428
8.17.5.23 DTC: U023287 431
8.17.5.24 DTC: U023087 434
8.17.5.25 DTC: U015587 436
8.17.6 Removal and installation 438
8.17.6.1 Removal and installation of T-BOX assembly.. 438
8.17.6.2 Removal and Installation of two-in-one antenna assembly 440
8.18 Power lift gate system 441
8.18.1 Specification 441
8.18.1.1 Fastener specifications 441
8.18.2 System description..... 442
8.18.2.1 System description 442
8.18.3 Component position..... 443
8.18.3.1 Component position 443
8.18.4 Electrical schematic diagram..... 444
8.18.4.1 Electrical schematic diagram 444
8.18.5 Diagnosis information and steps..... 445
8.18.5.1 Diagnostic instructions..... 445
8.18.5.2 Visual inspection..... 445
8.18.5.3 ECU terminals..... 445
8.18.5.4 Active test 447
8.18.5.5 Data list..... 449
8.18.5.6 DTC list..... 451
8.18.5.7 DTC: B111717 &B111716 453
8.18.5.8 DTC: U012287..... 456
8.18.5.9 DTC: U014087..... 458
8.18.5.10 DTC: U014687..... 460
8.18.5.11 DTC: U007588, U100587 462
8.18.5.12 DTC: B150200 463
8.18.5.13 DTC: B151800, B151900..... 467
8.18.5.14 DTC: B150700, B150900..... 471
8.18.5.15 DTC: B150B00..... 476
8.18.5.16 DTC: B150C00, B150D00 479
8.18.5.17 DTC: B151000, B151100..... 482
8.18.5.18 DTC: B151200, B151300..... 485
8.18.5.19 DTC: B151600 486
8.18.5.20 DTC: B151700, B151800..... 487
8.18.6 Removal and installation 489
8.18.6.1 Removal and installation of power lift gate closing switch assembly (optional) 489
8.18.6.2 Removal and installation of lift gate micro switch (optional)..... 490
8.18.6.3 Removal and installation of power lift gate controller 490
8.18.6.4 Removal and installation of lift gate lock body assembly (power lift gate)..... 493
8.18.6.5 Removal and installation of lift gate stay rod (electric)..... 494
8.19 Cruise control system 496
8.19.1 Description and operation 496
8.19.1.1 System Overview..... 496
8.19.1.2 Operating instructions for cruise control..... 497
8.19.2 Component position 500
8.19.2.1 Component position..... 500
8.19.3 Electrical schematic diagram 501
8.19.3.1 Electrical schematic diagram..... 501
8.19.4 Removal and installation..... 502
8.19.4.1 Removal and installation of steering wheel multi-function button assembly 502
8.20 Parking assist system 504
8.20.1 System description 504
8.20.1.1 System description..... 504
8.20.2 Component position 507
8.20.2.1 Component position..... 507
8.20.3 Electrical schematic diagram 508
8.20.3.1 Electrical schematic diagram..... 508
8.20.4 Removal and installation..... 510
8.20.4.1 Removal and installation of parking sensor ECU (integrated entertainment system assembly)..... 510
8.20.4.2 Removal and installation of ultrasonic sensor (rear bumper side)..... 510
8.20.4.3 Removal and installation of ultrasonic sensor (front bumper side) 512
8.21 Panoramic parking system..... 514
8.21.1 Specification..... 514
8.21.1.1 Fastener specifications..... 514
8.21.2 Description and operation 515
8.21.2.1 System description..... 515
8.21.3 Component position 516
8.21.3.1 Component position..... 516
8.21.4 Electrical schematic diagram 517
8.21.4.1 Electrical schematic diagram..... 517
8.21.5 Removal and installation..... 518
8.21.5.1 Removal and installation of panoramic parking ECU..... 518
8.21.5.2 Removal and installation of frontview camera 518
8.21.5.3 Removal and installation of rearview camera 520
8.22 ETC System 521
8.22.1 System description 521
8.22.1.2 System description..... 521
8.22.3 Component position 522
8.22.3.1 Component position..... 522

8.22.4 Electrical schematic diagram 523
8.22.4.1 Electrical schematic diagram 523
8.22.5 Removal and installation 524
8.22.5.1 Removal and installation of ETC assembly 524
8.23 Driving recorder 525
8.23.1 System description 525
8.23.1.1 System description 525
8.23.2 Component position 526
8.23.2.1 Component position 526
8.23.3 Electrical schematic diagram 527
8.23.3.1 Electrical schematic diagram 527
8.23.4 Removal and installation 528
8.23.4.1 Installation and removal of driving recorder assembly 528
8.24 Side assist system (SSS) 529
8.24.1 Specification 529
8.24.1.1 Fastener specifications 529
8.24.2 System description 530
8.24.2.1 Description of blind spot detection (BSD) system 530
8.24.2.2 Description of rear cross traffic alert system 531
8.24.2.3 Description of door open warning system ... 532
8.24.2.4 Description of rear collision warning system 532
8.24.3 Component position 534
8.24.3.1 Component position 534
8.24.4 Electrical schematic diagram 535
8.24.4.1 Electrical schematic diagram 535
8.24.5 Diagnosis information and steps 536
8.24.5.1 Diagnostic instructions 536
8.24.5.2 Visual inspection 536
8.24.5.3 ECU terminals 536
8.24.5.4 Data list 538
8.24.5.5 DTC list 540
8.24.5.6 DTC: B111716, B111717 543
8.24.5.7 DTC: U007488 549
8.24.5.8 DTC: U012287, U012286 550
8.24.5.9 DTC: U013187 554
8.24.5.10 DTC: U014087 556
8.24.5.11 DTC: U018687 558
8.24.5.12 DTC: U01068A 561
8.24.5.13 DTC: C040144 563
8.24.5.14 DTC: C040297 567
8.24.5.15 DTC: C040396, C040378 569
8.24.6 Removal and installation 572
8.24.6.1 Removal and installation of rear corner millimeter wave radar assembly 572
8.24.6.2 Removal and installation of rear corner millimeter wave radar assembly bracket 573
8.25 Bluetooth key 574
8.25.1 System description 574
8.25.1.1 System Overview 574
8.25.2 Component position 575
8.25.2.1 Component position 575
8.25.3 Electrical schematic diagram 576
8.25.3.1 Electrical schematic diagram 576
8.25.4 Removal and installation 577
8.25.4.1 Removal and installation of Bluetooth key controller 577
8.26 LSPM 578
8.26.1 Fastener specifications 578
8.26.1.1 Fastener specifications 578
8.26.2 System description 579
8.26.2.1 System description 579
8.26.3 Component position 580
8.26.3.1 Component position 580
8.26.4 Electrical schematic diagram 581
8.26.4.1 Electrical schematic diagram 581
8.26.5 Removal and installation 582
8.26.5.1 Removal and installation of LSPM loudspeaker assembly 582
8.27 Data communication system 583
8.27.1 System description 583
8.27.1.1 System description 583
8.27.2 Component position 584
8.27.2.1 Component position 584
8.27.3 Electrical schematic diagram 585
8.27.3.1 CAN topology 585
8.27.3.2 Schematic Diagram of LIN Communication 586
8.27.4 Removal and installation 587
8.27.4.1 Removal and installation of gateway controller (integrated body controller) 587
8.28 Intelligent body control system 588
8.28.1 Specification 588
8.28.1.1 Fastener specifications 588
8.28.2 Operation and description 589
8.28.2.1 Overview of body control system functions 589
8.28.2.2 Function description of PEPS system 589
8.28.3 Component position 592
8.28.3.1 Component position 592
8.28.4 Electrical schematic diagram 593
8.28.4.1 Electrical schematic diagram 593
8.28.5 Diagnosis information and steps 595
8.28.5.1 Diagnostic instructions 595
8.28.5.2 Visual inspection 595
8.28.5.3 ECU terminals 595
8.28.5.4 Active test 608
8.28.5.5 Data list 611
8.28.5.6 DTC list 625
8.28.5.7 DTC:B111717,B111716 636
8.28.5.8 DTC: U007388 639
8.28.5.9 DTC: U007488 640
8.28.5.10 DTC: U007588 641
8.28.5.11 DTC: U007688 642
8.28.5.12 DTC: U010387 643
8.28.5.13 DTC: U010087 645
8.28.5.14 DTC: U013187 647
8.28.5.15 DTC: U015187 648

8.28.5.16 DTC: U012887 650
8.28.5.17 DTC: U023087 652
8.28.5.18 DTC: U015587 653
8.28.5.19 DTC: U018687 655
8.28.5.20 DTC: U023287 657
8.28.5.21 DTC:B102011,B102013 659
8.28.5.22 DTC:B102111,B102113 663
8.28.5.23 DTC:B103011,B103013 666
8.28.5.24 DTC:B103111,B103113 669
8.28.5.25 DTC:B103211,B103213 673
8.28.5.26 DTC:B103311,B103313 676
8.28.5.27 DTC: B102911 679
8.28.5.28 DTC: B102A11 681
8.28.5.29 DTC: B104171 682
8.28.5.30 DTC: B104271 684
8.28.5.31 DTC: B101449, B101683..... 687
8.28.5.32 DTC:B101796,B101B96 690
8.28.5.33 DTC: B132596, B132696..... 693
8.28.5.34 DTC: B141096 696
8.28.5.35 DTC: B10F087, B10F187..... 699
8.28.5.36 DTC: B10F084, B10F184..... 701
8.28.5.37 DTC: B120000 702
8.28.5.38 DTC: B124696 704
8.28.5.39 DTC: B124796 706
8.28.5.40 DTC: B123013 711
8.28.5.41 DTC: B123413 712
8.28.5.42 DTC: B123613 714
8.28.5.43 DTC: B123213 715
8.28.5.44 DTC: B123513 717
8.28.5.45 DTC:C181011,C181115 718
8.28.5.46 DTC:C182011,C182115 722
8.28.5.47 DTC:C183011,C183115 726
8.28.5.48 DTC:C184314,C184412 730
8.28.5.49 DTC: C184571 733
8.28.5.50 DTC:C185D14,C185E12 736
8.28.5.51 DTC: C185F71 739
8.28.5.52 DTC:C188314,C188412 742
8.28.5.53 DTC: C188571 745
8.28.5.54 DTC:C18B287,U1A4187 749
8.28.5.55 DTC: U1A4287 752
8.28.5.56 DTC:U02A687 757
8.28.5.57 DTC: U011187 758
8.28.5.58 DTC: U011687 760
8.28.5.59 DTC: U029887 762
8.28.5.60 DTC: U029B87, U011087 764
8.28.5.61 DTC: U016687 765
8.28.5.62 DTC: U029387 767
8.28.5.63 DTC: U060087 769
8.28.5.64 DTC: P1B0007, P1B0009..... 771
8.28.5.65 DTC: P1B0107, P1B0109..... 777
8.28.5.66 DTC: P1B0207, P1B0209..... 783
8.28.5.67 DTC: P1B0309 788
8.28.5.68 DTC:P1B0409,P1B0414 790
8.28.5.69 DTC:P1B0509 792
8.28.5.70 DTC: P1B0609 797
8.28.5.71 DTC:P1B0709 800
8.28.5.72 DTC: P1B0809 803
8.28.5.73 DTC: U019887 806
8.28.6 Removal and installation 809
8.28.6.1 Removal and installation of body controller 809
8.28.6.2 Removal and installation of ENGINE START STOP button 811
8.28.6.3 Removal and installation of IMMO antenna 812
8.28.6.4 Removal and installation of PS antenna (rear side wall) 812
8.28.6.5 Removal and installation of PS antenna (rear bumper side) 814
8.28.6.6 Removal and installation of smart key battery... 814
8.29 LV power supply system 818
8.29.1 Specification..... 818
8.29.1.1 Fastener specifications..... 818
8.29.2 Component position 819
8.29.2.1 Component position..... 819
8.29.3 Removal and installation..... 820
8.29.3.1 Removal and installation of battery 820
8.29.3.2 Removal and installation of battery clamping plate 822
8.29.3.3 Removal and installation of battery tray 822
8.29.3.4 Removal and installation of battery ground wire 824
8.29.3.5 Disconnecting battery negative terminal..... 824

8.1 Warnings and notes

8.1.1 Warnings and notes

8.1.1.1 Warnings and notes

1. Warnings about disconnecting battery negative cable

Warning!

Unless otherwise stated in the operation procedure, the power mode of the start switch should be in the OFF state, and all electrical loads must be "OFF" before any electrical component is to be repaired. If the tool or equipment is easy to be in touch with the bare cable or live electrical terminal, do disconnect the battery negative terminal. If the instructions on safety are violated, personal injuries or damage to the vehicle components may occur.

2. Warnings for road test

Warning!

Perform a road test on the vehicle on the premise of ensuring safety and complying with all traffic regulations. Do not attempt any maneuvers that could jeopardize vehicle control. Violation of the above safety instructions may cause severe injuries and vehicle damage.

3. Warning about window quick down function

Warning!

When the power window switch is operated at the driver's door, the quick lifting/lowering function makes the window move extremely fast and cannot be stopped, which may cause personal injury.

4. Notes for disconnecting battery terminal

Notes

Always turn the start switch to the "OFF" position when connecting or disconnecting the battery terminal, battery charger or jumper cable. Failure to do so may damage the control module or other electrical components.

5. SRS warning

Warning!

The vehicle is equipped with a safety SRS. Failure to follow the correct procedure could cause the following conditions:

- The SRS opens accidentally.
- The system does not function when airbag protection is required.

Warning!

To avoid the above conditions, observe the following guidelines:

- Refer to the view of SRS components in order to determine if you are performing service on or near the SRS components or on the SRS wiring.
- If you are performing maintenance operations on or around SRS components or their wiring, you should disable the airbag system first. See "Warning on disconnection of battery negative cable” in "Warnings and notes".

6. Warning about very high temperature of deployed airbag ECU

Warning!

The metal surfaces of deployed SRS components may be very hot. In order to prevent fire and injury:

- Ensure sufficient cooling time before touching any metal surface of a SRS component.
- Do not place inflated SRS components next to any flammable material.

7. Warning about SRS clock spring

Warning!

Improper installation of the clock spring coil may damage the internal spiral coil of the clock spring. The airbag module may not work normally due to the coil fault, causing personal injury.

8. Warning about SRS module disposal

Warning!

In order to prevent personal injury due to accidental airbag deployment, no not dispose of the undeployed airbag module as normal shop waste. If the sealed container is damaged during disposal, some substances in the undeployed module may cause severe illness or personal injury. Follow the deployment steps to safely dispose of the undeployed airbag module.

9. Warning about handling and storage of SRS inflator module

Warning!

For transportation of undeployed airbag module:

- Do not handle the airbag module by carrying the wire or connector on the airbag module.
- Make sure the airbag opening is not facing you or someone else.

Warning!

For storage of undeployed airbag module, be sure that the opening of the airbag does not face the surface of the airbag module. Do not put the airbag with its opening downward. Do not put any article on the airbag module. Provide enough space around the airbag for accidental deployment. Otherwise, personal injury may be caused. Do not immerse the airbag module not deployed into water or other fluids. Do not put the airbag not deployed near a fire source or in any hot area to prevent accidental deployment and personal injury.

10. Warning about handling of SRS collision sensor

Warning!

Do not impact or shake the SRS collision sensor. Before powering on the impact sensor, ensure that it is fixed securely. If you do not follow the correct installation steps, the SRS may deploy by mistake or not deploy when it should have deployed, resulting in personal injury.

8.1.1.2 Preparations for operations related to hv electric control system

Personal preparations:

- •Before operation of the HV system, do wear HV protective articles such as HV insulated gloves, insulated shoes, etc.
- Do not carry metal articles during operation.
- Confirm breakage before using 1000V durable insulated gloves.

Site inspections:

- Put a triangular warning sign "warning: high voltage, do not touch" in a visible position (such as vehicle roof) to warn other personnel.
- Before parking the vehicle to be repaired in the repair work area, make sure that there is no water on the ground, and do not operate in humid environment.
- Make sure that the work area is equipped with carbon dioxide fire extinguishers.

Preparation of maintenance tools:

- Use special insulated tools for HV operation or the tools with insulation treatment.

Cutting off power supply of HV system:

- Turn off all the electrical appliances and turn off the Start switch.
- Disconnect the 12V battery negative terminal.

8.1.1.3 Warnings for operations related to hv electric control system

Warning!

The vehicle is a hybrid power system and is equipped with 393.1V HV power battery.

Be sure to operate the system correctly according to the instructions in this Manual. Otherwise, serious injury or electrocution may be caused.

Do not touch any HV cable and HV component. If necessary, follow the instructions below:

- Do wear HV protective articles such as: HV insulated gloves, insulated shoes and special insulated tools for HV operation.
- During the use of the vehicle, the HV system may be in a state of high voltage and high temperature. Please follow the warning sign instructions to avoid high voltage and high temperature injury.
- Insulate the removed cable with insulating tapes.

When the HV system is repaired, the following precautions must be noted to prevent possible personal injuries:

Turn off all the electrical appliances and turn off the Start switch.

Disconnect the 12V battery negative terminal.

During operation of the HV system, HV protective articles such as HV insulated gloves, insulated shoes and special tools for HV insulation must be worn.

HV electricians shall ensure that the power supply is cut off and wait for 10min before operation.

Relevant HV electricians shall be consulted in case of any doubt. Before performing any operation of the HV system and repairing the vehicle body, HV electricians must cut off the power supply of the system.

If the power supply of the HV system cannot be cut off, only professional electricians can carry out the maintenance.

Notes for inspection and repair of HV circuit:

Technicians must be professionally trained before they can repair and inspect HV systems.

The "Warning: High Voltage! Do Not Touch" sign shall be used to inform other technicians of that the HV system is being inspected or repaired.

All HV harnesses and connectors shall be orange. Power battery and other HV parts are provided with "High Voltage" warning labels. Please do not touch these harnesses or parts without permission.

Do not lean your body or put the tools against any HV circuit and its components. Never use any cutting-formed and sharp tools near HV components and circuits.

Do not use any power supply, such as those for fusion welding, brazing, thermal bonding and operations with hot air, near HV components and circuits.

Do not seriously twist or bend the HV circuits. In case of any abnormality or doubt, consult the HV electrician or professional electrician.

No attempt shall be made to repair any harness or connector if such harness or connector of the HV circuit is faulty. Please directly replace the damaged or faulty HV cable or connector.

The one wearing an artificial cardiopulmonary aid is not allowed to work on vehicles equipped with HV systems. Artificial cardiopulmonary aids include built-in analgesic pump, implantable defibrillator, cardiac pacemaker, insulin pump, hearing-aid, etc.

8.2 Intelligent multimedia system

8.2.1 Fastener specifications

8.2.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Entertainment system assembly	Cross recessed hexagon head flange bolt	6±1

8.2.2 System description

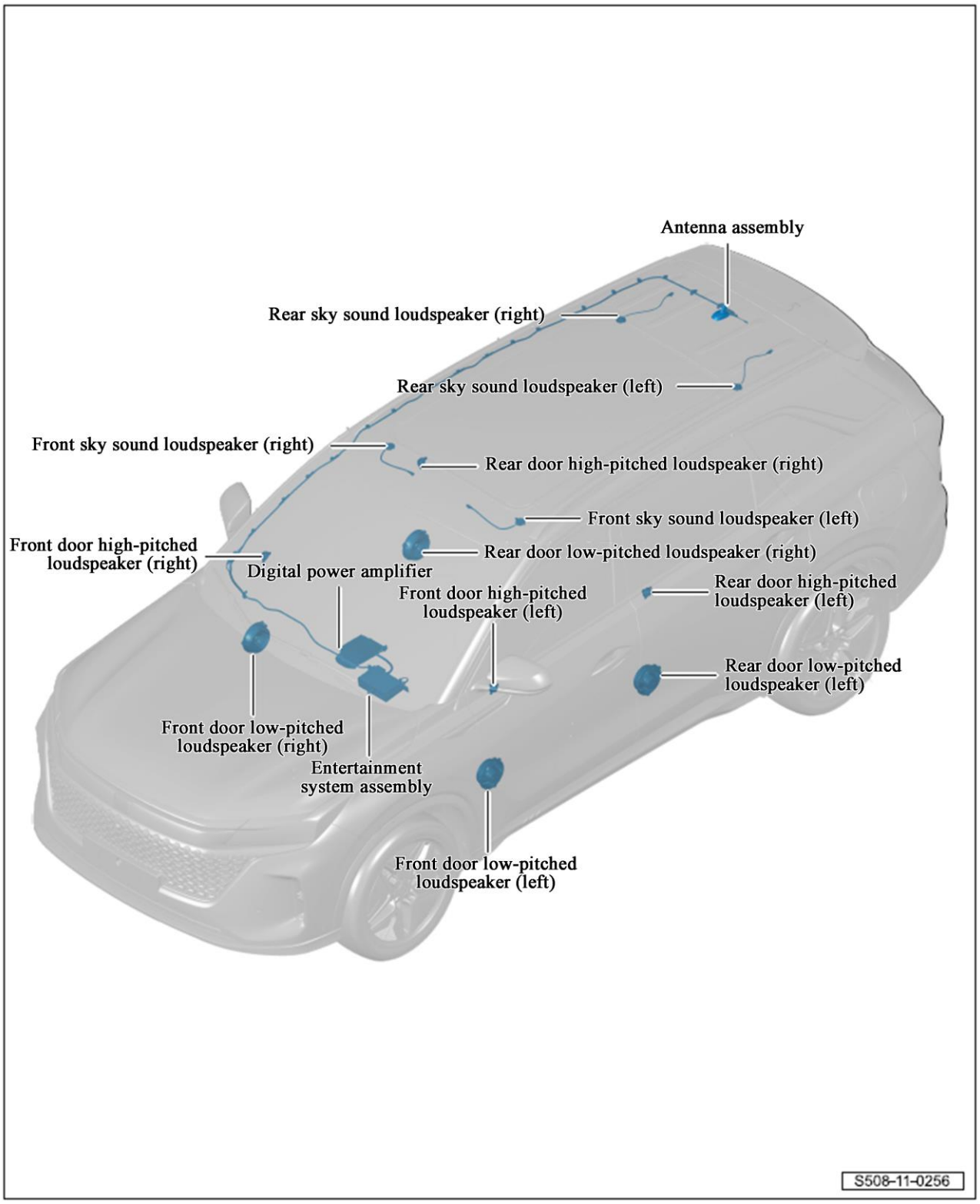
8.2.2.1 System description

The entertainment system is mainly composed of MP5 host, multimedia touch screen, loudspeaker and antenna and has powerful functions of entertainment and driving assistance, including radio, navigation, USB disk play, Bluetooth adaptation (which can be adapted with Bluetooth mobile phone for hands-free answer), reversing image, A/C control display, Huawei HiCar and smart assistant, ADAS, driving recorder, voice interaction, and network entertainment service; it is equipped with a high-end external independent power amplifier to achieve super-power output and enjoy the auditory feast.

8.2.3 Component position

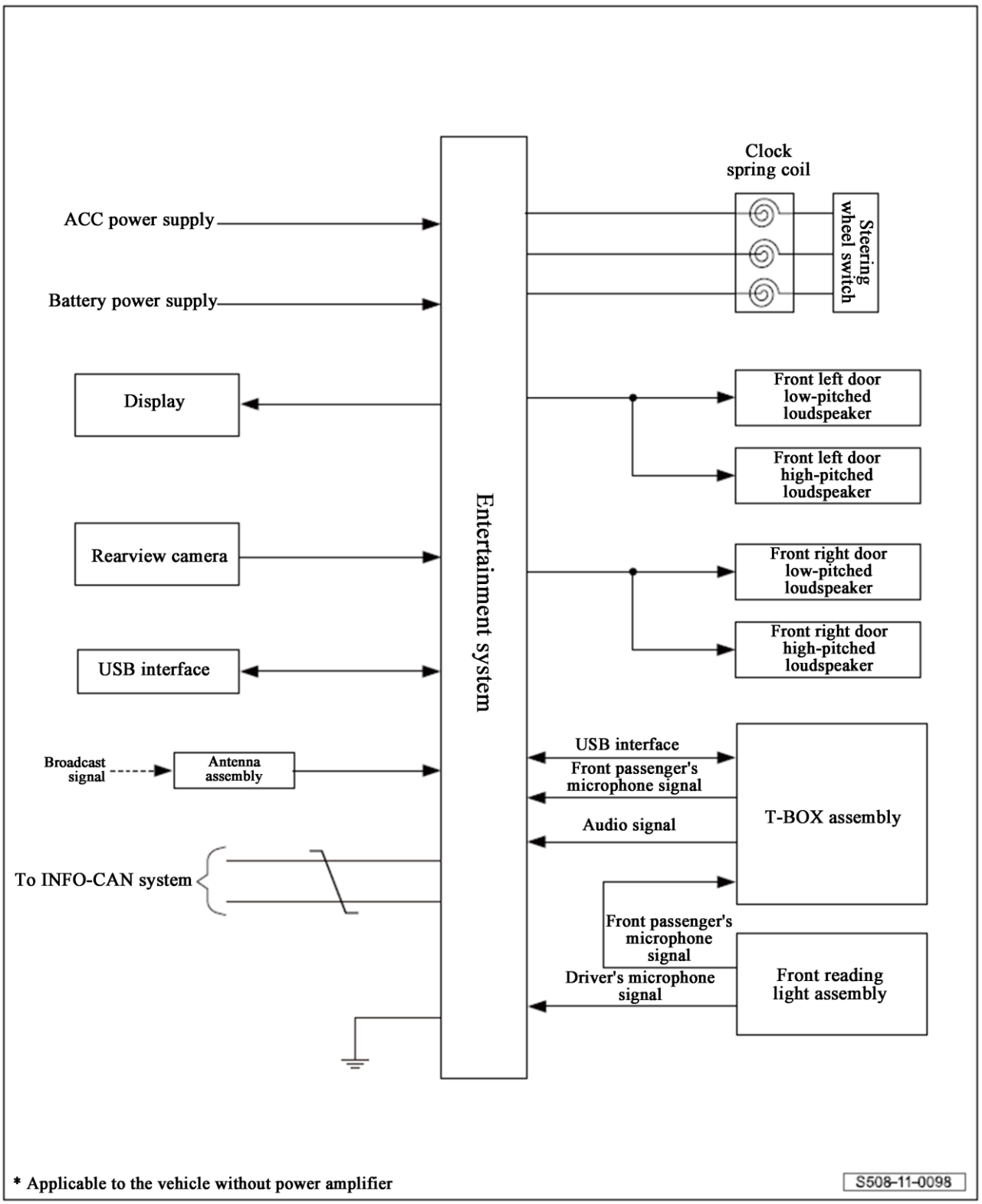
8.2.3.1 Component position

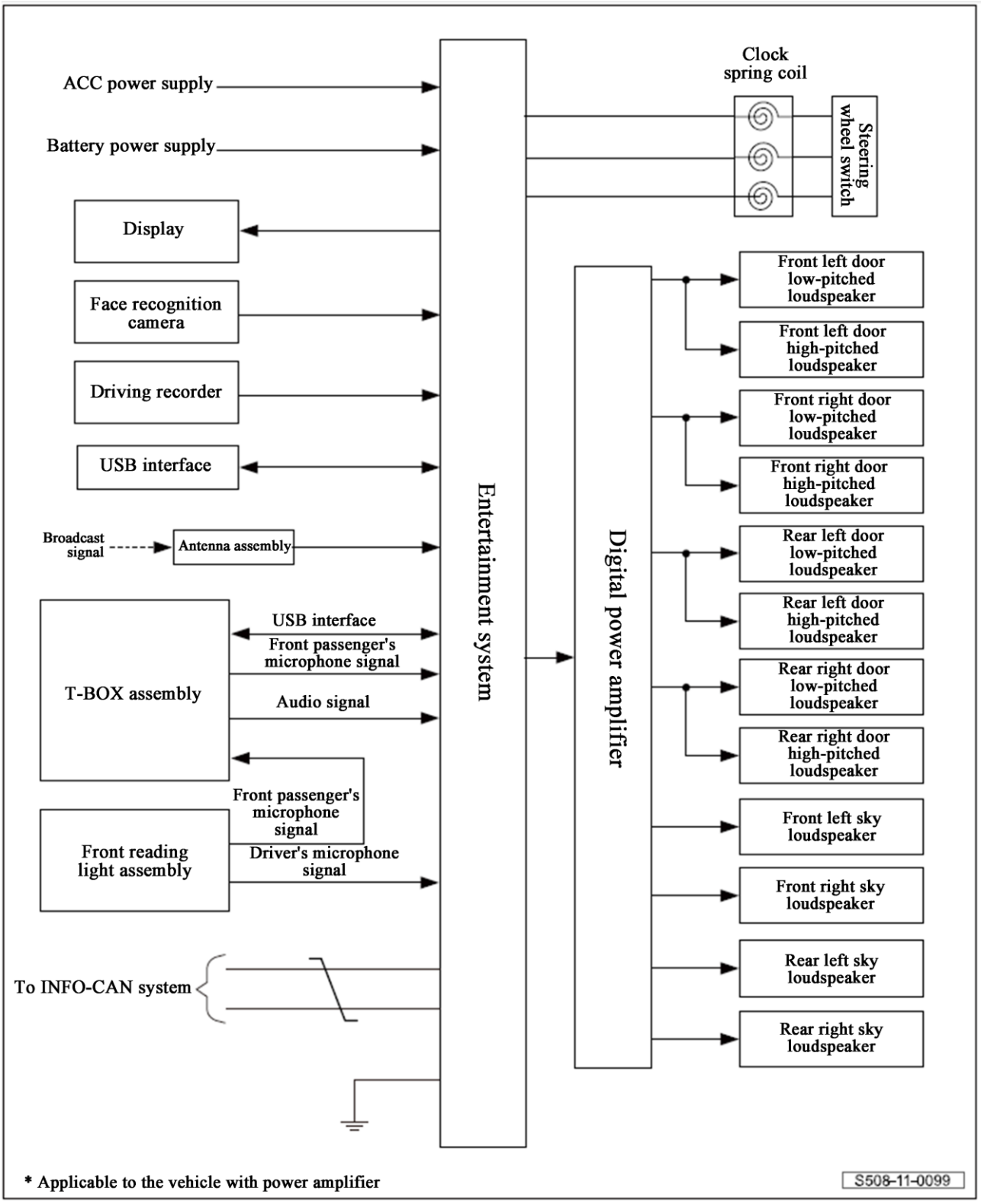
Component position



8.2.4 Electrical schematic diagram

8.2.4.1 Electrical schematic diagram




ACC power supply
Battery power supply
Display
Face recognition camera
Driving recorder
USB interface
Broadcast signal
Antenna assembly
T-BOX assembly
USB interface
Front passenger's microphone signal
Audio signal
Front passenger's microphone signal
Front reading light assembly
Driver's microphone signal
To INFO-CAN system
Entertainment system
Clock spring coil
Steering wheel switch
Digital power amplifier
Front left door low-pitched loudspeaker
Front left door high-pitched loudspeaker
Front right door low-pitched loudspeaker
Front right door high-pitched loudspeaker
Rear left door low-pitched loudspeaker
Rear left door high-pitched loudspeaker
Rear right door low-pitched loudspeaker
Rear right door high-pitched loudspeaker
Front left sky loudspeaker
Front right sky loudspeaker
Rear left sky loudspeaker
Rear right sky loudspeaker
* Applicable to the vehicle with power amplifier
S508-11-0099

8.2.5 Diagnosis information and steps

8.2.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the acoustic host with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

8.2.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.
- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

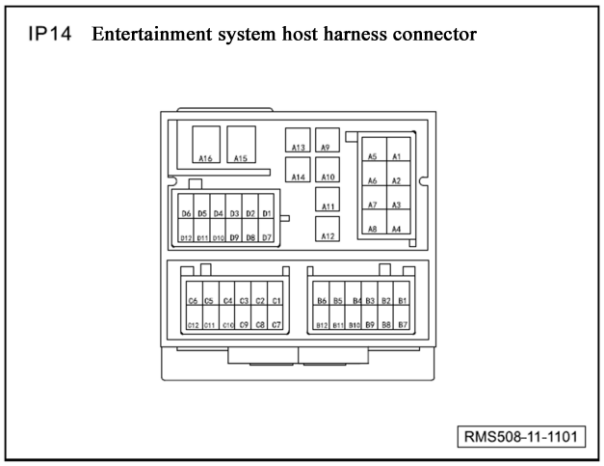
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

8.2.5.3 ECU terminal

Audio control unit harness connector (IP14)



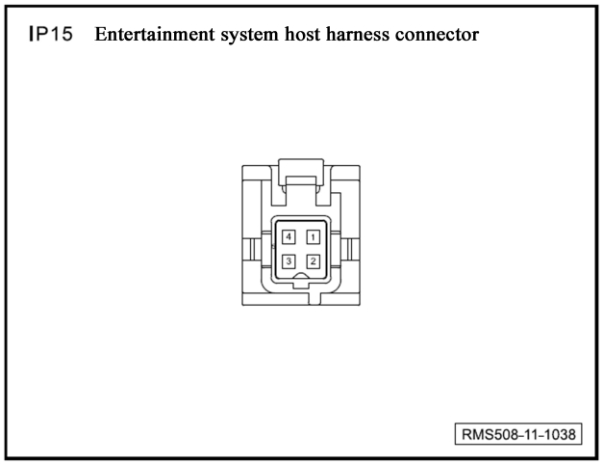
Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
A02	0.5/red-blue	Front right loudspeaker +	—	—
A03	0.5/white	Front left loudspeaker +	—	—
A06	0.5/green-blue	Front right loudspeaker -	—	—
A07	0.5/yellow-white	Front left loudspeaker -	—	—
A11	0.35/orange	Entertainment (Info)CAN-H	—	—
A12	0.35/orange-white	Entertainment (Info)CAN-L	—	—
A13	0.35/red-gray	ACC	Put the start switch to	Battery voltage

			“ON” position	
A15	1.5/black	GND	—	0V
A16	1.5/red-black	MP5 / power amplifier (30 A)	—	—
B01	0.35/yellow-red	MP5 signal 1 (KEY)	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
B02	0.35/yellow-black	MP5 signal 2 (KEY)	—	—
B03	0.35/brown-red	All-around view switch	—	—
B05	0.35/green	Receive DVR signal	—	—
B06	0.35/yellow	Send signal to DVR	—	—
B07	0.35/white-yellow	MP5 signal ground (KEY)	—	—
B08	0.35/black	Radar ground	—	—
B09	0.35/white-purple	Radar data	—	—
B10	0.35/green-black	Radar power supply	—	—
B11	0.35/black-white	Video signal shield ground	—	—
B12	0.35/white	DVR video signal	—	—
C01	0.35/red-green	MIC1+	—	—
C02	0.35/red-black	MIC1-	—	—
C03	0.35/pink-grey	LINEOUT+	—	—
C05	0.35/yellow-blue	Reversing image ground of left rearview mirror	—	—
C06	0.35/yellow-brown	Reversing image power supply of left rearview mirror	—	—
C07	0.35/pink-black	MIC2+	—	—
C08	0.35/green, pink, red	MIC2-	—	—
C09	0.35/pink-white	LINEOUT-	—	—
C11	0.35/black-yellow	Reverse shield ground	—	—
C12	0.35/yellow	Reversing video signal	—	—
D01	0.5/white-blue	Front left loudspeaker +	—	—
D02	0.5/red-blue	Front right loudspeaker +	—	—
D03	0.5/pink-green	Rear left loudspeaker +	—	—
D04	0.5/green-yellow	Rear right loudspeaker +	—	—
D05	0.5/green, pink, red	CONTROL control	—	—
D06	0.5/yellow-green	INABLE enable	—	—
D07	0.5/white-green	Front left loudspeaker -	—	—
D08	0.5/green-orange	Front right loudspeaker -	—	—
D09	0.5/pink-blue	Rear left loudspeaker-	—	—

D10	0.5/green-gray	Rear right loudspeaker-	—	—

Audio control unit harness connector (IP15)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	—	USB communication data cable	—	—

8.2.5.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F187	Part No	-	-	-	-
F18A	Supplier code	-	-	-	-
F197	ECU name	-	-	-	-
F189	Software version No	-	-	-	-
F089	Hardware version No	-	-	-	-
F193	Supplier hardware version No	-	-	-	-
F195	Supplier software version No	-	-	-	-
F190	VIN	-	-	-	-
F010	Logoff configuration	-	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
2101	Detect IVI login status	-	0	255	-
2102	IVI PDID number	-	-	-	-
F100	Operation area query	-	0	255	-
F101	Software version of the backup area	-	-	-	-

8.2.5.5 DTC list

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
B111716	Battery voltage is too low	Voltage too low, system black screen	Battery undervoltage	Suggest shutting down and checking the battery status

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
B111717	Battery voltage is too high	Voltage too high, system shutdown	Abnormal battery circuit	Suggest shutting down and checking the battery status
U007688	CAN bus off	Abnormal communication, vehicle control function failure	1. CAN bus has physical fault 2. Bus is interfered with 3. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U014087	Lost communication with BCM	Abnormal BCM communication, body signal cannot be detected	1. The controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U013187	Lost communication with EPS	Abnormal EPS communication, reversing auxiliary line function not available	1. EPS controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
				fault, controller fault
U012887	Lost communication with EPB	Abnormal EPB communication abnormal, EPB parking status judgment failure	1. IC controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U023287	Lost communication with SRR_R1	Abnormal SRR communication, SRR alarm prompt function failure	1. IC controller fails to send the message 2. CAN bus has physical fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
			3. Bus is interfered with 4. Control unit internal fault	3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U015587	Lost communication with IC	Abnormal IC communication, unable to update instrument vehicle control status	1. IC controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U016487	Lost communication with AC	Abnormal AC communication, abnormal A/C display and control function	1. IC controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U011187	Lost communication with BMS	Abnormal BMS communication, abnormal status report	1. BMS controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
			4. Control unit internal fault	LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U029387	Lost communication with VCU	Abnormal VCU communication, abnormal gear information, unable to enter R gear video	1. VCU controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
				5. Power supply fault, grounding fault, controller fault
U010087	Lost communication with EMS	Unable to update EMS status	1. EMS controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U010387	Lost communication with GSM	-	1. GSM controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U012287	Lost communication with ESP	Abnormal ESP communication, vehicle speed signal lost, affecting IVI function	1. ESP controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
				fault, controller fault
U023087	Lost communication with PLG	Abnormal lift gate status control	1. PLG controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
U019887	Lost communication with TBOX	Abnormal Tbox function, OTA function failure	1. TBOX controller fails to send the message 2. CAN bus has physical fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
			3. Bus is interfered with 4. Control unit internal fault	3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
B180001	Lost communication with PCM	PCM communication lost, affecting vehicle control function	1. PCM controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault
B180002	Lost communication with LSPM	LSPM communication lost, low speed pedestrian alarm switch status Abnormal	1. LSPM controller fails to send the message 2. CAN bus has physical fault 3. Bus is interfered with 4. Control unit internal fault	1. CAN bus open circuit 2. CAN bus is short-circuited to ground or power supply 3. CAN bus HV and LV wires short-circuited 4. CAN bus is interfered with by wireless signal 5. Power supply fault, grounding fault, controller fault

8.2.5.6 DTC: B111716, B111717

DTC	DTC definition
B111716	Battery voltage is too low
B111717	Battery voltage is too high

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.
Standard voltage value: **11~14V**
B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the fuses IF15 and IF19 of the entertainment system host.

A Check whether the fuses IF15 and IF19 are blown.

No → Go to Step 5.

Yes

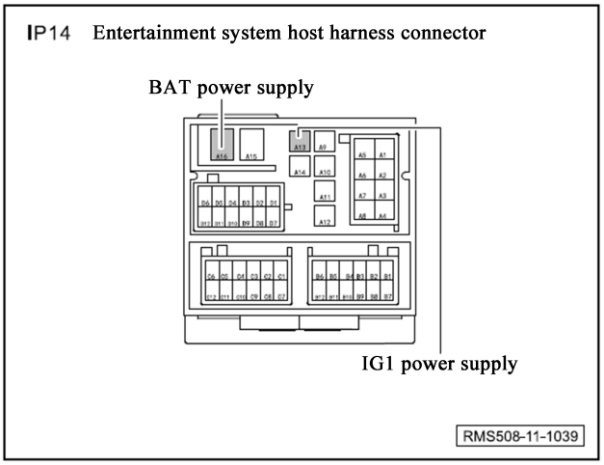
Step 4	Check and repair the circuits of fuses IF15 and IF19.

A Check whether fuses IF15 and IF19 are short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF1520A, IF195A**
D Confirm whether the entertainment system host works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the entertainment system host.



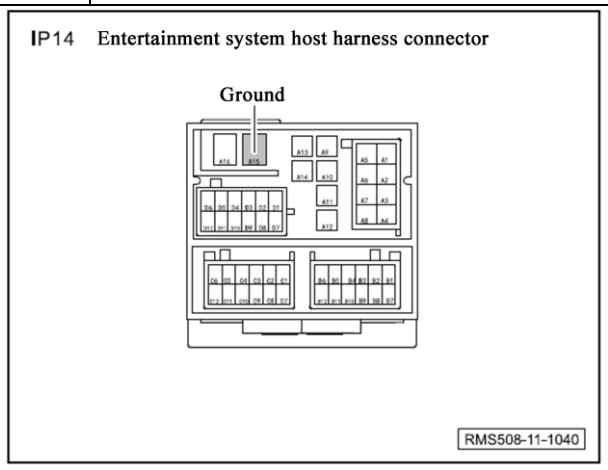
A Turn the start switch to "OFF" position.
B Disconnect the entertainment system host harness connector IP14.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal A16/A13 of the entertainment system host harness connector IP14 and body ground.
Standard voltage value: **11~14V**
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the entertainment system host.

IP14 Entertainment system host harness connector



A Turn the start switch to "OFF" position.

B Disconnect the entertainment system host harness connector IP14.

C Measure the resistance between terminal A15 of the entertainment system host harness connector IP14 and body ground.
Standard resistance value: **<1Ω**

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.2.5.7 DTC: U007688

DTC	DTC definition
U007688	CANBUSOFF

1. Diagnosis steps

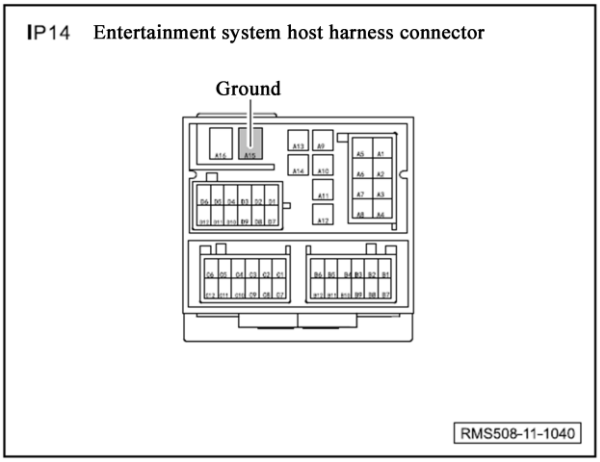
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.
B Disconnect the entertainment system host harness connector IP14.
C Measure the resistance between terminal A11 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: about **120Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.2.5.8 DTC: U014087 & U016487

DTC	DTC definition
U014087	Loss of communication with BCM
U016487	Lost communication with AC

1. Diagnosis steps

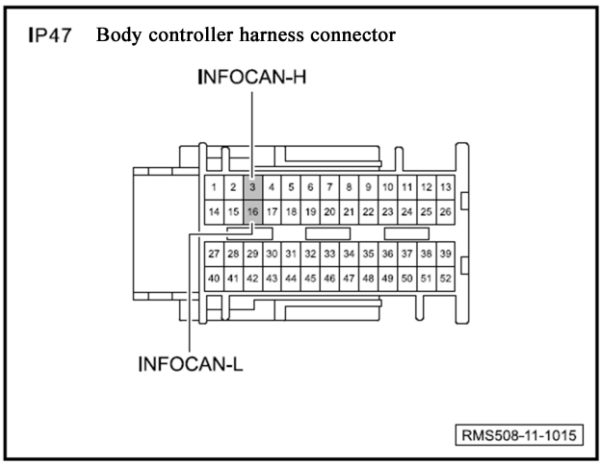
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

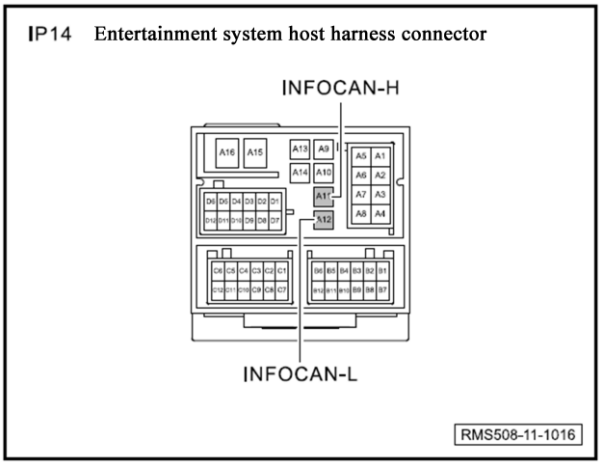
Yes

Step 2	Check the CAN data communication wire between the entertainment system host and the body controller.



A Turn the start switch to "OFF" position.
B Disconnect the entertainment system host harness connector IP14.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal A11 of the entertainment system host harness connector IP14 and terminal 3 of the body controller harness connector IP47.
E Measure the resistance between terminal A12 of the entertainment system host harness connector IP14 and terminal 16 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.2.5.9 DTC: U013187

DTC	DTC definition
U013187	Lost communication with EPS

1. Diagnosis steps

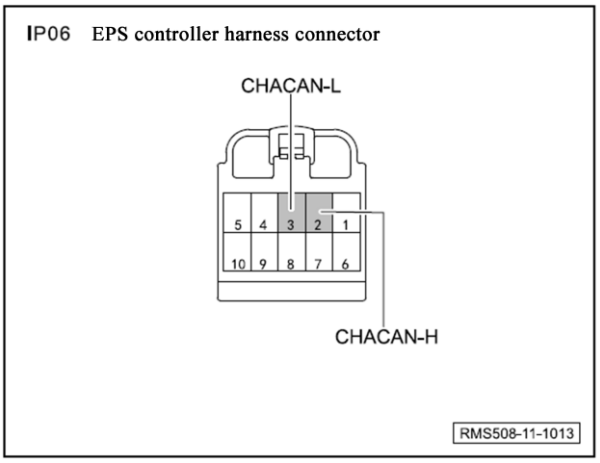
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

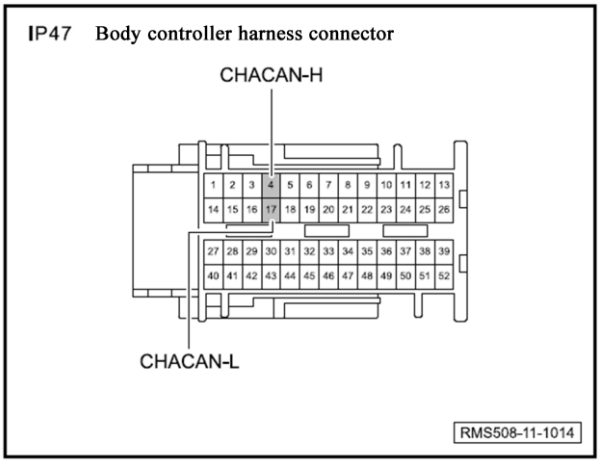
No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the EPS controller and the body controller.



A Turn the start switch to "OFF" position.
B Disconnect the EPS controller harness connector IP06.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 2 of the EPS controller harness connector IP06 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 3 of the EPS controller harness connector IP06 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

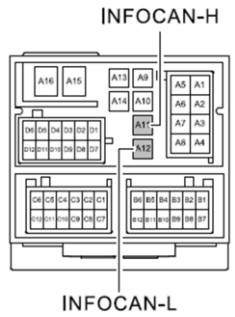


No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

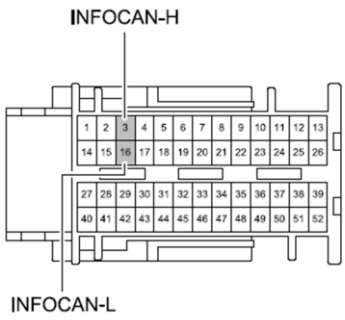
Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.

IP14 Entertainment system host harness connector



RMS508-11-1016

IP47 Body controller harness connector



RMS508-11-1015

A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the EPS controller.

A Check whether the power supply and ground wires of the EPS controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.2.5.10 DTC: U010087

DTC	DTC definition
U010087	Lost communication with EMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

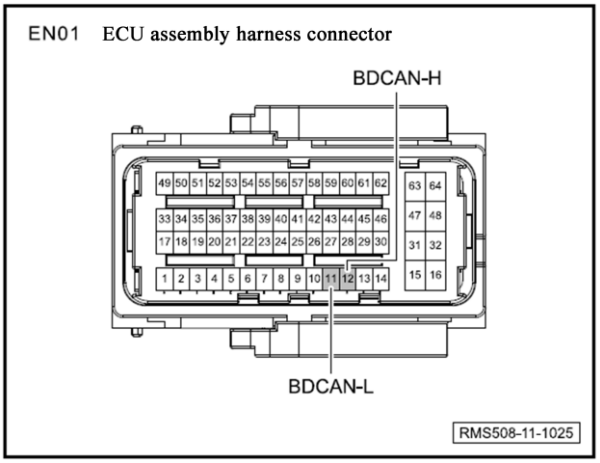
D Read the DTC again.

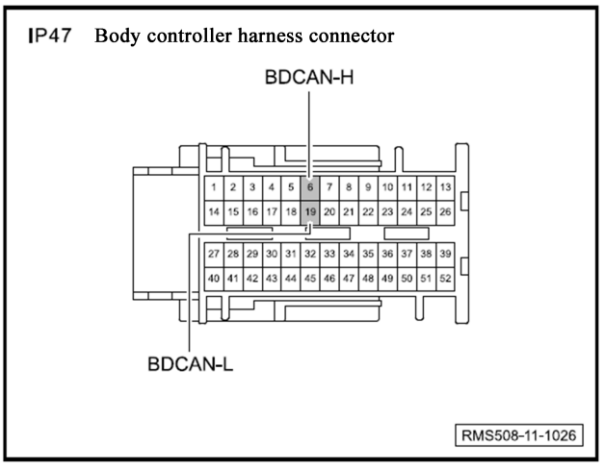
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the ECU assembly harness connector EN01.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 19 of the body controller harness connector IP47.

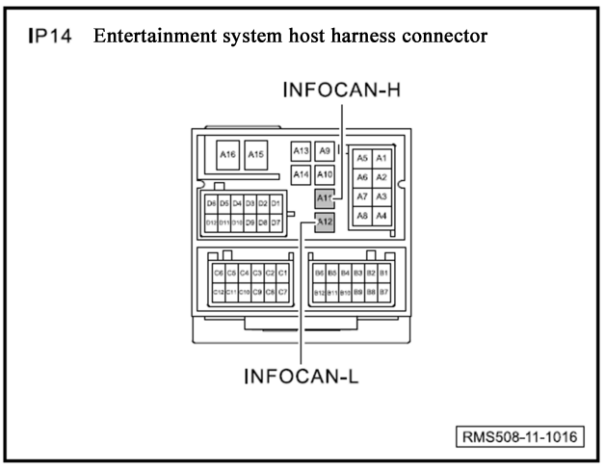
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

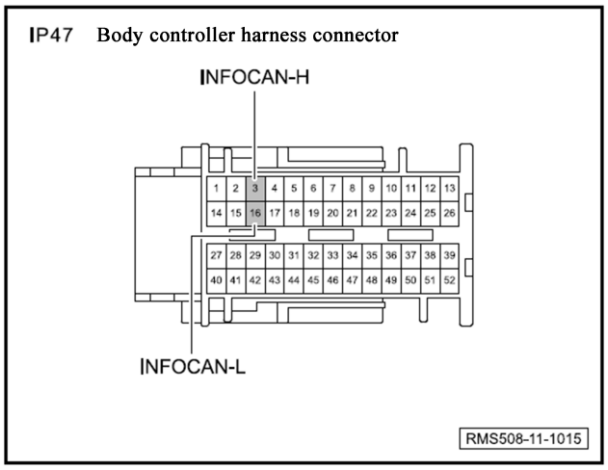
D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes →

Next

Step 8	The diagnosis is over.

8.2.5.11 DTC: U012887

DTC	DTC definition
U012887	Lost communication with EPB

1. Diagnosis steps

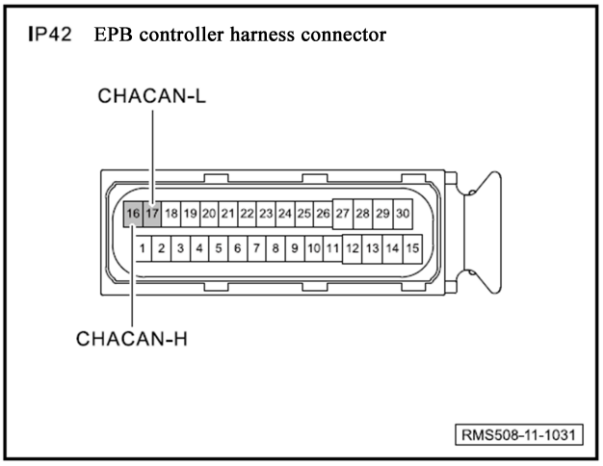
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

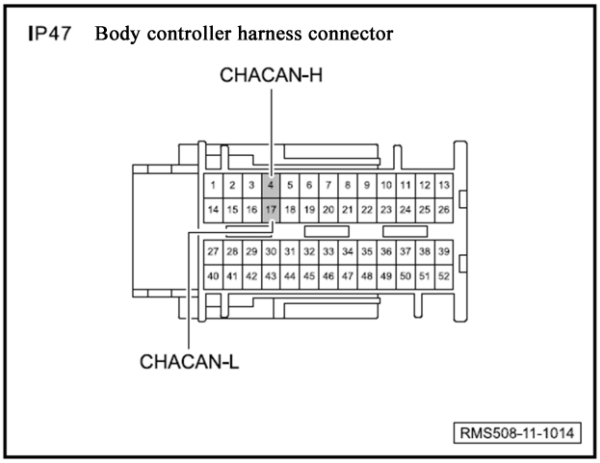
Yes

Step 2	Check the CAN data communication wire between the EPB controller and the body controller.



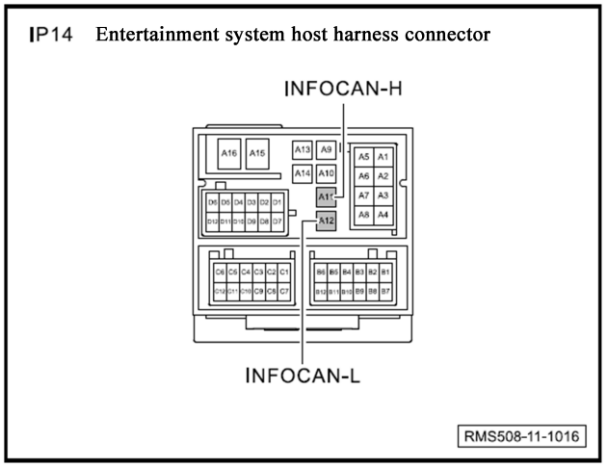
A Turn the start switch to "OFF" position.
B Disconnect EPB controller harness connector IP42.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 16 of EPB controller harness connector IP42 and terminal 4 of body controller harness connector IP47.
E Measure the resistance between terminal 17 of EPB controller harness connector IP42 and terminal 17 of body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

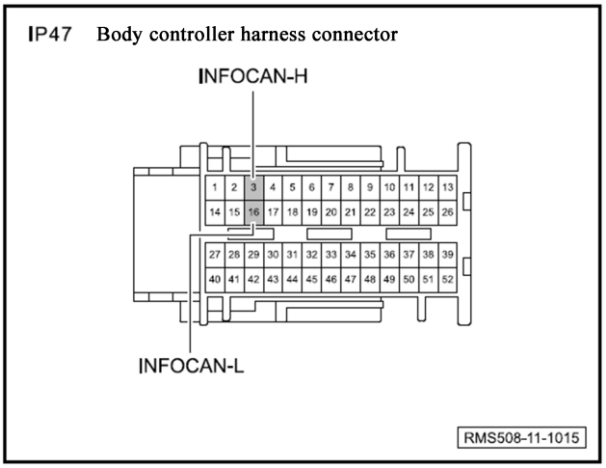
No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.2.5.12 DTC: U023287

DTC	DTC definition
U023287	Lost communication with SRR_R1

1. Diagnosis steps

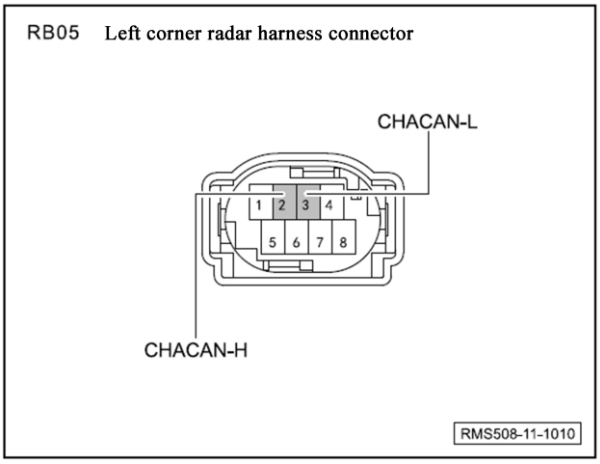
Step 1	Check the DTCs.

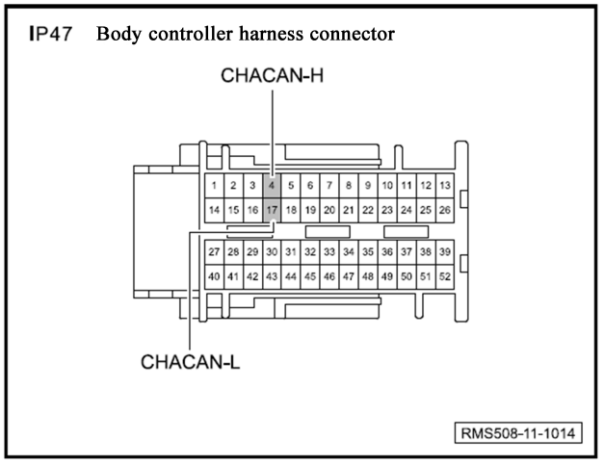
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the left corner radar and the body controller.





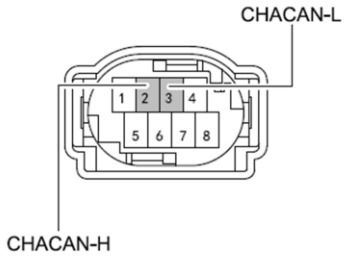
A Turn the start switch to "OFF" position.
B Disconnect the left corner radar harness connector RB05.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 2 of the left corner radar harness connector RB05 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 3 of the left corner radar harness connector RB05 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

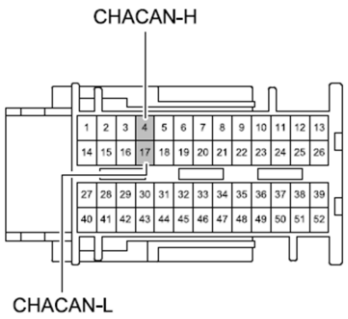
Step 3	Check the CAN data communication wire between the right corner radar and the body controller.

RB04 Right corner radar harness connector



RMS508-11-1011

IP47 Body controller harness connector



RMS508-11-1014

A Turn the start switch to "OFF" position.

B Disconnect the right corner radar harness connector RB04.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 2 of the right corner radar harness connector RB04 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 3 of the right corner radar harness connector RB04 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

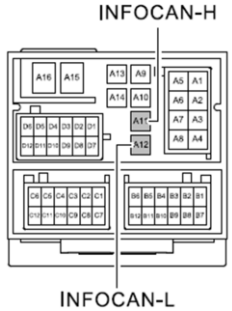
No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the body controller and the entertainment system host.

IP14 Entertainment system host harness connector



RMS508-11-1016

A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

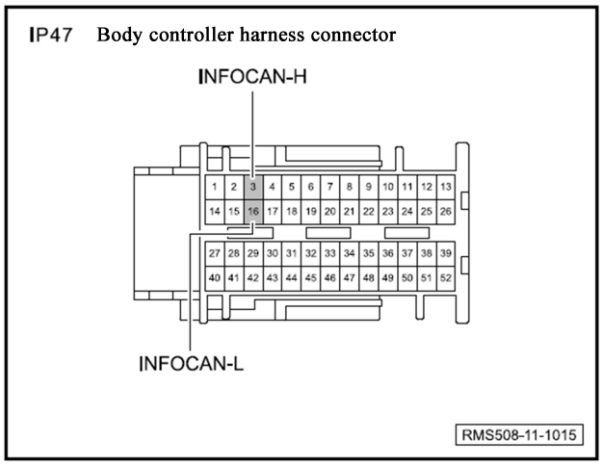
E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the

standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply and ground wires of the left and right corner radars.

A Check whether the power supply and ground wires of the left and right corner radars are normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.2.5.13 DTC: U015587

DTC	DTC definition
U015587	Lost communication with IC

1. Diagnosis steps

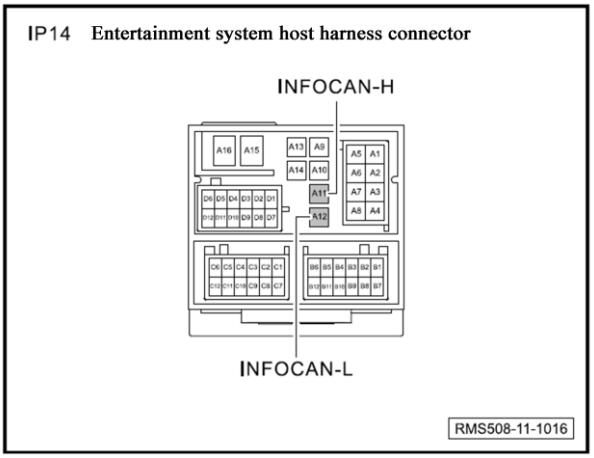
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

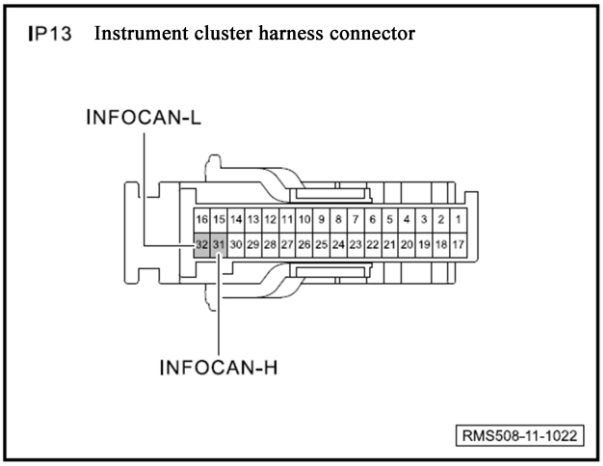
Yes

Step 2	Check the CAN data communication wire between the instrument cluster and the entertainment system host.



A Turn the start switch to "OFF" position.
B Disconnect the instrument cluster harness connector IP13.
C Disconnect the entertainment system host harness connector IP14.
D Measure the resistance between terminal 31 of the instrument cluster harness connector IP13 and terminal A11 of the entertainment system host harness connector IP14.
E Measure the resistance between terminal 32 of the instrument cluster harness connector IP13 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

No

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.2.5.14 DTC: U012287

DTC	DTC definition
U012287	Lost communication with ESP

1. Diagnosis steps

Step 1	Check the DTCs.

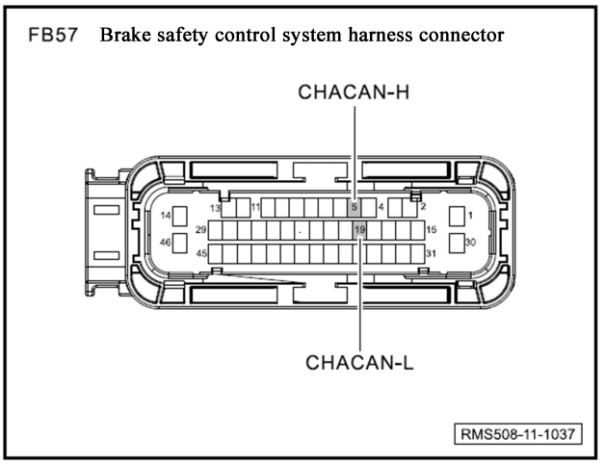
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

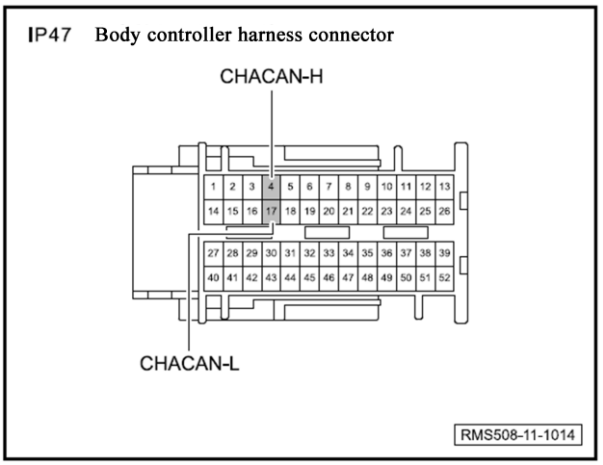
Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.

FB57 Brake safety control system harness connector



IP47 Body controller harness connector



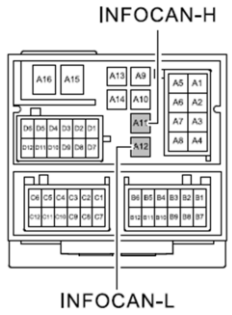
A Turn the start switch to "OFF" position.
B Disconnect the brake safety control system harness connector FB57.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

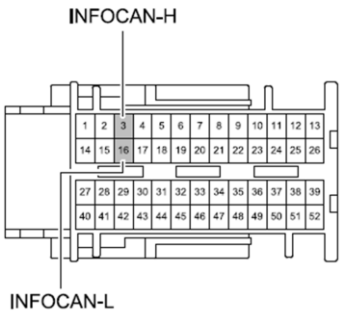
Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.

IP14 Entertainment system host harness connector



RMS508-11-1016

IP47 Body controller harness connector



RMS508-11-1015

A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.2.5.15 DTC: U023087

DTC	DTC definition
U023087	Lost communication with PLG

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

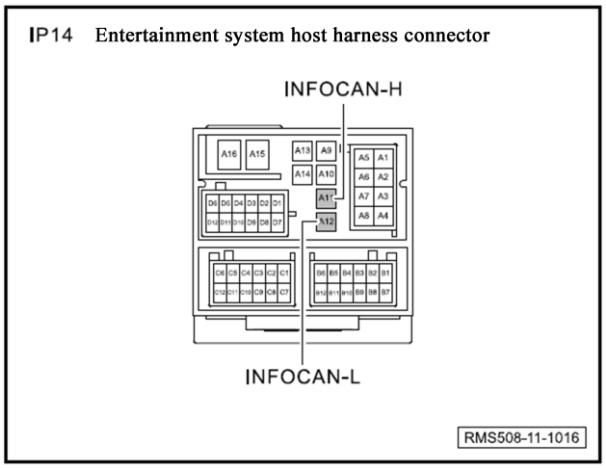
D Read the DTC again.

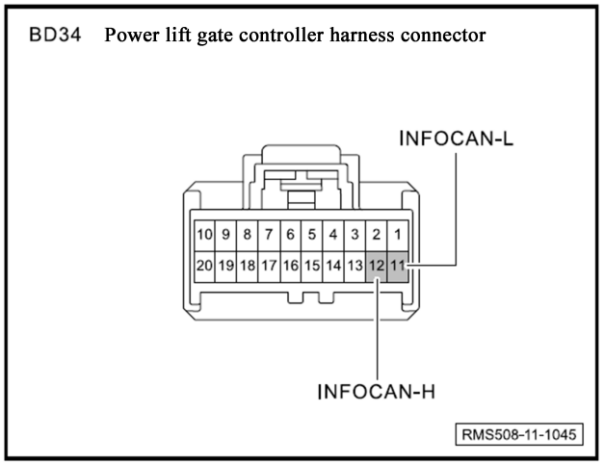
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the power lift gate controller and the entertainment system host.





A Turn the start switch to "OFF" position.

B Disconnect the power lift gate controller harness connector BD34.

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 12 of the power lift gate controller harness connector BD34 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 11 of the power lift gate controller harness connector BD34 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the power lift gate controller.

A Check whether the power supply and ground wires of the power lift gate controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

No

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.
B Is the fault eliminated after replacing the entertainment system host?

Yes	The system works normally.

Next

Step 6	The diagnosis is over.

8.2.5.16 DTC: U010087

DTC	DTC definition
U011187	Lost communication with BMS

1. Diagnosis steps

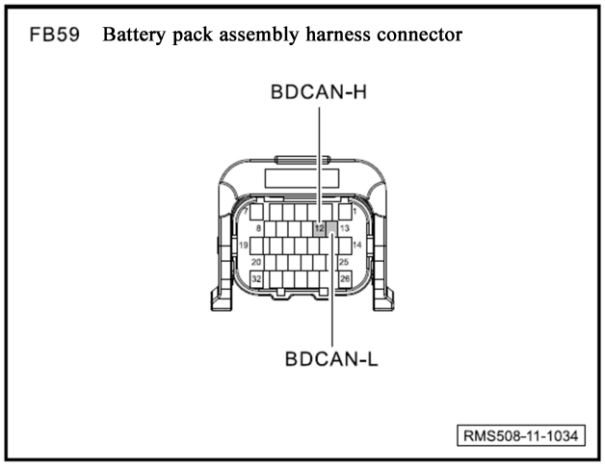
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

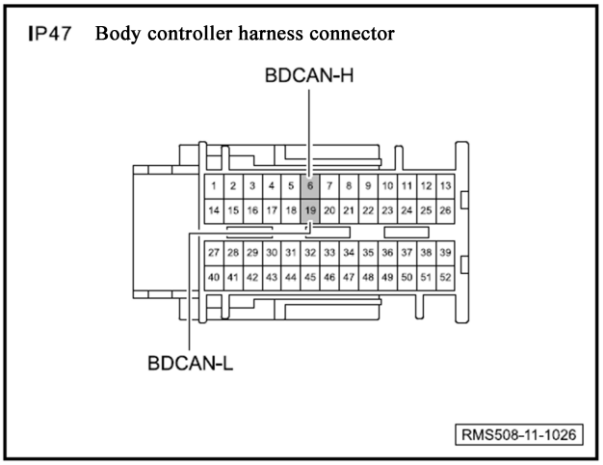
Yes

Step 2	Check the CAN data communication wire between the battery pack assembly and the body controller.



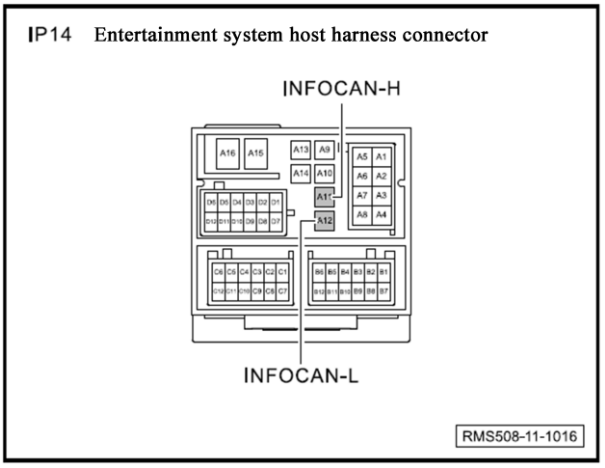
A Turn the start switch to "OFF" position.
B Disconnect the battery pack assembly harness connector FB59.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

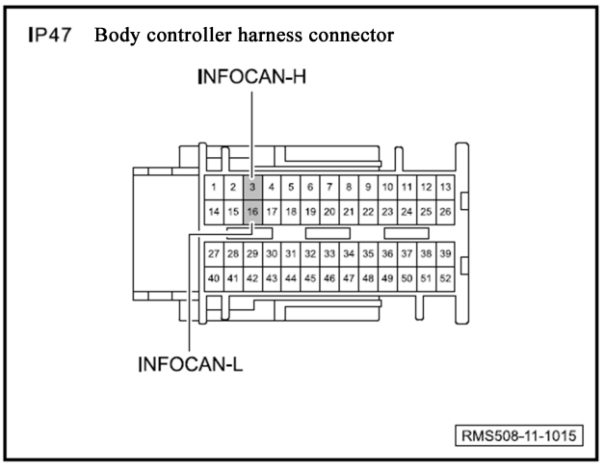
No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the battery pack assembly.

A Check whether the power supply and ground wires of the battery pack assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.2.5.17 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

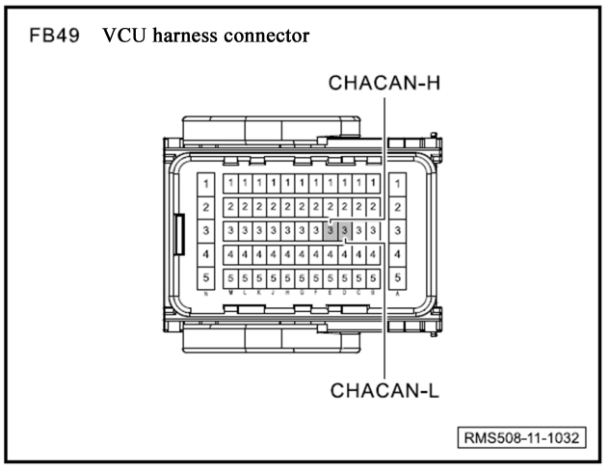
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

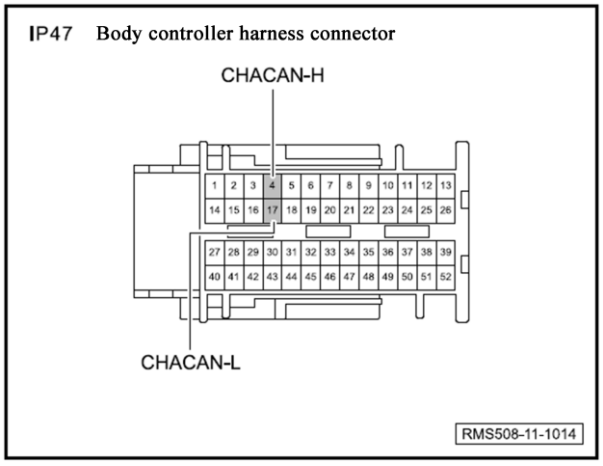
No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CHACAN data communication wire between the VCU and the body controller.



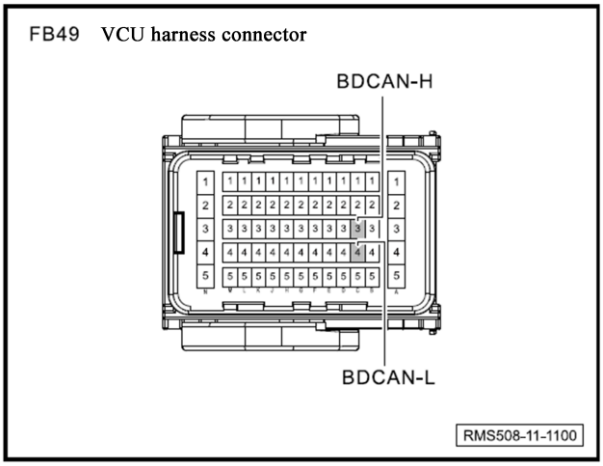
A Turn the start switch to "OFF" position.
B Disconnect the VCU harness connector FB49.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

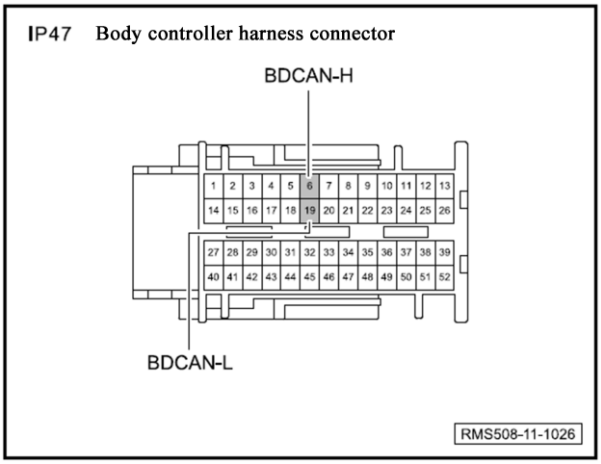


No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the BDCAN data communication wire between the VCU and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller harness connector IP47.

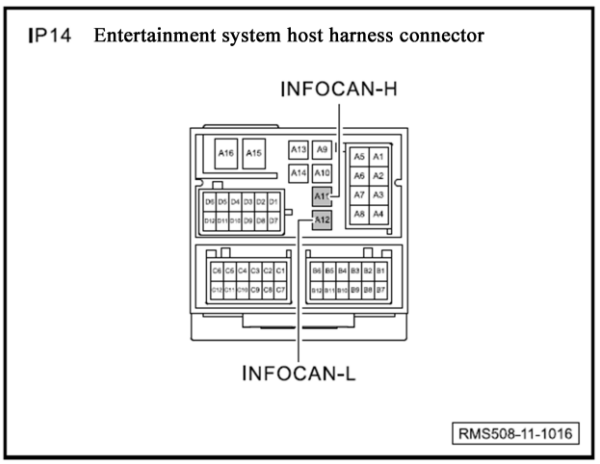
E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the body controller and the entertainment system host.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

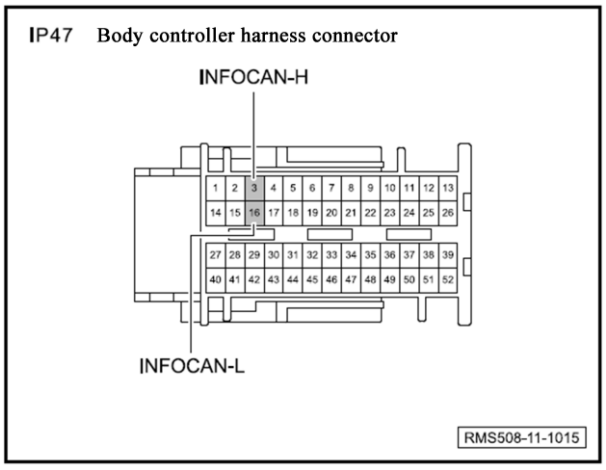
D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or

replace the harness.



Yes

Step 5	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.2.5.18 DTC: U010387

DTC	DTC definition
U010387	Lost communication with GSM

1. Diagnosis steps

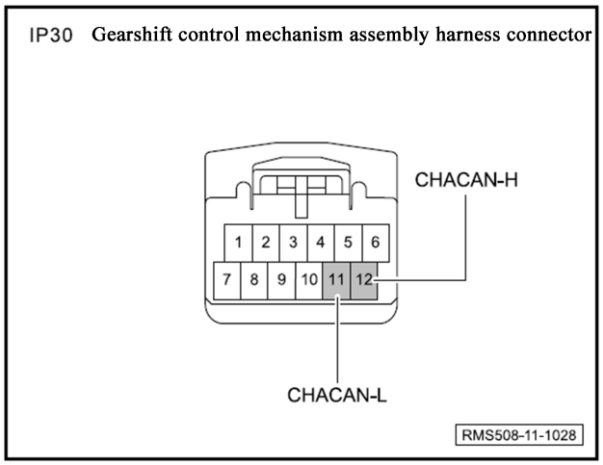
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

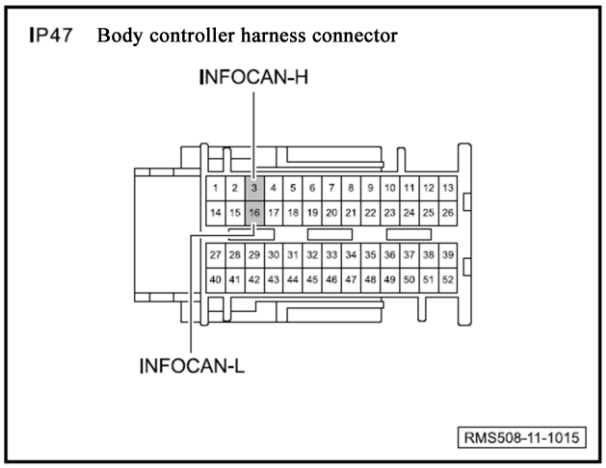
Yes

Step 2	Check the CAN data communication wire between the gearshift control mechanism assembly and the body controller.



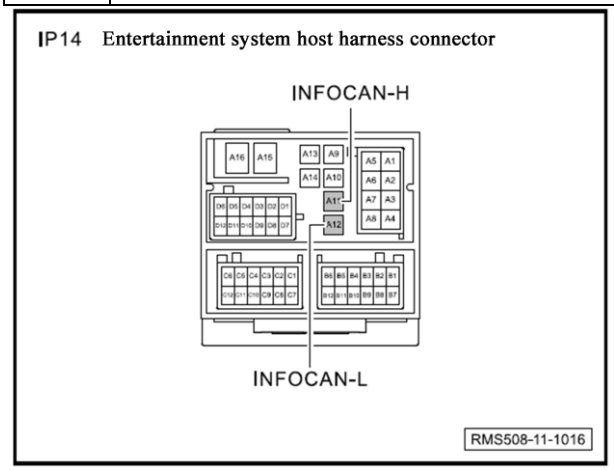
A Turn the start switch to "OFF" position.
B Disconnect the gearshift control mechanism assembly harness connector IP30.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the gearshift control mechanism assembly harness connector IP30 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 11 of the gearshift control mechanism assembly harness connector IP30 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.



A Turn the start switch to "OFF" position.

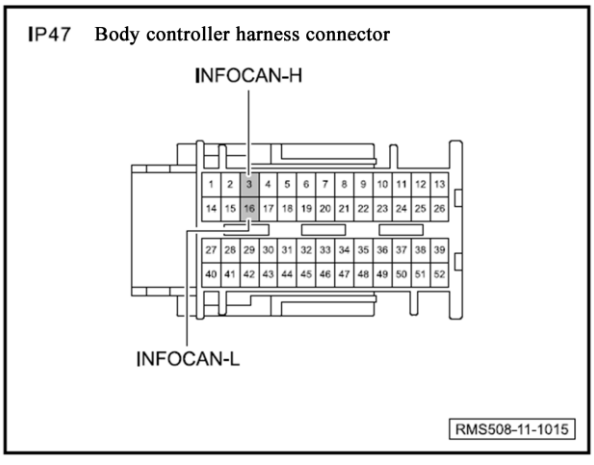
B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.



No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.2.5.19 DTC: U019887

DTC	DTC definition
U019887	Lost communication with TBOX

1. Diagnosis steps

Step 1	Check the DTCs.

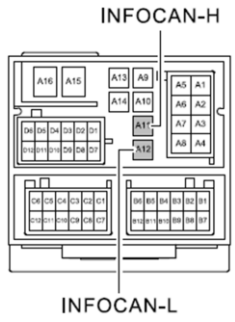
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

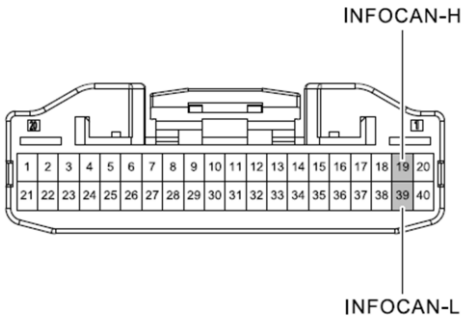
Step 2	Check the CAN data communication wire between the T-BOX assembly and the entertainment system host.

IP14 Entertainment system host harness connector



RMS508-11-1016

IP60 T-BOX assembly harness connector



RMS508-11-1029

A Turn the start switch to "OFF" position.
B Disconnect the T-BOX assembly harness connector IP60.
C Disconnect the entertainment system host harness connector IP14.
D Measure the resistance between terminal 19 of the T-BOX assembly harness connector IP60 and terminal A11 of the entertainment system host harness connector IP14.
E Measure the resistance between terminal 39 of the T-BOX assembly harness connector IP60 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the T-BOX assembly.

A Check whether the power supply ground wire of the T-BOX assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

No

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.2.5.20 DTC: B180001

DTC	DTC definition
B180001	Lost communication with PCM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

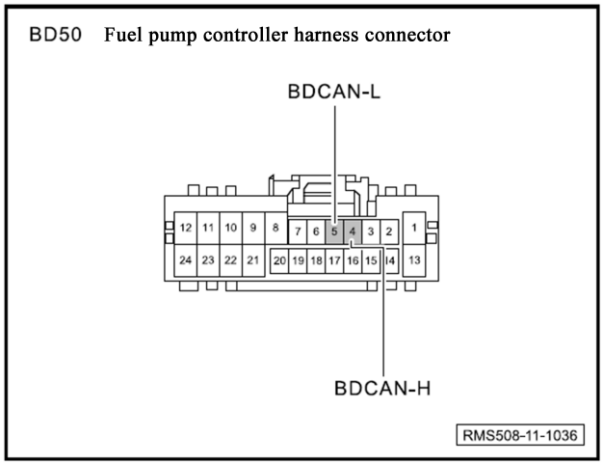
D Read the DTC again.

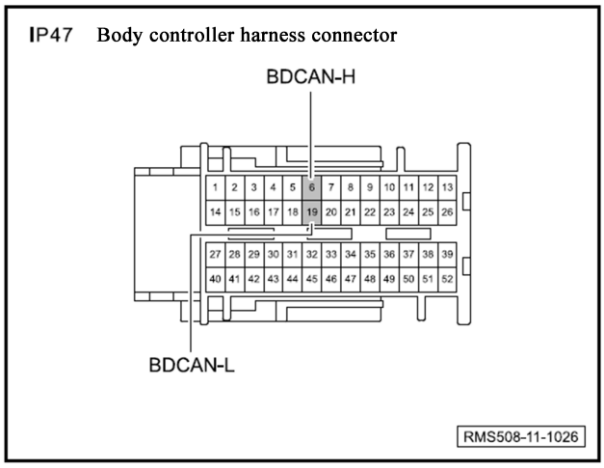
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the fuel pump controller and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the fuel pump controller harness connector BD50.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 4 of the fuel pump controller harness connector BD50 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal 5 of the fuel pump controller harness connector BD50 and terminal 19 of the body controller harness connector IP47.

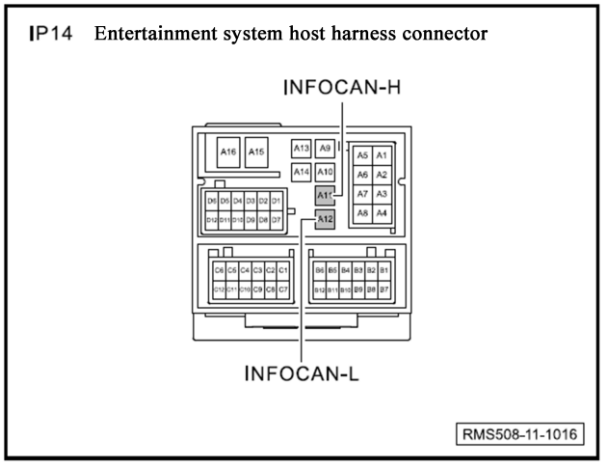
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the entertainment system host.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

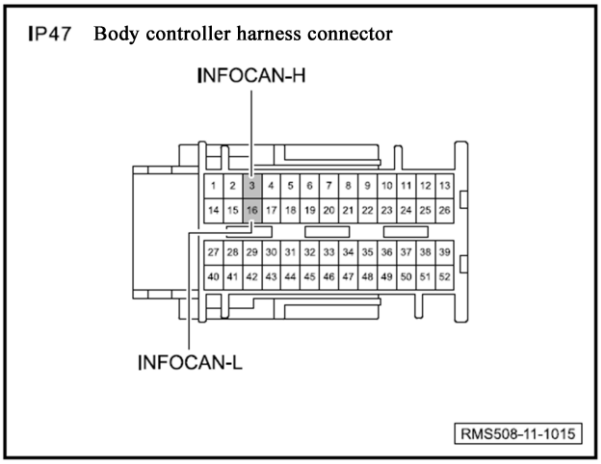
E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication

wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply ground wire of the oil pump controller.

A Check whether the power supply ground wire of the oil pump controller is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the oil pump controller.

A Replace the oil pump controller.

B Is the fault eliminated after replacing the fuel pump controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.2.5.21 DTC: B180002

DTC	DTC definition
B180002	Lost communication with LSPM

1. Diagnosis steps

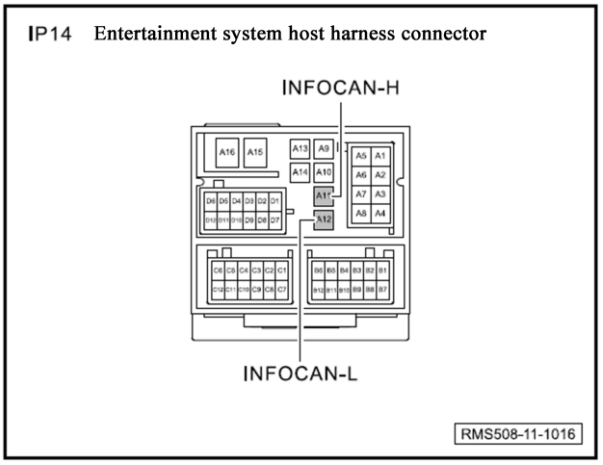
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

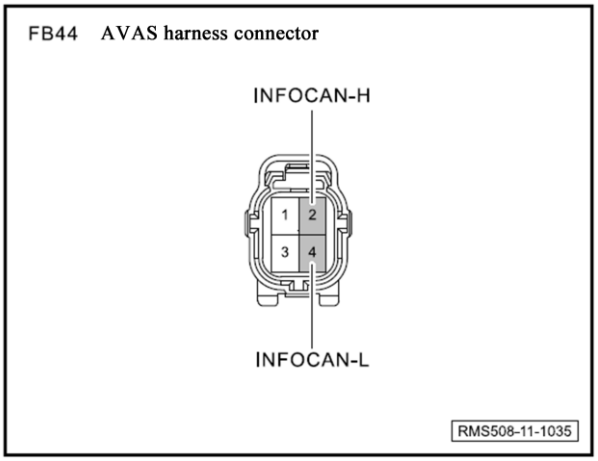
Yes

Step 2	Check the CAN data communication wire between the LSPM loudspeaker and the entertainment system host.



A Turn the start switch to "OFF" position.
B Disconnect the LSPM loudspeaker harness connector FB44.
C Disconnect the entertainment system host harness connector IP14.
D Measure the resistance between terminal 2 of the LSPM loudspeaker harness connector FB44 and terminal A11 of the entertainment system host harness connector IP14.
E Measure the resistance between terminal 4 of the LSPM loudspeaker harness connector FB44 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground wire of the LSPM loudspeaker.

A Check whether the power supply ground wire of the LSPM loudspeaker is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the LSPM loudspeaker.

A Replace the LSPM loudspeaker.

B Is the fault eliminated after replacing the LSPM loudspeaker?

Yes → The system works normally.

No

Step 5	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.2.6 Removal and installation

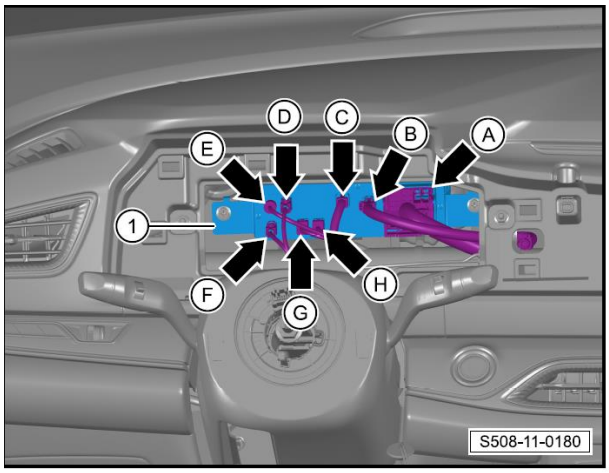
8.2.6.1 Removal and installation of entertainment system assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

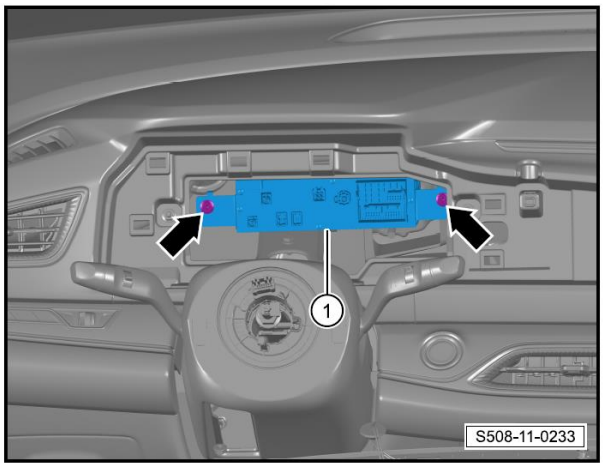
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument cluster assembly. Refer to 8.8.6.1 Removal and installation of instrument cluster assembly



4 Remove the entertainment system assembly

a. Disconnect the connectors (see arrows A, B, C, D, E, F, G and H) of the entertainment system assembly ①.



b. Unscrew the fixing bolts (see the arrows), and remove the entertainment system assembly ①.

- Tightening torque of bolt: **6±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After replacing the entertainment system assembly, use a diagnostic scanner for after-sales matching of the entertainment system assembly. Refer to 1.4.2.6 After-sales matching after module replacement

8.2.6.2 Removal and installation of digital power amplifier

Disassembly procedures

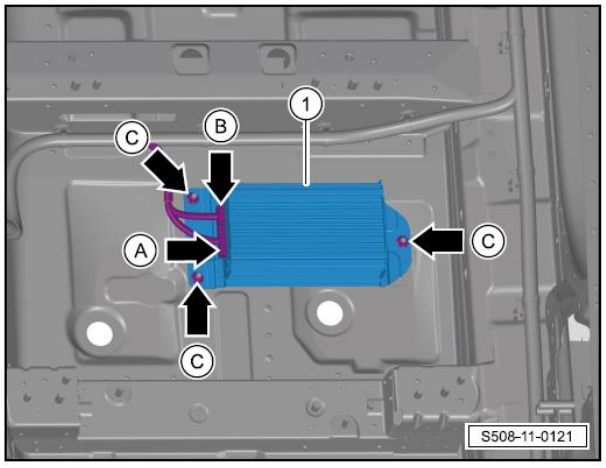
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front passenger seat and backrest assembly. Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

4 Remove the right A-pillar lower interior trim panel assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly

5 Remove the front right door sill assembly. Refer to 9.14.2.18 Removal and installation of front door sill assembly



6 Remove the digital power amplifier

a. Lift the front passenger seat front carpet.

b. Disconnect the digital power amplifier connector (see arrows A and B).

c. Unscrew the fixing nut (see arrow C), and remove the digital power amplifier ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, perform a function test on the digital power amplifier.

8.2.6.3 Removal and installation of front door low-pitched loudspeaker

Disassembly procedures

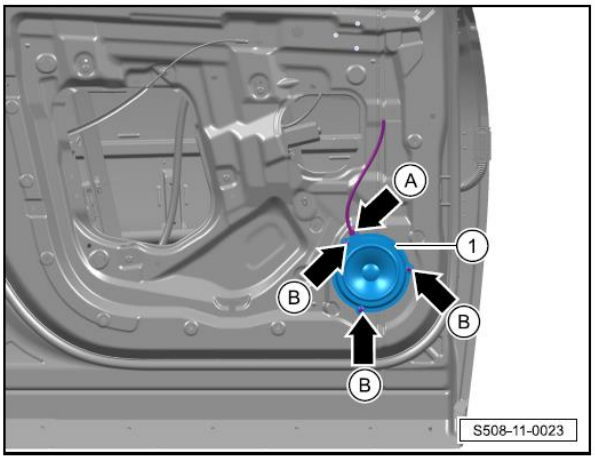
Tip:

The removal and installation steps are only for the front left low-pitched loudspeaker, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly



4 Remove the front door low-pitched loudspeaker

a. Disconnect the connector (see arrow A) of the front door low-pitched loudspeaker.

b. Unscrew the fixing screws (see arrow B), and take out the front door low-pitched loudspeaker ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the front door low-pitched loudspeaker.

8.2.6.4 Removal and installation of front door high-pitched loudspeaker

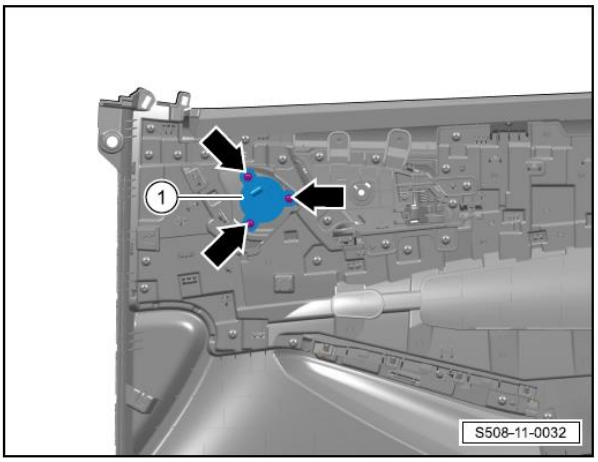
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door high-pitched loudspeaker, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the front door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

4 Remove the front door high-pitched loudspeaker

a. Unscrew the fixing screws (see the arrows) and remove the front door high-pitched loudspeaker ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the front door high-pitched loudspeaker.

8.2.6.5 Removal and installation of rear door low-pitched loudspeaker

Disassembly procedures

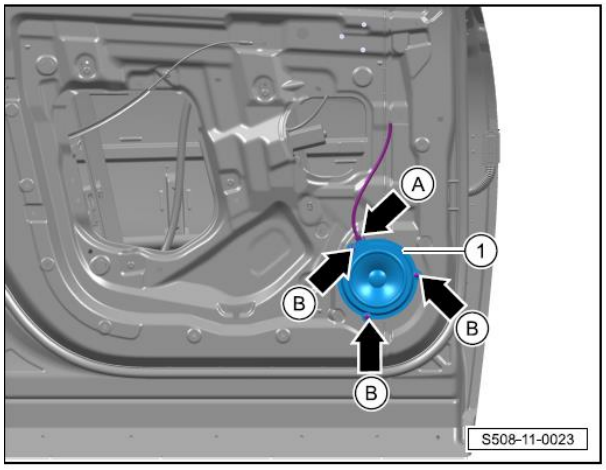
Tip:

The removal and installation steps are only for the rear left low-pitched loudspeaker, which can be basically referred to for the rear right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly



4 Remove the rear door low-pitched loudspeaker

a. Disconnect the connector (see arrow A) of the rear door low-pitched loudspeaker.

b. Unscrew the fixing screws (see arrow B), and take out the rear door low-pitched loudspeaker ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear door low-pitched loudspeaker.

8.2.6.6 Removal and Installation of rear door high-pitched loudspeaker assembly

Disassembly procedures

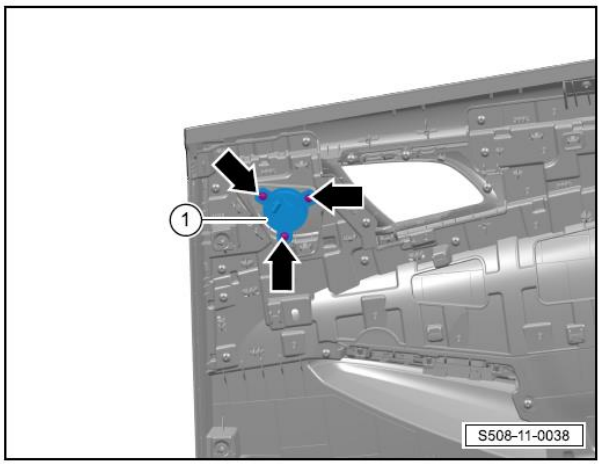
Tip:

The removal and installation steps are only for the rear door high-pitched loudspeaker assembly (left), which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly



4 Remove the rear door high-pitched loudspeaker assembly

a. Unscrew the fixing screws (see the arrows), and remove the rear door high-pitched loudspeaker assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear door high-pitched loudspeaker assembly.

8.2.6.7 Removal and installation of front sky sound loudspeaker

Disassembly procedures

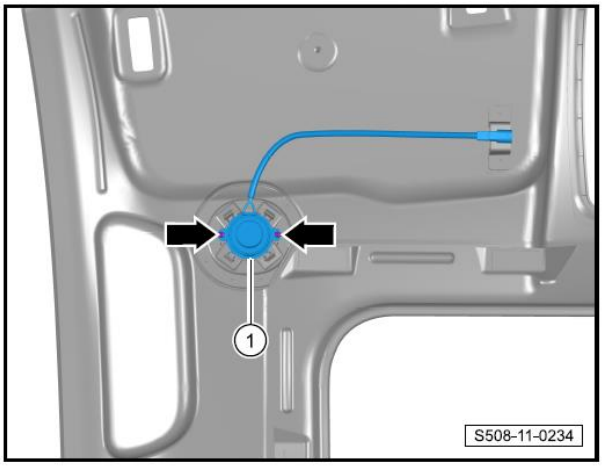
Tip:

The removal and installation procedures are only for the front left sky loudspeaker, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)



4 Remove the front sky sound loudspeaker

a. Unscrew the fixing screws (see the arrows) and take out the front sky loudspeaker ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the front sky loudspeaker.

8.2.6.8 Removal and installation of rear sky sound loudspeaker

Disassembly procedures

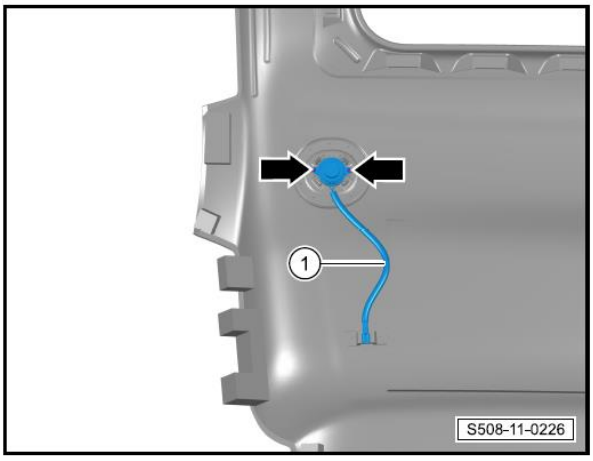
Tip:

The removal and installation procedures are only for the rear left sky loudspeaker, which can be basically referred to for the rear right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)



4 Remove the rear sky sound loudspeaker

a. Unscrew the fixing screws (see the arrows) and take out the rear sky loudspeaker ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear sky loudspeaker.

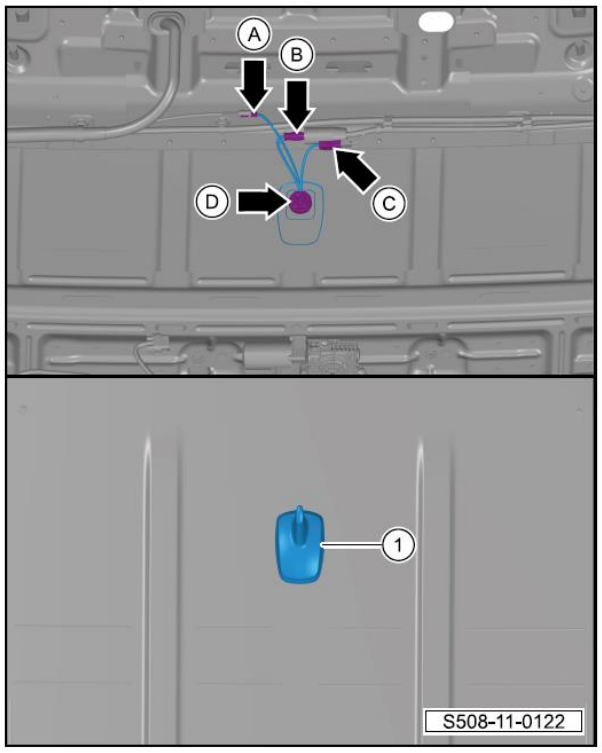
8.2.6.9 Removal and installation of antenna assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)



4 Remove the antenna assembly

a. Disconnect the connectors (see arrows A, B and C) of antenna assembly.

b. Unscrew the fixing nut of the antenna assembly (see arrow D), and remove the antenna assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the antenna assembly.

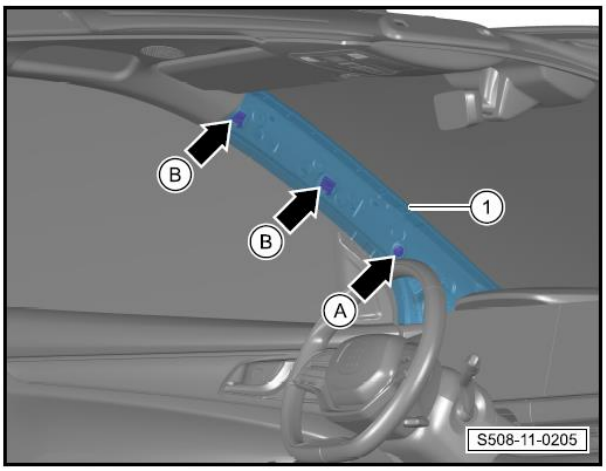
8.2.6.10 Removal and installation of face recognition camera

Disassembly procedures

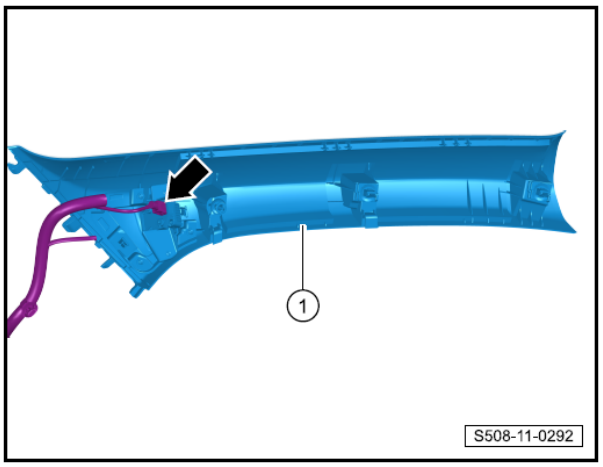
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

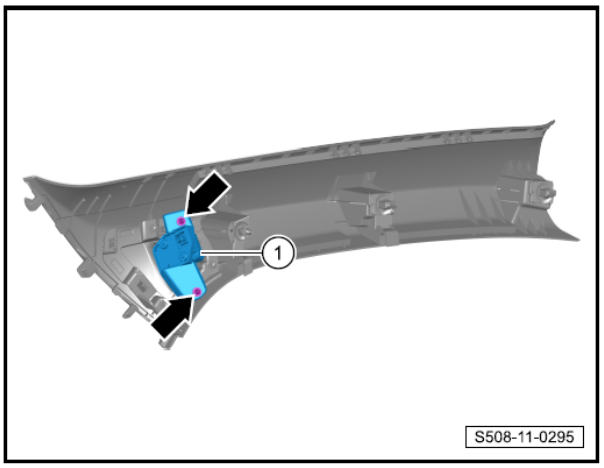
3 Remove the face recognition camera



a. Disengage the fixing clip (see arrows A and B), and remove the A-pillar interior trim panel assembly with face recognition camera ①.



b. Disconnect the connector (see arrow), and take out the A-pillar interior trim panel assembly with face recognition camera ①.



c. Unscrew the fixing screws (see the arrows) and take out the face recognition camera ①.

Installation procedures

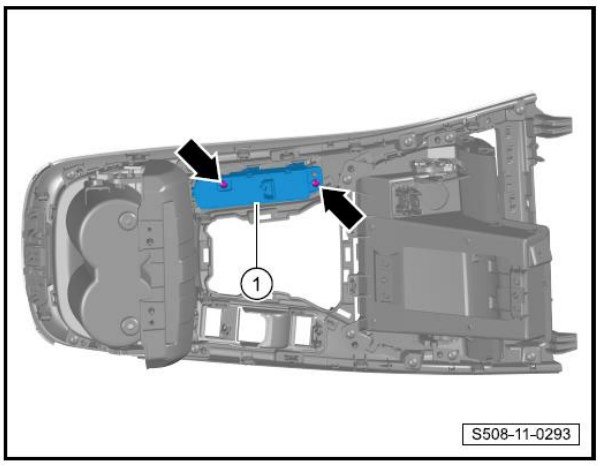
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the face recognition camera functions normally.

8.2.6.11 Removal and installation of gearshift panel right switch component

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



2 Remove the gearshift panel right switch component

a. Unscrew the fixing nuts of the gearshift panel right switch component (see the arrow), and remove the gearshift panel right switch component ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the gearshift panel right switch component.

8.3 Exterior lighting system

8.3.1 Specification

8.3.1.1 Bulb specifications

Bulb	Specification	Power	Bulb/light color
Headlight	LED	42W	White
		27W	
Front turn signal	LED	10W	Amber
Front position light (without light strip)	LED	4W	White
Front position light (with light strip)	LED	7W	White
Reversing light	Halogen	21W	Red
Rear fog light	Halogen	21W	Amber
Rear turn signal (rear bumper)	Halogen	21W	Red
Rear position light (rear bumper)	Halogen	5W	Red
Brake light (rear bumper)	Halogen	21W	Red
License plate light assembly	LED	0.8W	White
CHMSL	LED	1.92W	Red
Rear position light (lift gate without light strip)	LED	13.8W	Red
Rear position light (lift gate with light strip)	LED	20.8W	Red
Rear turn signal light (lift gate)	LED	7.8W	Amber
Brake light (lift gate)	LED	30W	Red

8.3.1.2 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Combination headlamp assembly	Cross recessed hexagon head bolt c/w big plain washer cluster M6×18	6±1
	Hexagon head flange bolt	6±1
Lift gate rear combination light assembly	Hexagon flange nut M6	4±1
Rear bumper rear combination light assembly	Cross recessed pan head self-tapping screw	3±1
Grille light strip assembly	Bolt M6×20	4±1
Lift gate light strip assembly	Hexagon flange nut M6	6±1
CHMSL assembly connected to spoiler	Cross recessed pan head self-tapping screw	3±1
Small switch set	Cross recessed mushroom head tapping screw	2±1

8.3.2 System principle

8.3.2.1 System description

The exterior lighting system of this model contains various functional lights meeting the requirements of relevant laws and regulations, and has humanized functions such as follow-me-home lighting, vehicle-finding lighting, lane change flashing of turn signal, headlight height adjustment, daytime running light and automatic lighting. The driver can operate all lights through relevant switches, smart remote control keys or light switches.

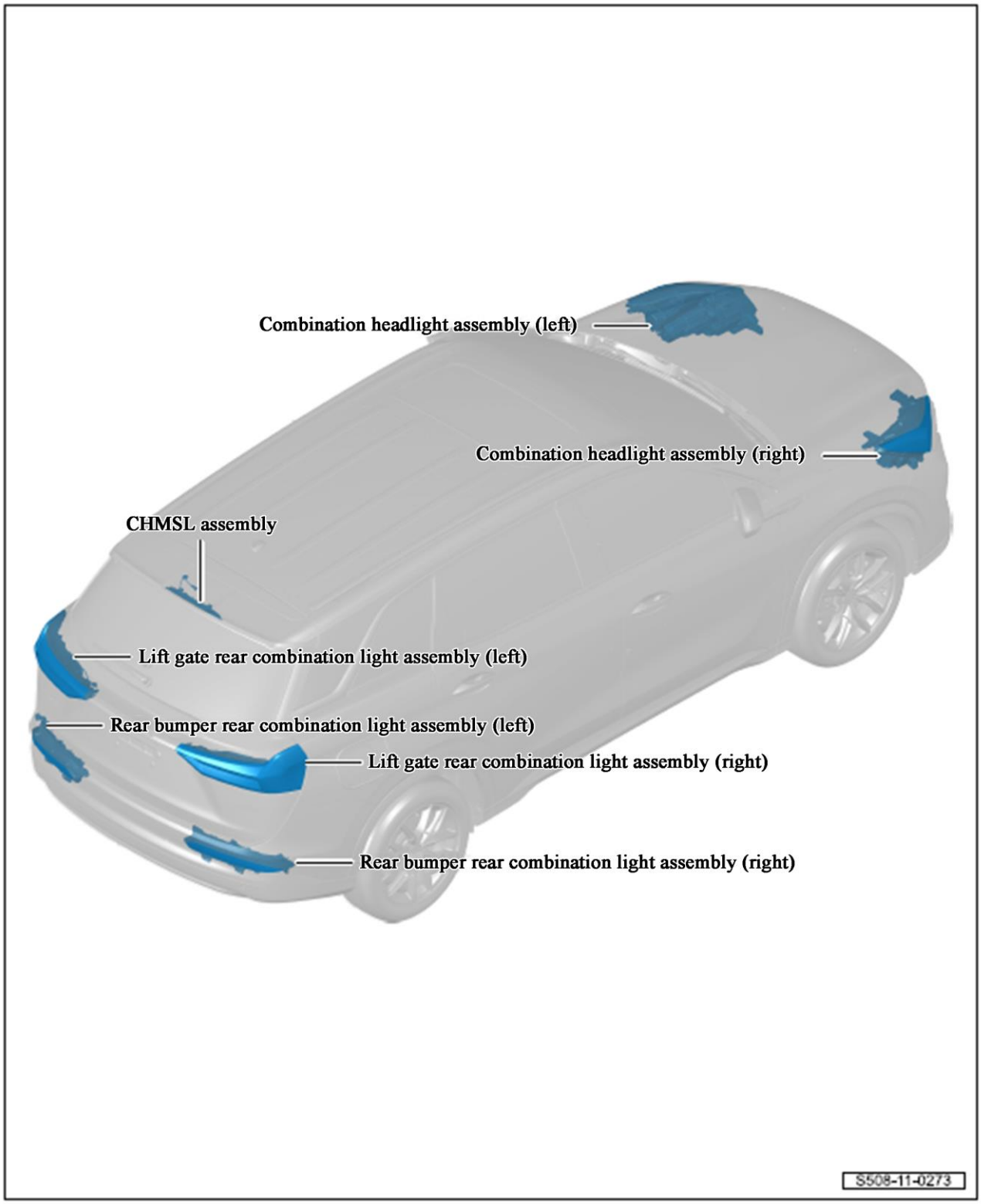
The exterior lighting system mainly includes:

- Position light
- Low beam
- High beam and overtaking light
- Turn signal and hazard warning light
- Automatic light
- Rear fog light
- Daytime running light
- Brake light
- Reversing light
- License plate light

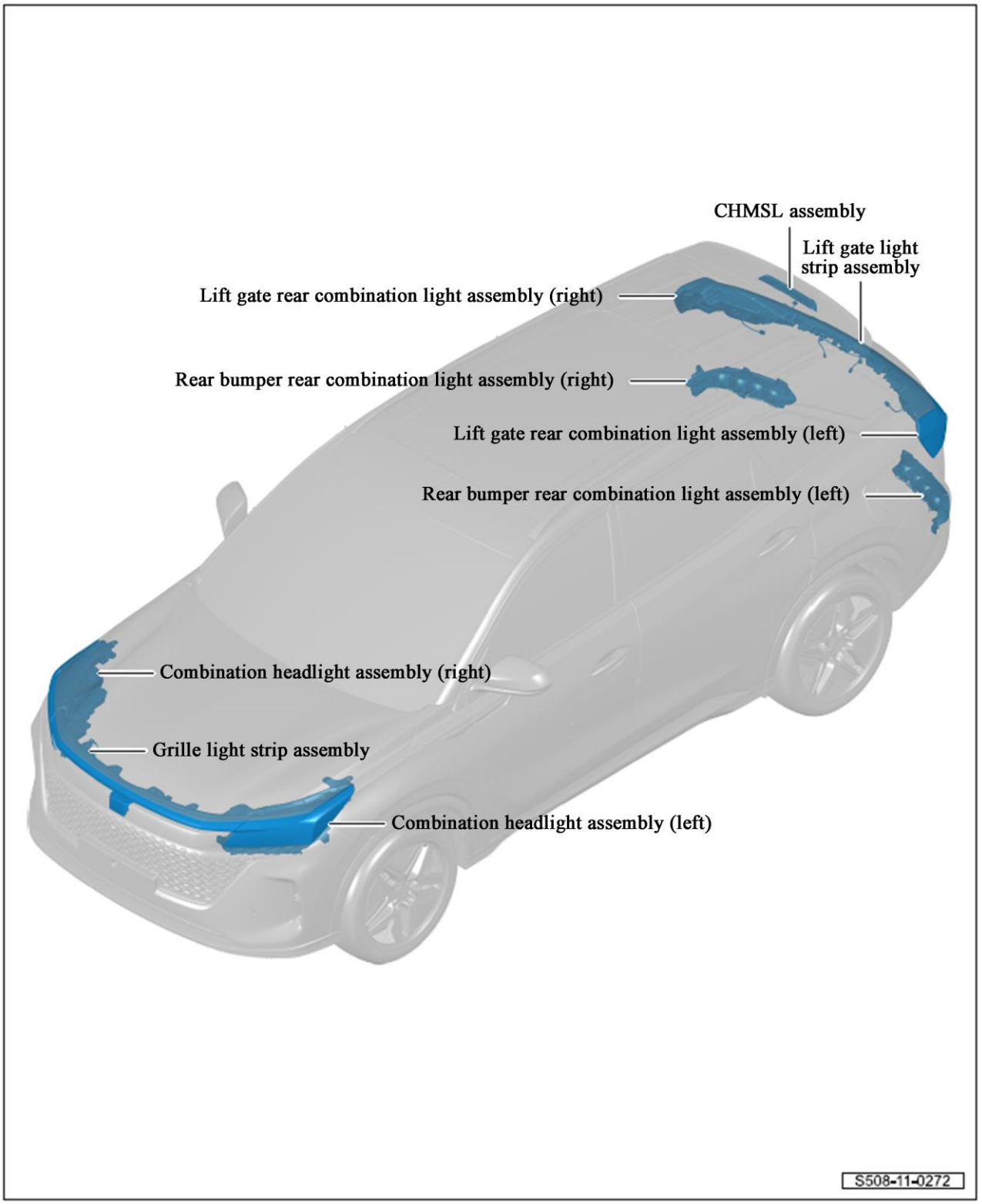
8.3.3 Component position

8.3.3.1 Component position

Vehicle without front and rear light strips (low-end configuration)

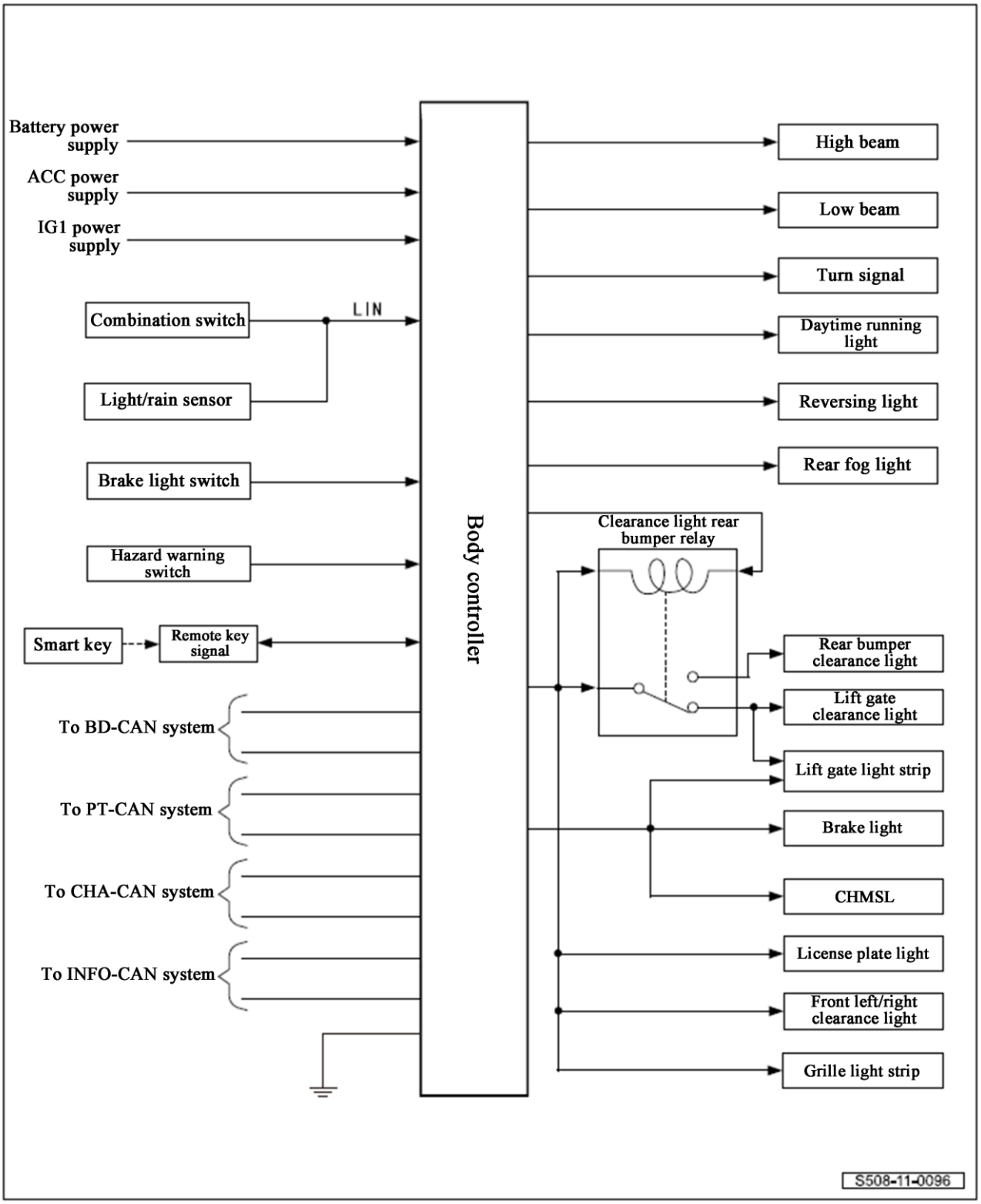


Vehicle with front and rear light strips (high-end configuration)



8.3.4 Electrical schematic diagram

8.3.4.1 Electrical schematic diagram



8.3.5 Removal and installation

8.3.5.1 Removal and installation of combination headlight assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left combination headlight, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

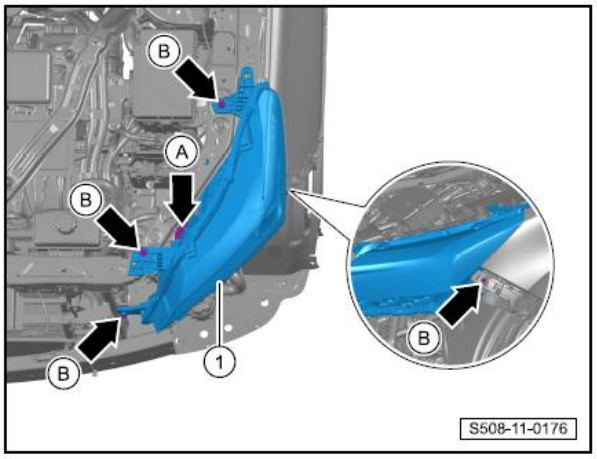
3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

3 Remove the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

6 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



7 Remove the combination headlight assembly

a. Disconnect the connector (see arrow A) of the combination headlight assembly ①.

b. Unscrew the fixing bolt (see arrow B) of combination headlight assembly ①.

c. Remove the combination headlight assembly ①.

- Tightening torque of bolt (see arrow **B**): **6±1Nm**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the combination headlight assembly.
- Carry out light adjustment when necessary. Refer to 8.3.5.22 Adjustment of combination headlight assembly

8.3.5.2 Removal and installation of grille light strip assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

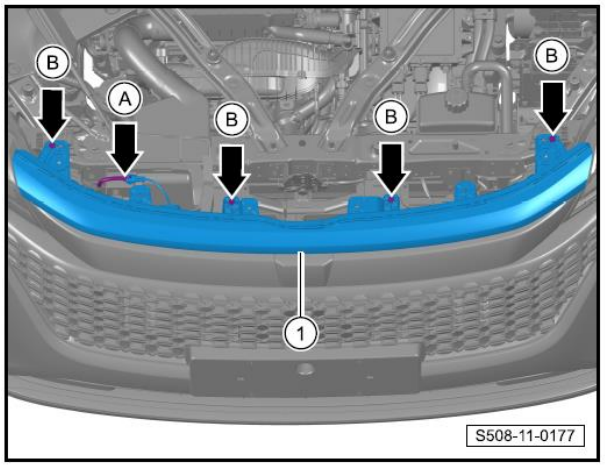
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



7 Remove the grille light strip assembly

a. Disconnect the connector (see arrow A) of the grille light strip assembly ①.

b. Unscrew the fixing bolts (see arrow B), and remove the grille light strip assembly ①.

- Tightening torque of bolt (see arrow B): 4±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the grille light strip assembly.

8.3.5.3 Removal and installation of lift gate rear combination light assembly

Disassembly procedures

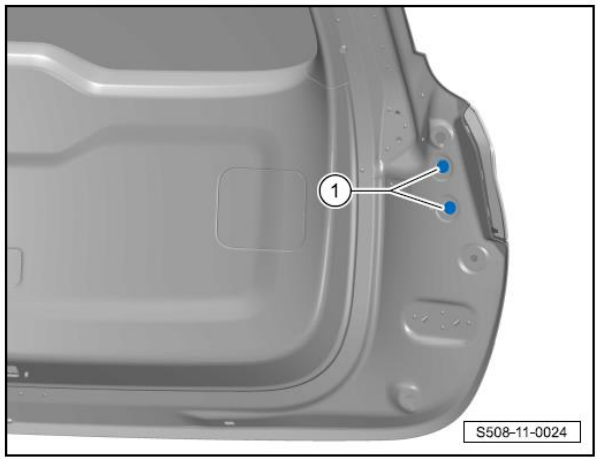
Tip:

The removal and installation procedures are only for the left lift gate rear combination light assembly, which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

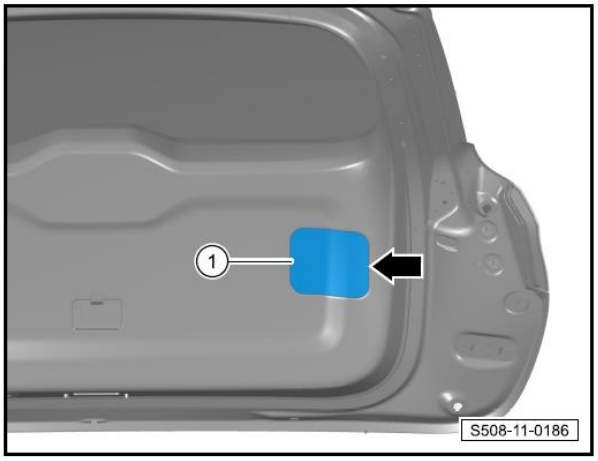
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Open the lift gate.

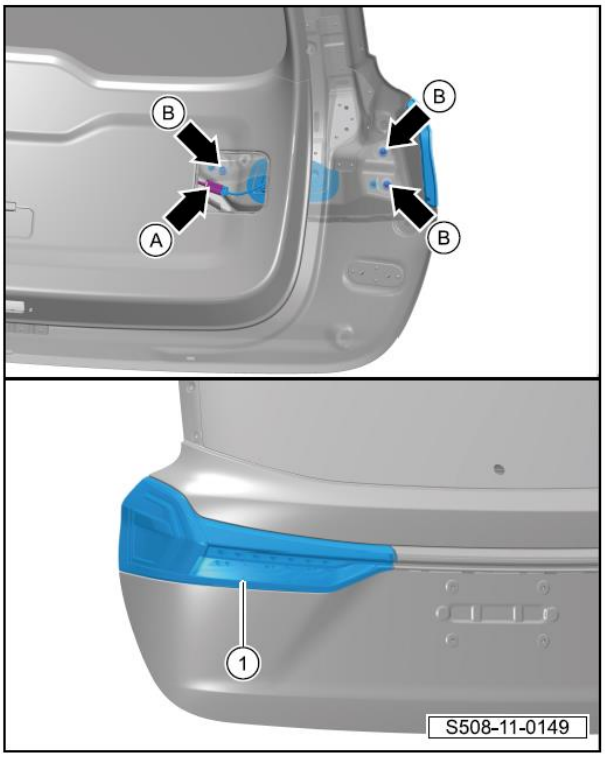


4 Remove the lift gate rear combination light assembly

a. Disengage the bolt blank cover ① of the lift gate rear combination light assembly.



b. Remove the left cover plate ① of the rear combination light maintenance port in the position of the arrow.



c. Disconnect the connector (see arrow A) of the lift gate rear combination light assembly.

d. Unscrew the fixing nuts (see arrow B), and remove the lift gate rear combination light assembly ①.

- Tightening torque of nut (see arrow B): 4±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the lift gate rear combination light assembly.

8.3.5.4 Removal and installation of rear bumper rear combination light assembly

Disassembly procedures

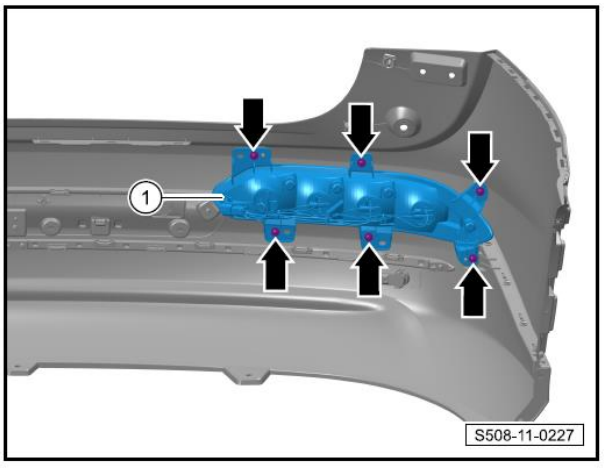
Tip:

The removal and installation procedures are only for the left rear bumper rear combination light assembly, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



4 Remove the rear bumper rear combination light assembly

b. Unscrew the fixing screws (see the arrows), and remove the rear bumper rear combination light assembly ①.

- Tightening torque of screw (see arrow **C**): **3±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear bumper rear combination light.

8.3.5.5 Removal and installation of lift gate light strip assembly

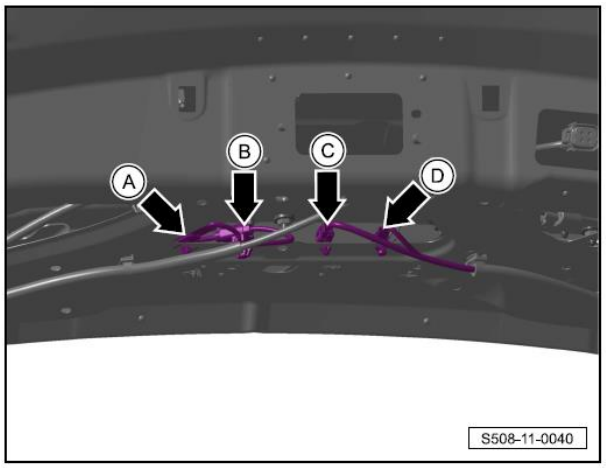
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

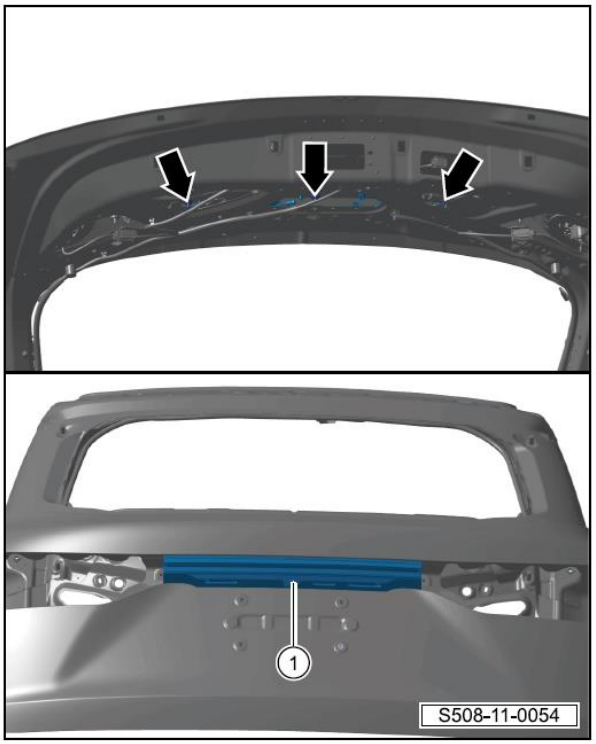
3 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly

4 Remove the lift gate rear combination light assembly. Refer to 8.3.5.3 Removal and installation of lift gate rear combination light assembly



5 Remove the lift gate light strip assembly

a. Disconnect the connectors (see arrows A, B, C and D) of the lift gate light strip assembly.



b. Unscrew the fixing nuts (see arrow B), and remove the lift gate light strip assembly ①.

- Tightening torque of nut: **6±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the lift gate light strip assembly.

8.3.5.6 Removal and installation of logo front assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

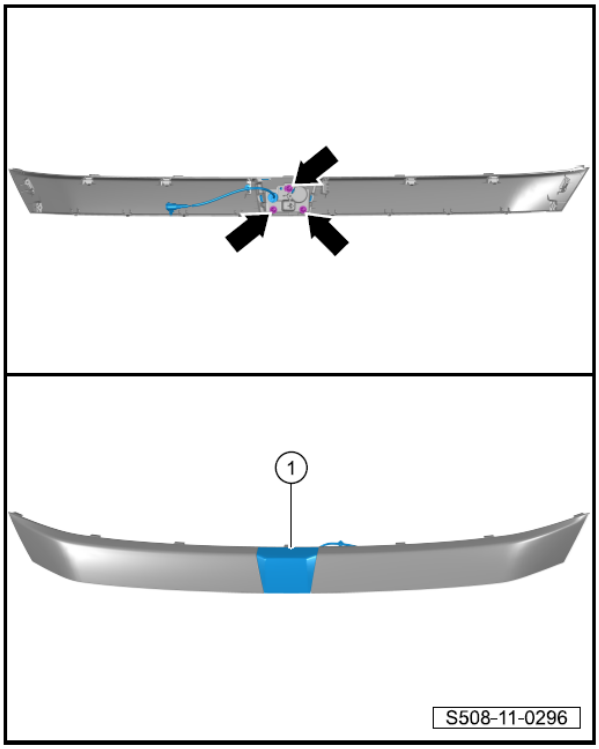
4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

5 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

7 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

8 Remove the front bumper deflector. Refer to 9.4.3.10 Removal and installation of front bumper deflector



9 Remove the logo front assembly

a. Unscrew the fixing bolts (see the arrows) and remove the front logo assembly ①.

- Tightening torque of bolt: **6±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the light of the logo front.

8.3.5.7 Removal and installation of high/low beam bulb

Disassembly procedures

Tip:

The removal and installation procedures are only for the high/low beam bulb (right), which can be basically referred to for the left one.

1 Turn off all the electrical appliances and turn off the Start switch.

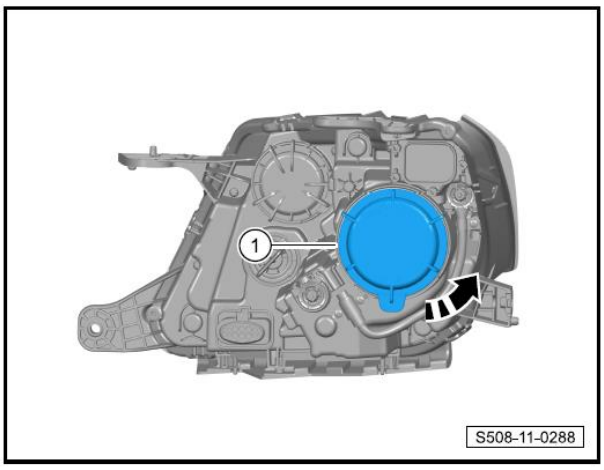
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

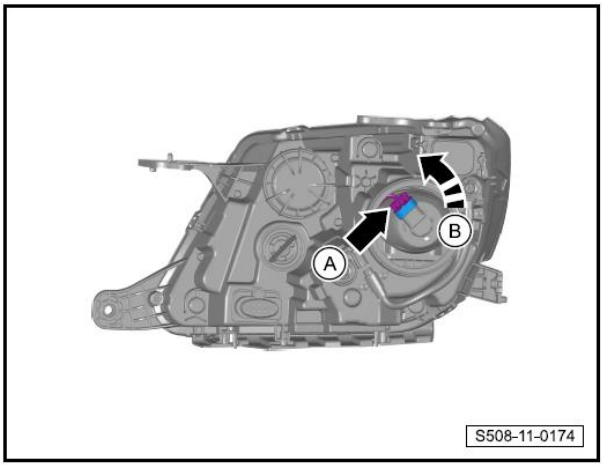
5 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



7 Remove the high/low beam bulb

a. Unscrew the trim cover ① in the direction of the arrow.



b. Disconnect the low beam bulb connector (see arrow A), and unscrew the high/low beam bulb ① in the given direction (see arrow B).

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the high/low beam bulb can light up normally.

8.3.5.8 Removal and installation of front turn signal bulb

Disassembly procedures

Tip:

The removal and installation procedures are only for the front turn signal bulb (right), which can be basically referred to for the left one.

1 Turn off all the electrical appliances and turn off the Start switch.

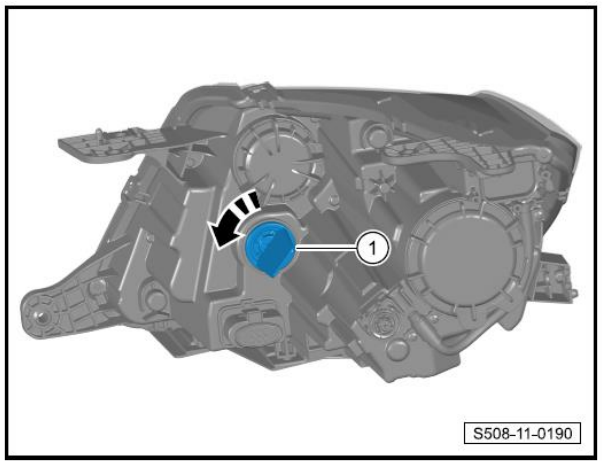
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

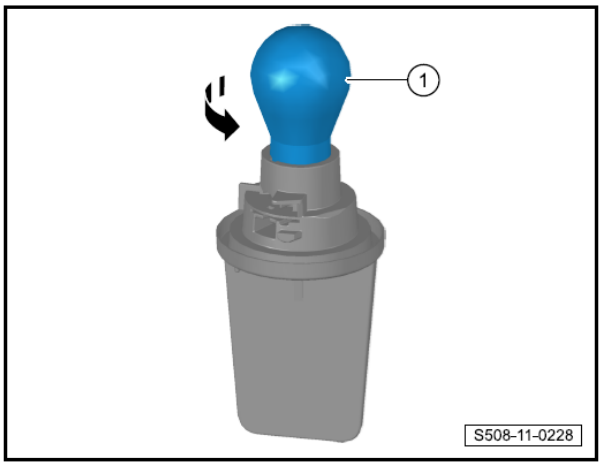
5 Remove the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



7 Remove the front turn signal bulb

a. Unscrew the base with front turn signal bulb ① in the direction of the arrow.



b. Press the bulb, and unscrew the front turn signal bulb ① in the direction of the arrow.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the front turn signal bulb can light up normally.

8.3.5.9 Removal and installation of rear turn signal bulb (rear bumper side)

Disassembly procedures

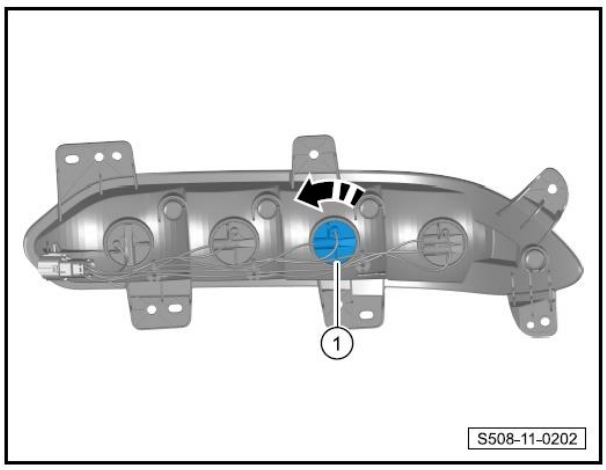
Tip:

The removal and installation procedures are only for the rear turn signal bulb (left), which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

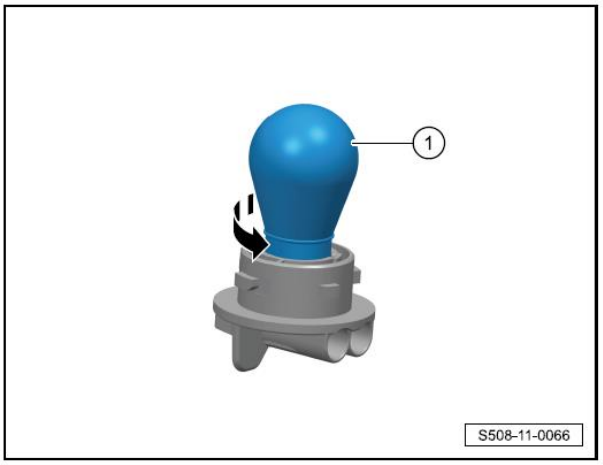
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



4 Remove the rear turn signal bulb (rear bumper side)

a. Unscrew the base with rear turn signal bulb ① in the direction of the arrow.



b. Press the bulb, and unscrew the rear turn signal bulb ① in the direction of the arrow.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the rear turn signal bulb can light up normally.

8.3.5.10 Removal and installation of front position light bulb

Disassembly procedures

Tip:

The removal and installation procedures are only for the front position light bulb (right), which can be basically referred to for the left one.

1 Turn off all the electrical appliances and turn off the Start switch.

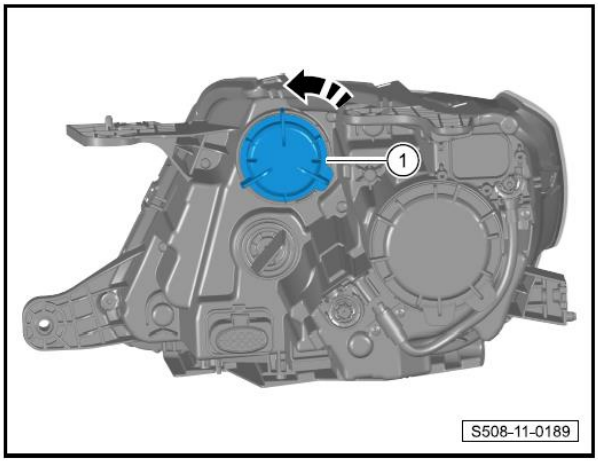
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

4 Remove the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

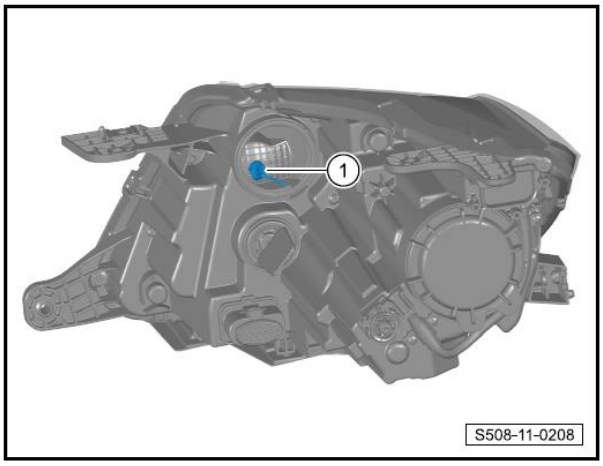
5 Remove the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

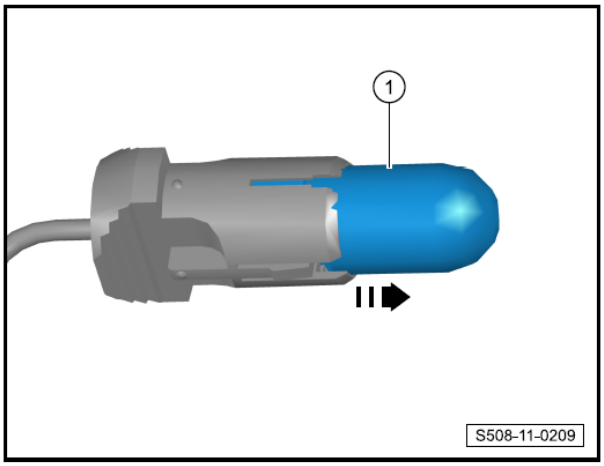


7 Remove the front position light bulb

a. Unscrew the trim cover ① in the direction of the arrow.



b. Remove the position light bulb with harness ①.



c. Remove the position light bulb ① in the given direction (see arrow).

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the front position light bulb can light up normally.

8.3.5.11 Removal and installation of rear position light bulb (rear bumper side)

Disassembly procedures

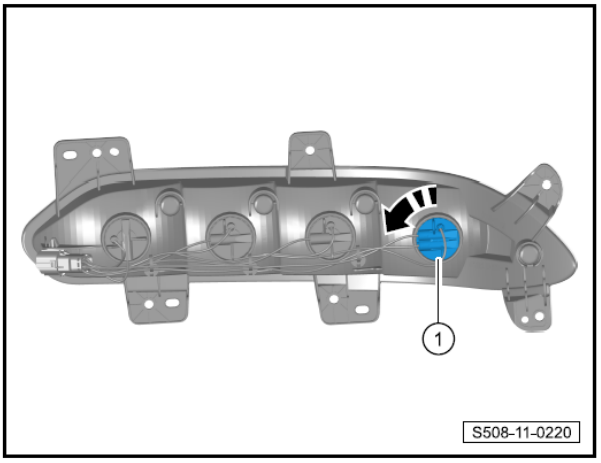
Tip:

The removal and installation procedures are only for the rear position light bulb (left), which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

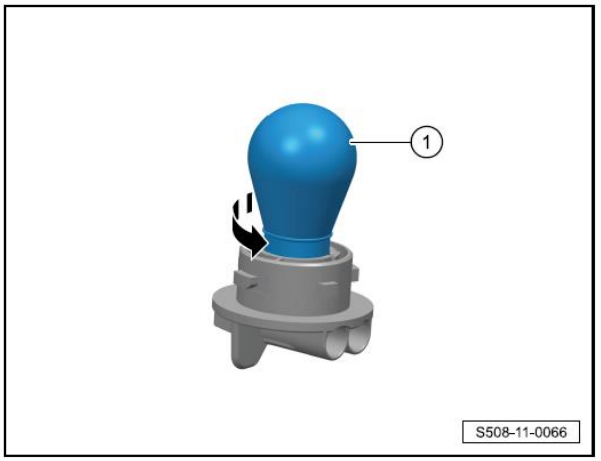
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



4 Remove the rear position light bulb (rear bumper side)

a. Unscrew the base with rear position light bulb ① in the direction of the arrow.



b. Press the bulb, and unscrew the rear position light bulb ① in the direction of the arrow.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the rear position light bulb can light up normally.

Tip:

The rear position light (rear bumper side) needs to light up when the position light switch is turned on while the lift gate is open.

8.3.5.12 Removal and installation of reversing light bulb

Disassembly procedures

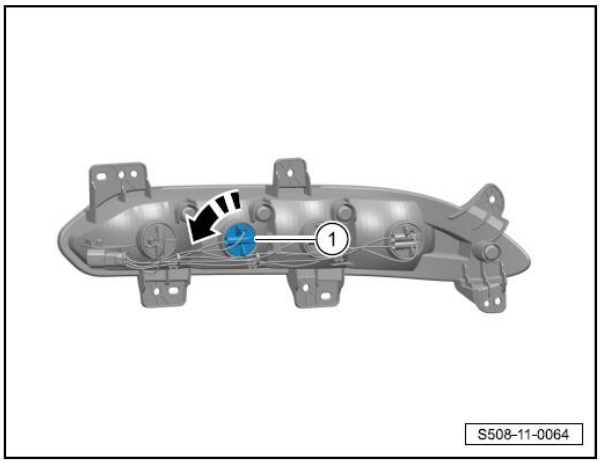
Tip:

The removal and installation steps are only for the left reversing light bulb, which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

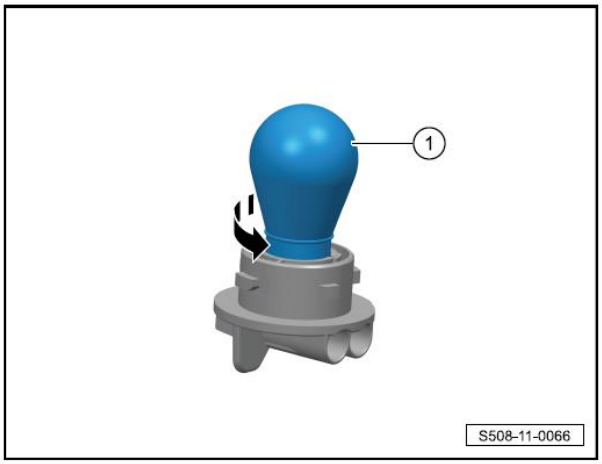
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



4 Remove the reversing light bulb.

a. Unscrew the base reversing light bulb ① in the direction of the arrow.



b. Press the bulb, and unscrew the reversing light bulb ① in the direction of the arrow.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the reversing light bulb can light up normally.

8.3.5.13 Removal and installation of break light bulb (rear bumper side)

Disassembly procedures

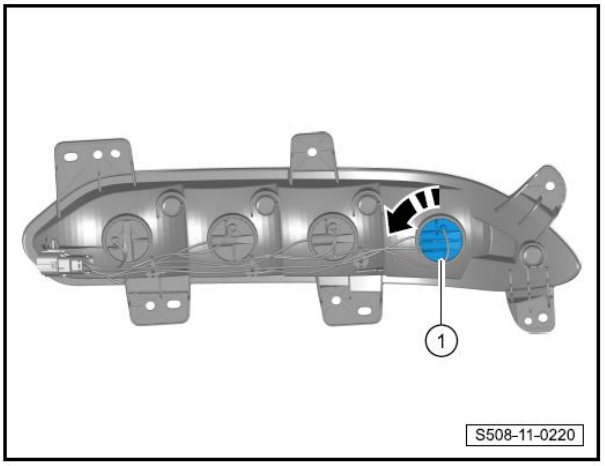
Tip:

The removal and installation procedures are only for the break light bulb (left), which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

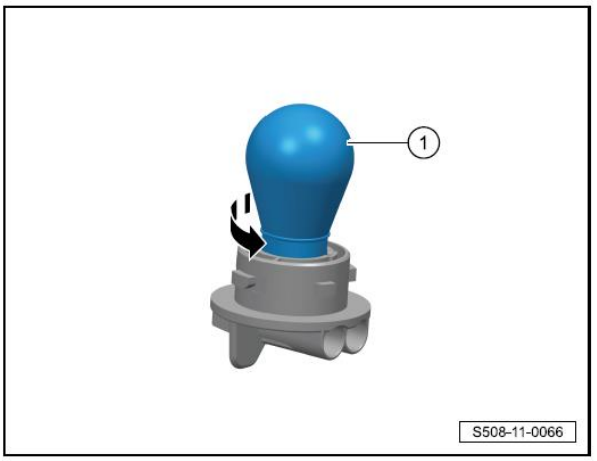
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate rear combination light assembly. Refer to 8.3.5.3 Removal and installation of lift gate rear combination light assembly



4 Remove the break light bulb (rear bumper side)

a. Unscrew the base with brake light bulb ① in the direction of the arrow.



b. Press the bulb, and unscrew the brake light bulb ① in the direction of the arrow.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the rear bumper break light bulb can light up normally.

Tip:

The rear break light (rear bumper side) needs to light up when the brake pedal is depressed while the lift gate is open.

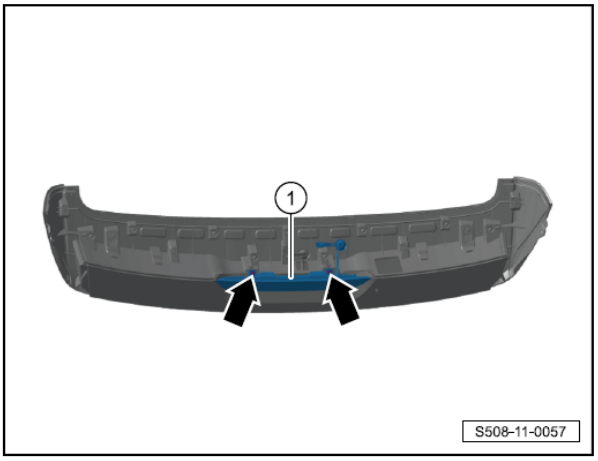
8.3.5.14 Removal and installation of CHMSL

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the spoiler assembly. Refer to 9.15.2.9 Removal and installation of spoiler assembly



4 Remove the CHMSL

a. Unscrew the fixing screws (see the arrows), and remove the CHMSL ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the CHMSL can light up normally.

8.3.5.15 Removal and installation of rear fog light bulb

Disassembly procedures

Tip:

The removal and installation steps are only for the rear left fog light bulb, which can be basically referred to for the right one.

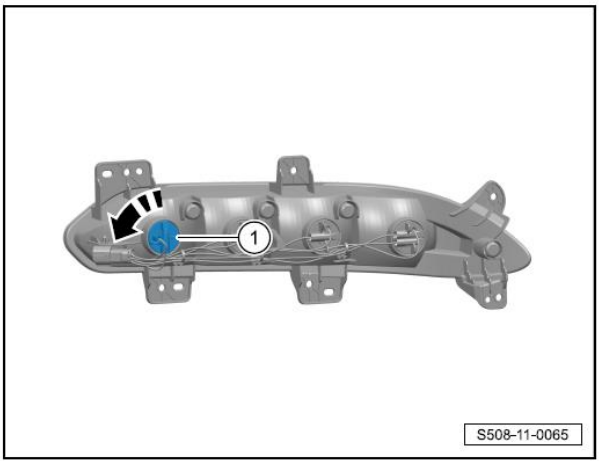
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

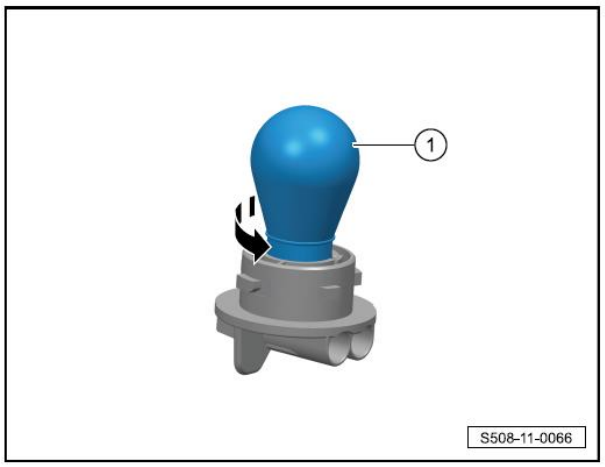
3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories

4 Remove the rear fog light bulbs.

a. Unscrew the base rear fog light bulb ① in the direction of the arrow.



b. Press the bulb, and unscrew the rear fog light bulb ① in the direction of the arrow.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the rear fog light bulb can light up normally.

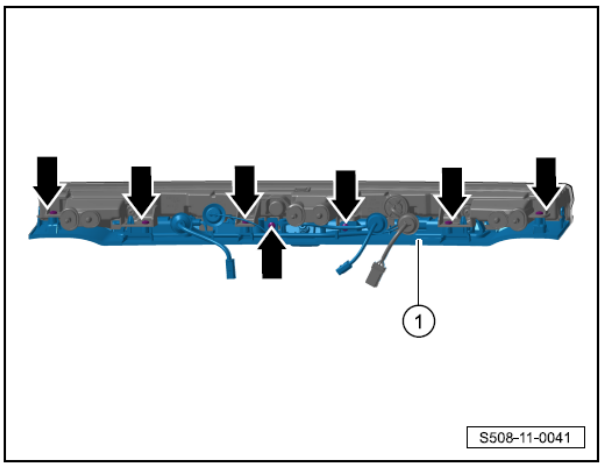
8.3.5.16 Removal and installation of license light assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

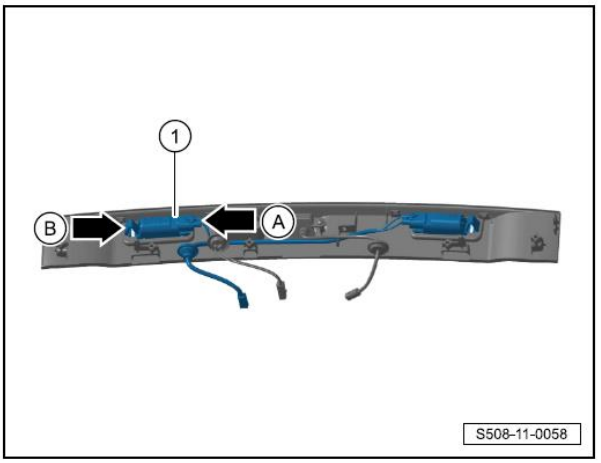
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate light assembly. Refer to 8.3.5.5 Removal and installation of lift gate light assembly



4 Remove the license plate light assembly

a. Unscrew the fixing screws (see the arrow), and remove the rear license light mounting bracket assembly ①.



b. Disconnect the connector (see arrow A) of the rear license plate light.

c. Press the fixing clip (see arrow B), and remove the rear license light assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the license plate light can light up normally.

8.3.5.17 Removal and installation of combination switch assembly

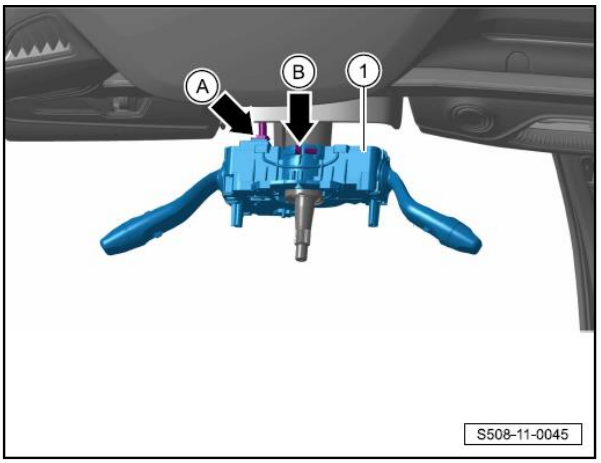
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the steering wheel assembly. Refer to 3.13.8.6 Removal and installation of steering wheel assembly

4 Remove the clock spring coil. Refer to 8.3.5.20 Removal and installation of clock spring coil



5 Remove the combination switch assembly

a. Disconnect the combination light assembly connector (see arrow A).

b. Unscrew the fixing bolt (see arrow B), and remove the combination switch assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the combination switch assembly.

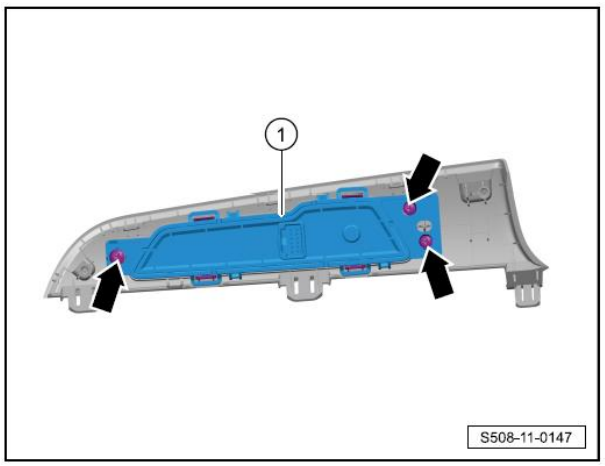
8.3.5.18 Removal and installation of small switch set

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

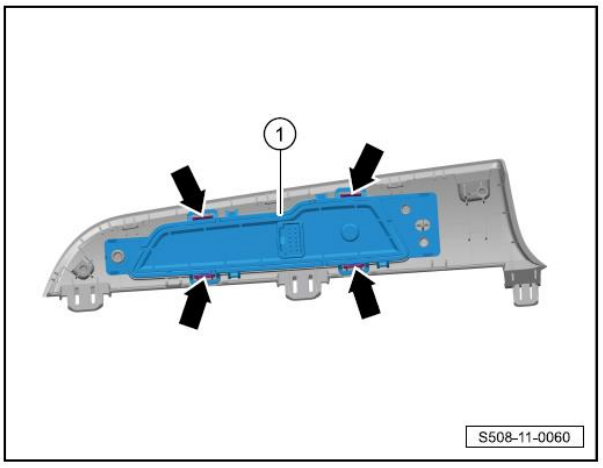
3 Remove the instrument panel central trim strip assembly (left). Refer to 9.8.3.9 Removal and installation of instrument panel central trim strip assembly (left)



4 Remove the small switch set

a. Unscrew the fixing screws of the small switch set (see the arrow).

- Tightening torque of screw: **2±1 N·m**



b. Disengage the fixing clip (see arrow), and remove the small switch set ①.

Installation procedures

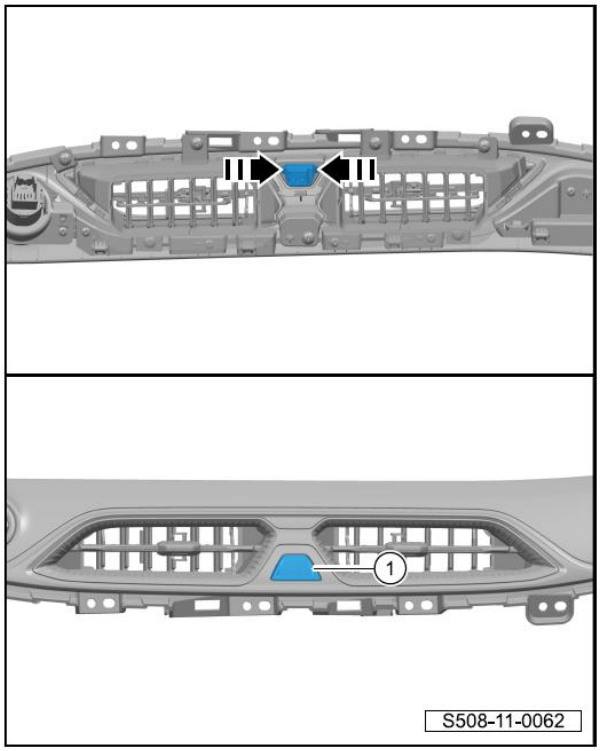
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the small switch set.

8.3.5.19 Removal and installation of hazard warning switch

Disassembly procedures

1 Remove the instrument panel central trim strip assembly (right). Refer to 9.8.3.12 Removal and installation of instrument panel central trim strip assembly (right)



2 Remove the hazard warning switch

a. Press the clip in the direction of the arrow, and remove the hazard warning switch ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the hazard warning switch.

8.3.5.20 Removal and installation of clock spring coil

Disassembly procedures

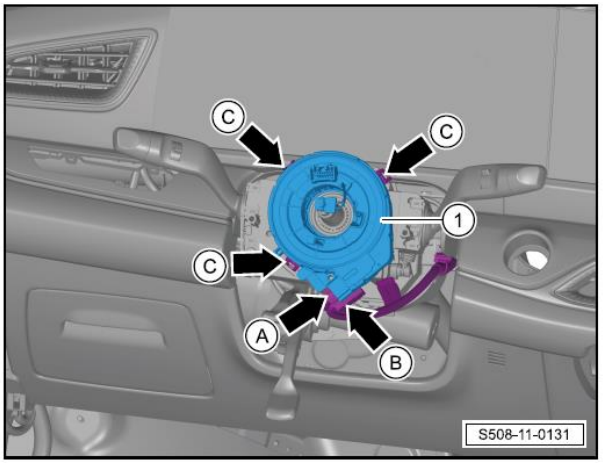
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the steering wheel. Refer to 3.13.8.6 Removal and installation of steering wheel assembly

4 Remove the combination switch upper cover assembly. Refer to 9.8.3.7 Removal and installation of combination switch upper cover assembly

5 Remove the combination switch lower cover. Refer to 9.8.3.8 Removal and installation of combination switch lower cover



6 Remove the clock spring coil.

a. Disconnect the connectors (see arrows A and B) of the clock spring coil.

b. Disengage the fixing clip (see arrows C), and remove the clock spring coil ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, adjust the clock spring coil. Refer to 8.3.5.21 Adjustment of clock spring coil

8.3.5.21 Adjustment of clock spring coil

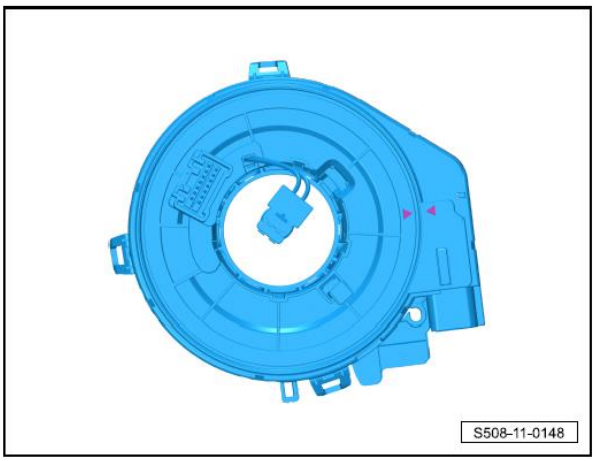
Adjustment procedure

Note:

Rotating the clock spring coil clockwise and counterclockwise for more than 3.5 turns will damage the spring.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Adjust the clock spring coil

a. Turn the steering wheel to the middle position to keep the front wheels straight forward.

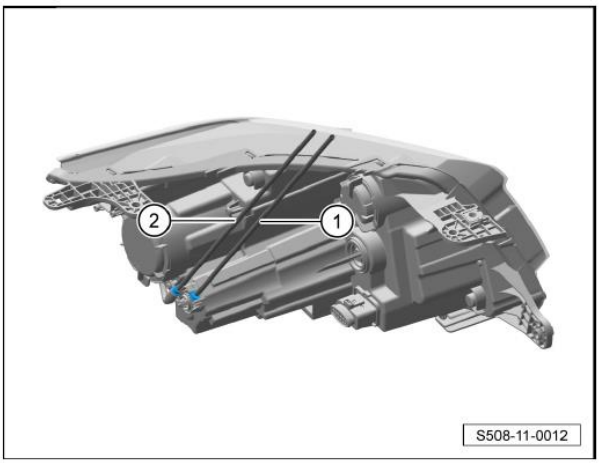
b. Rotate to the extreme position clockwise, and then rotate the inner circle of the clock spring coil anti-clockwise for 3.5 circles to the middle position to align with the positioning marks on the parts of the clock spring coil, and the adjustment is completed.

8.3.5.22 Adjustment of combination headlight assembly

Adjustment procedure

Tip:

Adjust the headlight according to local law laws.



1 Adjustment of combination headlight assembly

a. Park the vehicle on a horizontal place, keep the front of the vehicle in a certain distance (10m in front) from the curtain wall, and turn on the light switch.

b. Rotate tools ① and ② to adjust the light of the combination headlight in four directions, up, down, left and right.

8.4 Interior lighting system

8.4.1 Specification

8.4.1.1 Bulb specifications

Bulb	Specification	Bulb/light color
Front reading light assembly	LED	White
Rear interior light assembly	W5W	White
Trunk light assembly	C10W	White

8.4.1.2 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between the front reading light and the front panel roof bow	Cross recessed mushroom head tapping screw	3±1

8.4.2 System description

8.4.2.1 System composition

The interior lighting system mainly includes:

- Front reading light
- Rear left/right interior light
- Front left/right vanity mirror light
- Trunk light

8.4.2.2 Description of interior lighting system functions

Energy-saving output power supply

Function description:

- Power-saving output: With the dome light on, the output is stopped 15min after powering on at the "OFF" position.

Interior light

Function description:

1 Auto ON and OFF for the door controller: If any one of the four doors is opened, the dome light remains on.

2 Auto ON and OFF for the power supply: The dome light remains on for 30s when the power supply switch is turned to OFF from ON.

3 Automatic ON and OFF in case of remote control: When the power is OFF, the light will be on for 30s if the remote unlocking is used, and the light will go out if the remote locking is used.

4 Auto ON and OFF for collision: The dome light is lit after the collision event is received from the airbag ECU.

5 ON and OFF in case the trunk is opened and closed: If the trunk is opened, the trunk light will be on.

6 ON and OFF in case the glove box is opened and closed: If the glove box is opened, the glove box light will be on.

7 ON and OFF of the vanity mirror light: If the vanity mirror is opened, the vanity mirror light will be on.

8 ON and OFF of the door open warning light: If the door is opened, the door open warning light will be on.

Backlight

Function description:

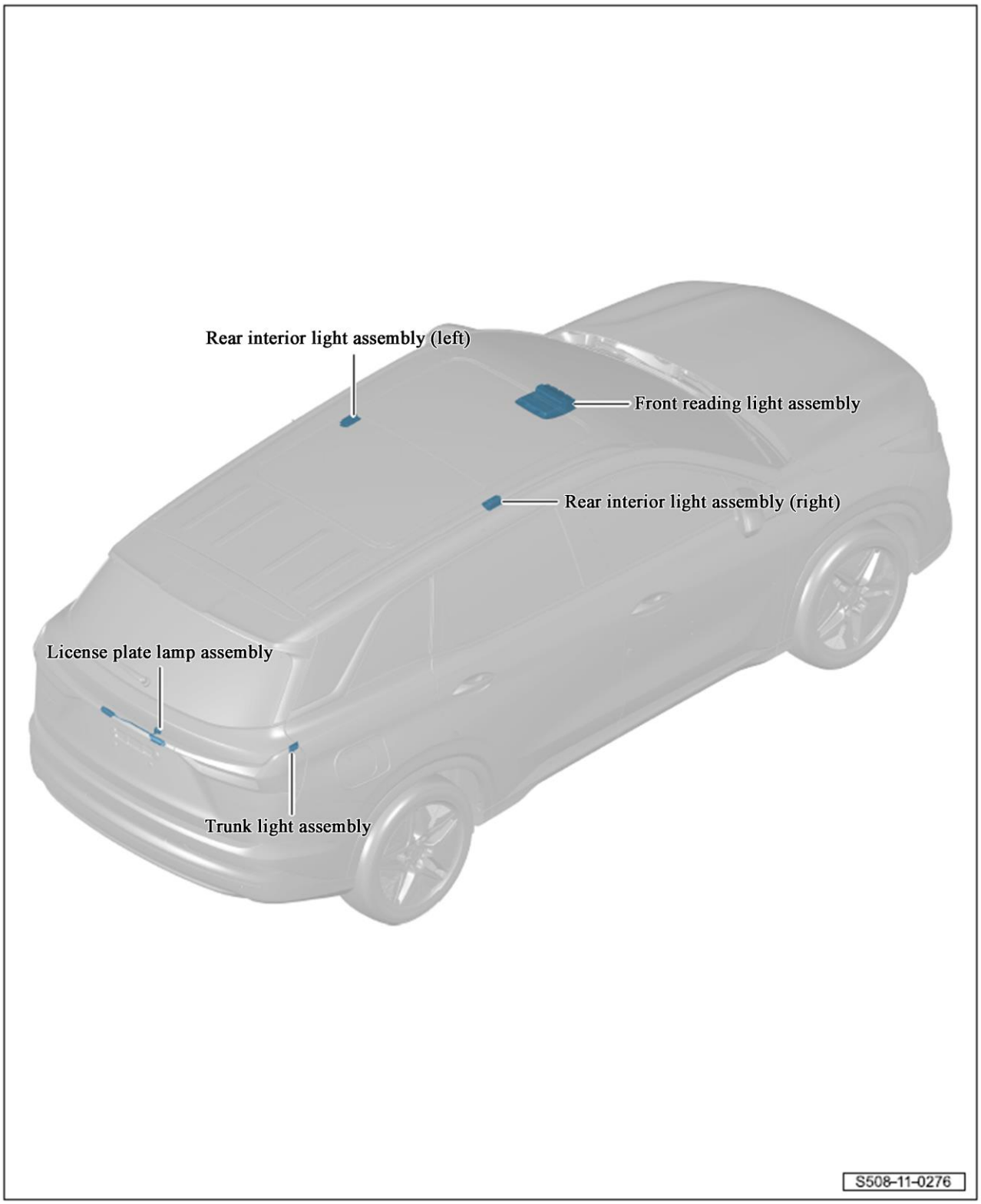
1 Manual ON and OFF: The backlight and clearance light share the same control logic.

2 Brightness adjustment: The brightness is adjusted via the brightness adjustment switch of the backlight on the instrument.

8.4.3 Component position

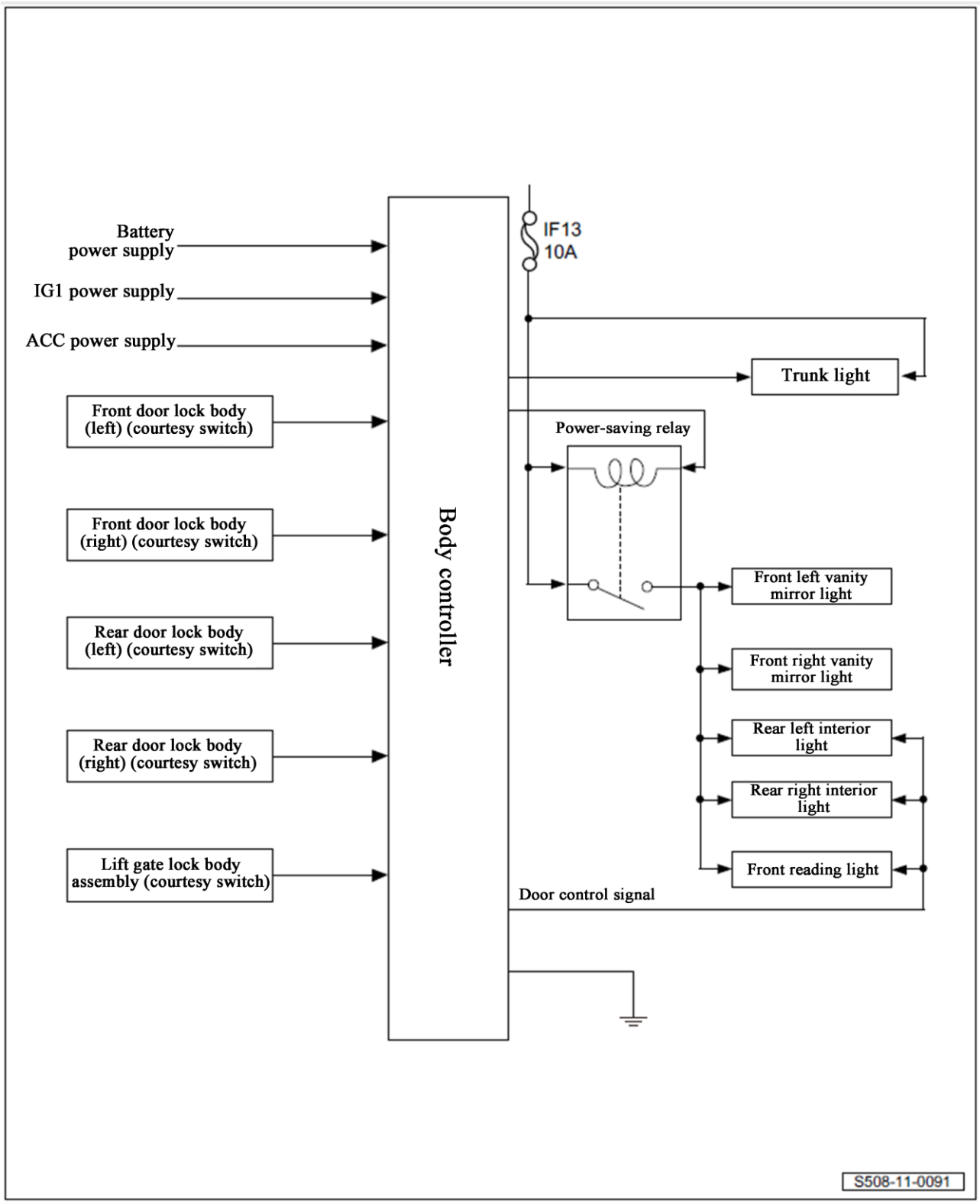
8.4.3.1 Component position

Component position



8.4.4 Electrical schematic diagram

8.4.4.1 Electrical schematic diagram



8.4.5 Removal and installation

8.4.5.1 Removal and installation of front reading light assembly

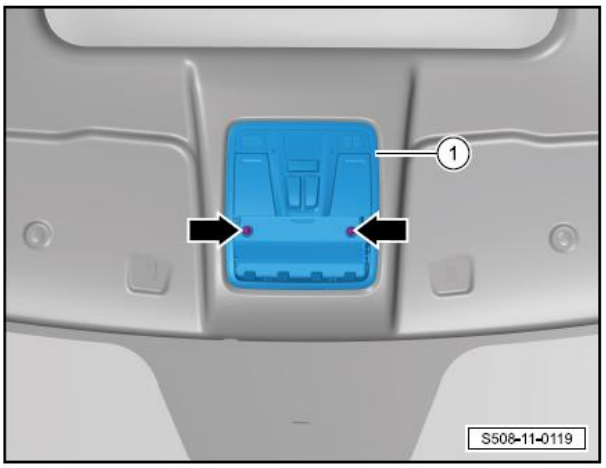
Disassembly procedures

Tip:

The front dome light adopts an LED bulb. It is not allowed to replace a single LED bulb during replacement, and the front reading light assembly needs to be replaced.

1 Turn off all the electrical appliances and turn off the Start switch.

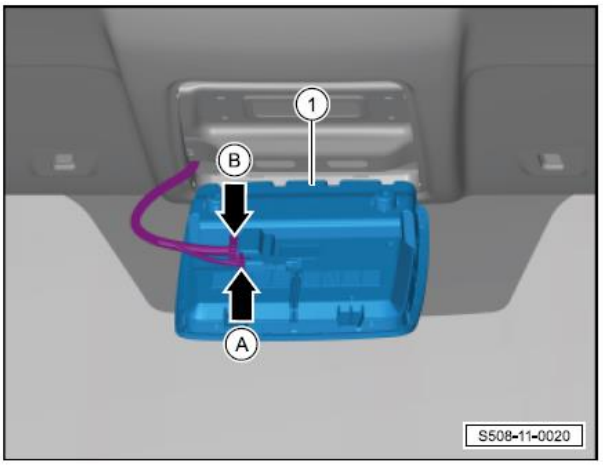
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the front reading light assembly

a. Open the glasses box, unscrew the fixing screw of the front reading light assembly (see arrow), and remove the front reading light assembly ①.

- Tightening torque of screw: **3±1 N·m**



b. Disconnect the connector (see arrows A and B), and take out the front reading light assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

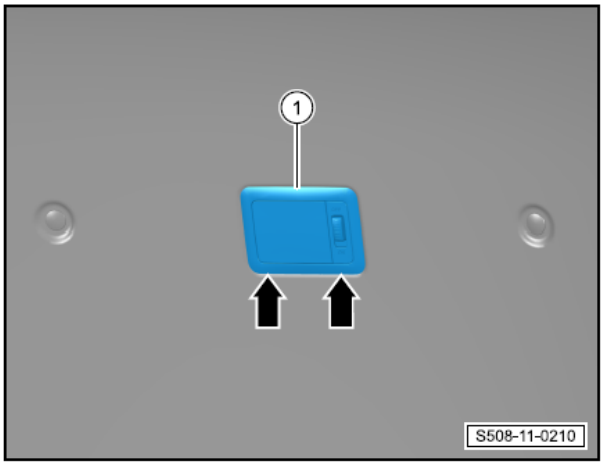
- After the installation, perform a function test on the front dome light.

8.4.5.2 Removal and installation of rear interior light assembly (small sunroof)

Disassembly procedures

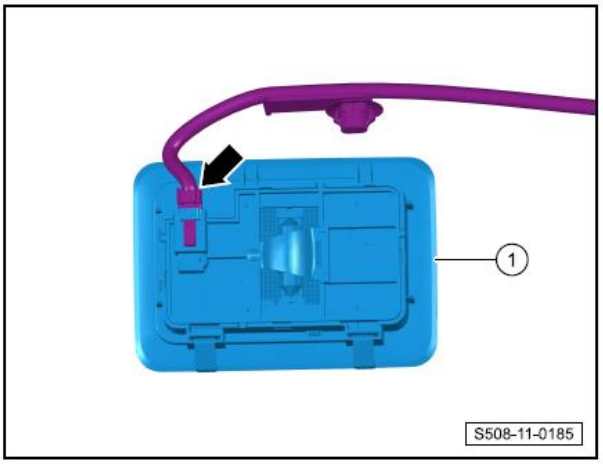
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the rear interior light assembly

a. Use interior trim removal tools to remove the rear interior light assembly ① in the position of the arrow.



b. Disconnect the connector (see arrow), and take out the rear interior light assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

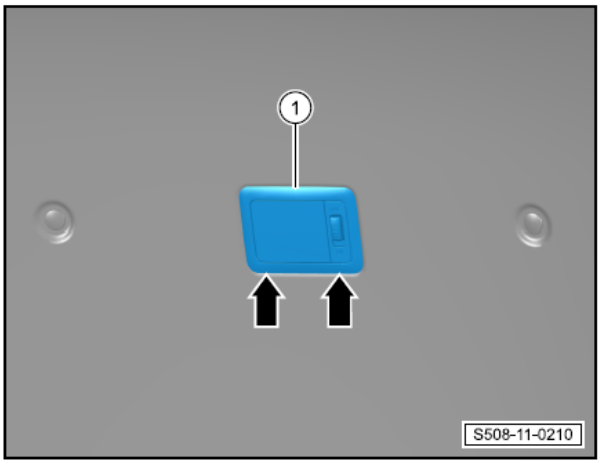
- After the installation, perform a function test on the rear interior light assembly.

8.4.5.3 Removal and installation of rear interior light bulb (small sunroof)

Disassembly procedures

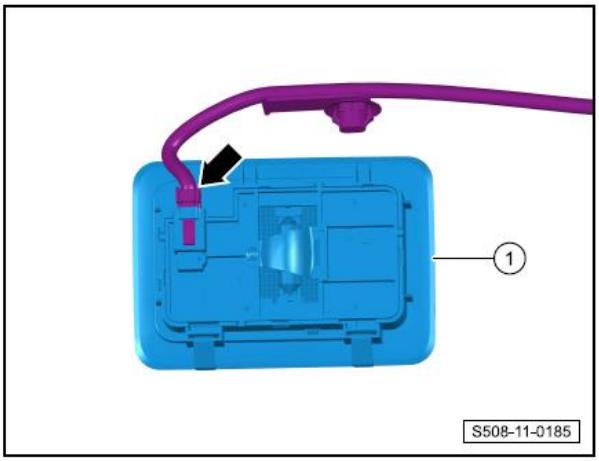
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

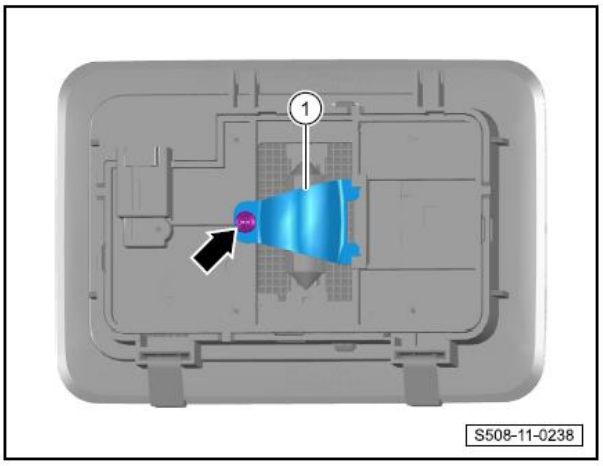


3 Remove the rear interior light assembly

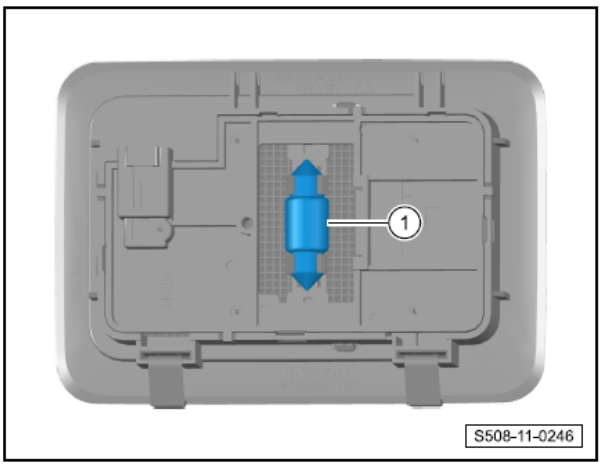
a. Use interior trim removal tools to remove the rear interior light assembly ① in the position of the arrow.



b. Disconnect the connector (see arrow), and take out the rear interior light assembly ①.



c. Unscrew the fixing screw (see arrow), and take out the insulation cover of the rear interior light bulb ①.



d. Remove the rear interior light bulb ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear interior light assembly.

8.4.5.4 Removal and installation of rear interior light assembly (panoramic sunroof)

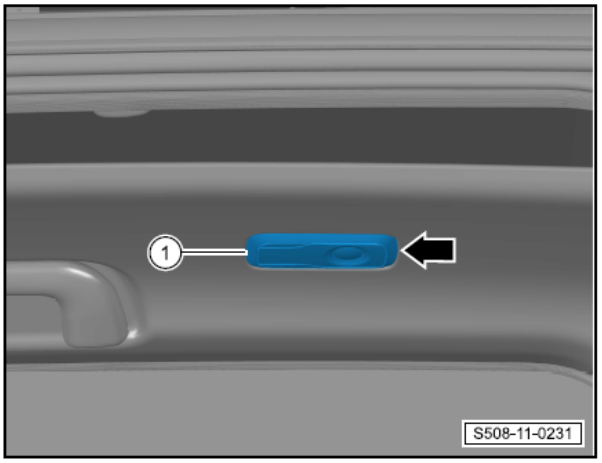
Disassembly procedures

Tip:

The removal and installation steps are only for the rear left interior light assembly, which can be basically referred to for the rear right one.

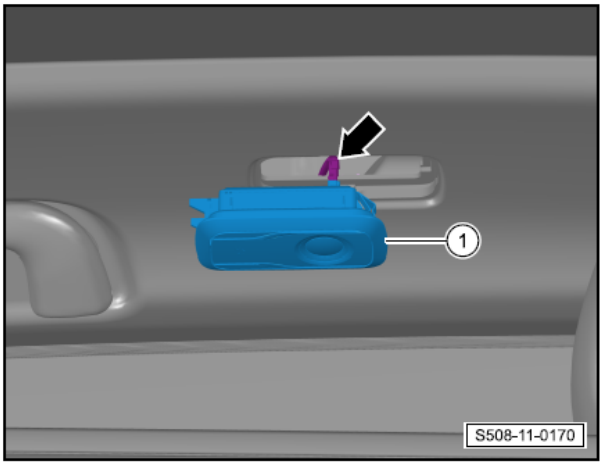
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the rear interior light assembly

a. Use interior trim removal tools to remove the rear interior light assembly ① in the position of the arrow.



b. Disconnect the connector (see arrow), and take out the rear interior light assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear interior light assembly.

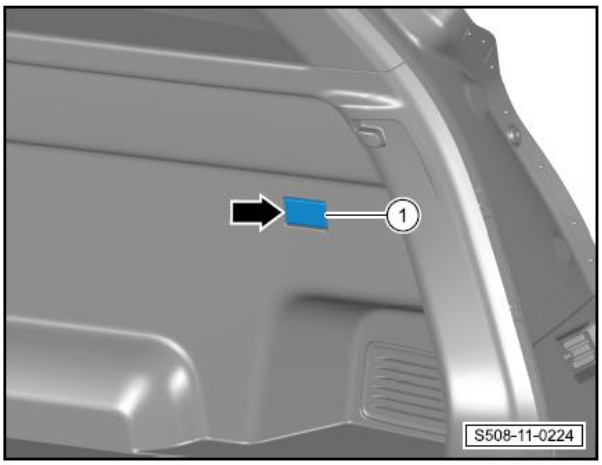
8.4.5.5 Removal and installation of trunk light assembly

Disassembly procedures

1 Open the lift gate.

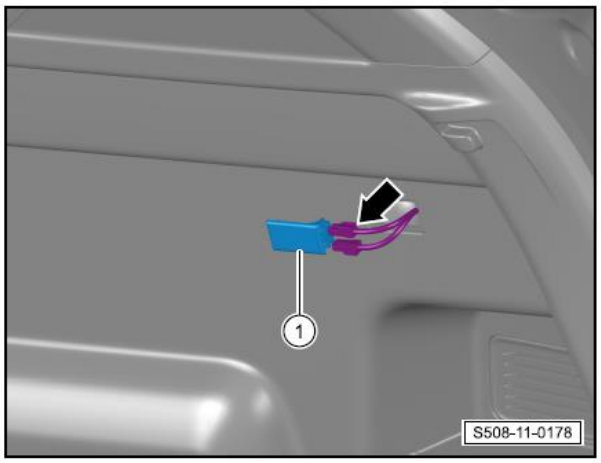
2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



4 Remove the trunk light assembly

a. Use interior trim removal tools to remove the trunk light assembly ① in the position of the arrow.



b. Disconnect the connector (see arrow), and take out the trunk light assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the trunk light assembly can be turned on normally.

8.5 Window glass

8.5.1 Fastener specifications

8.5.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Electric window main switch with front door switch cover plate	Cross recessed mushroom head tapping screw	3±1

8.5.2 System overview

8.5.2.1 System Overview

The window system is mainly composed of body controller, four-door electric window switch, four-door window regulator assembly, etc., and provides one-button lifting and anti-pinch functions for four-door windows.

The glass regulator can be operated when the power supply is in “ON”, and electric windows can be switches within 30s after overall shutdown. The windows will be out of operation if any of the four doors is opened.

Operation method of window lifting:

- Press/Pull and hold the switch button to open/close the window; release the switch button after reaching the required position to stop the opening/closing action.
- Press/Pull the switch button to open/close the window automatically; operate the switch button again during window opening/closing to stop the opening/closing action.

Remote key control method:

- Open the windows: With the vehicle powered off, shortly press the key to unlock, and then press and hold the remote key unlock button. The vehicle will lower the four-door windows after unlocking
- Close the windows: With the vehicle powered off, press the remote control key lock, then press and hold the remote control key lock button. The vehicle will raise the four-door windows to the top after the vehicle is locked.

Notes

The opening and closing function with remote key requires the window to have anti-pinch function

8.5.2.2 Learning of one-button window lifting function

Learning process of one-button window lifting function

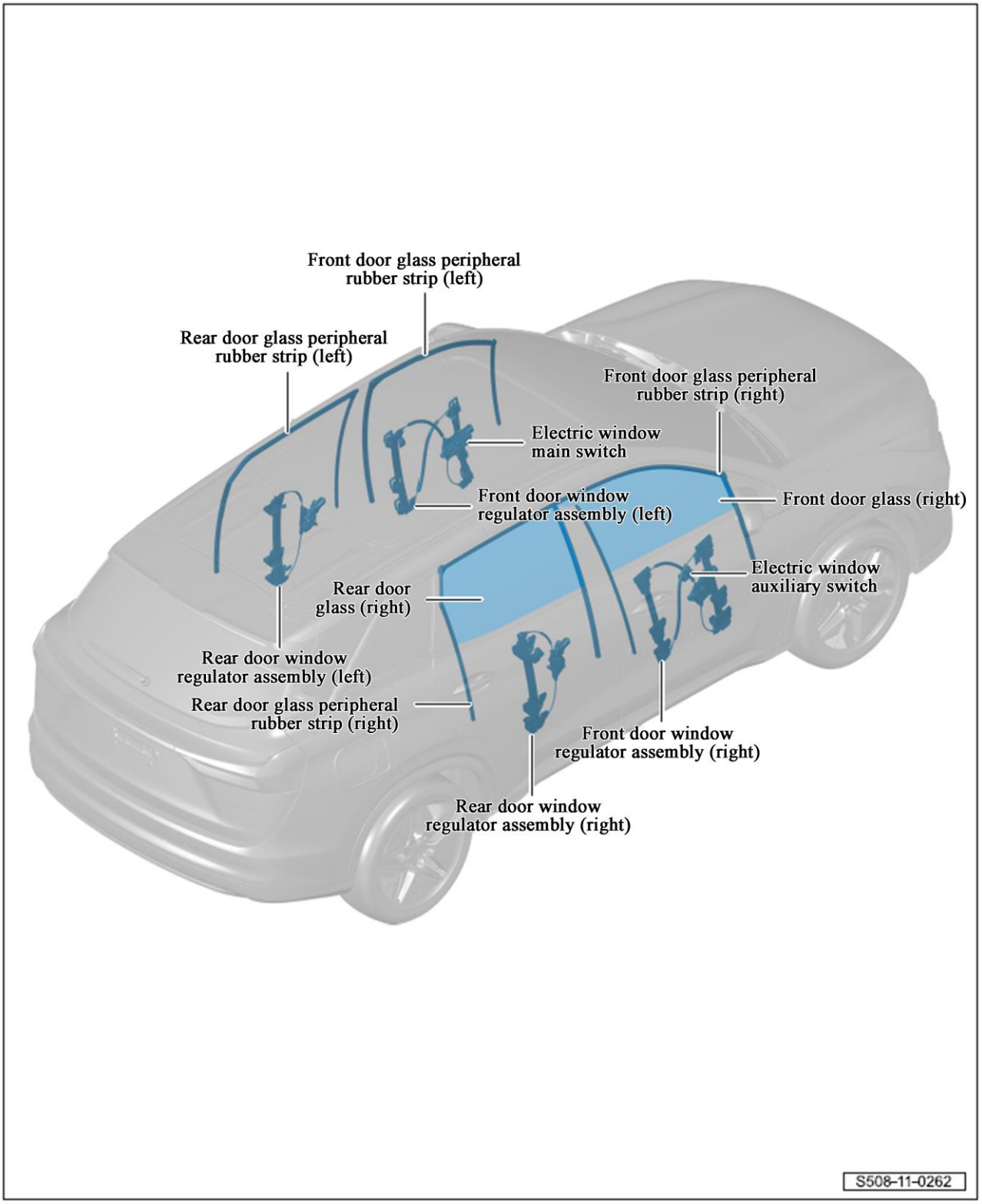
After vehicle battery is disconnected, the automatic window lifting function must be re-activated.

- Release the brake pedal, press the ENGINE START/STOP button twice (the indicator light turns green), and operate the front left (rear left/front right/rear right) lifting button to lift the window pane to the top, and then release the button.
- Operate the lifting button again to raise the window to the top and stall for 2s, and then lower the window to the bottom manually, and then raise the window to the top manually; after the above actions, the left front (rear left / front right / rear right) window learning is successful.

8.5.3 Component position

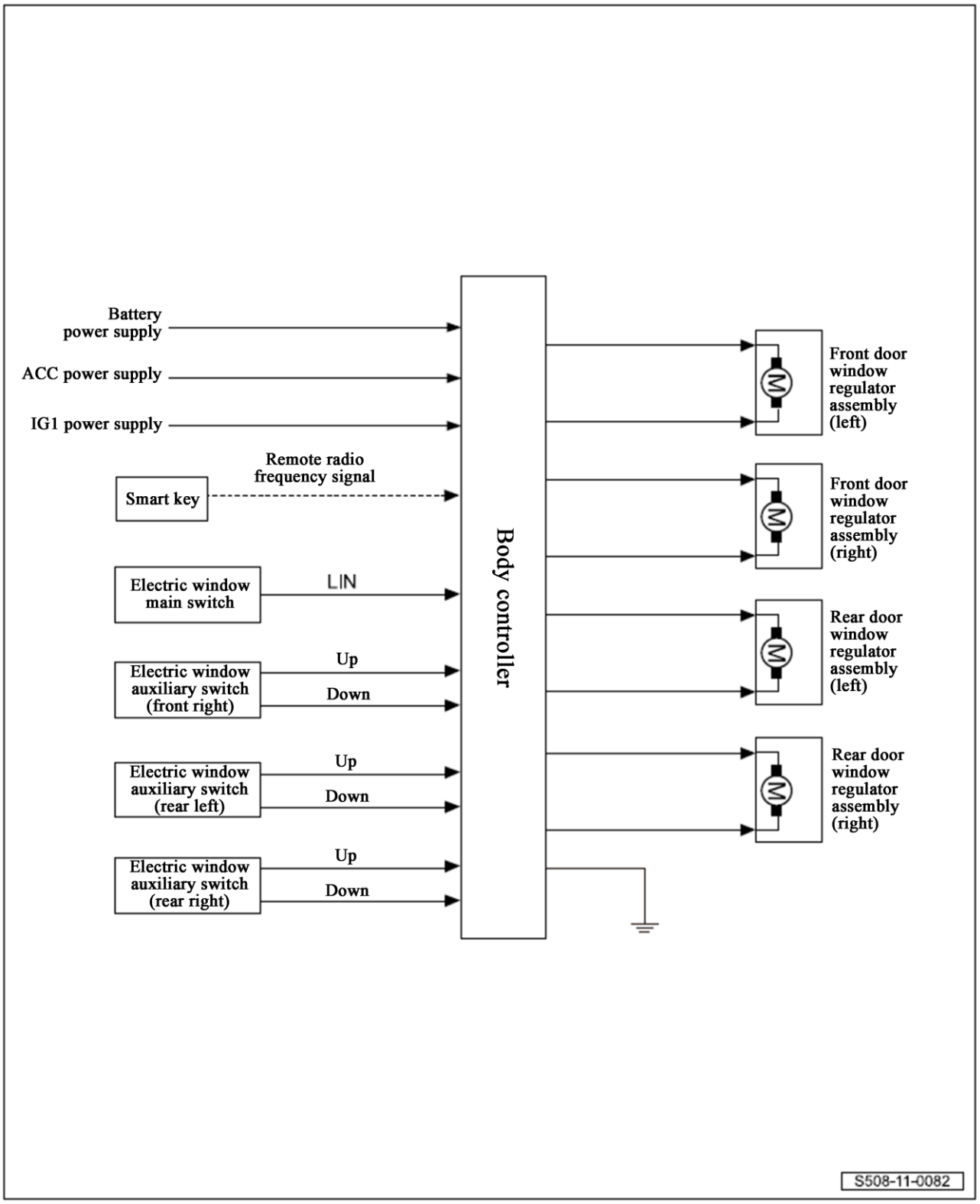
8.5.3.1 Component position

Component position



8.5.4 Electrical schematic diagram

8.5.4.1 Electrical schematic diagram



8.5.5 Diagnosis information and steps

8.5.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the APM (BCM) with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

8.5.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

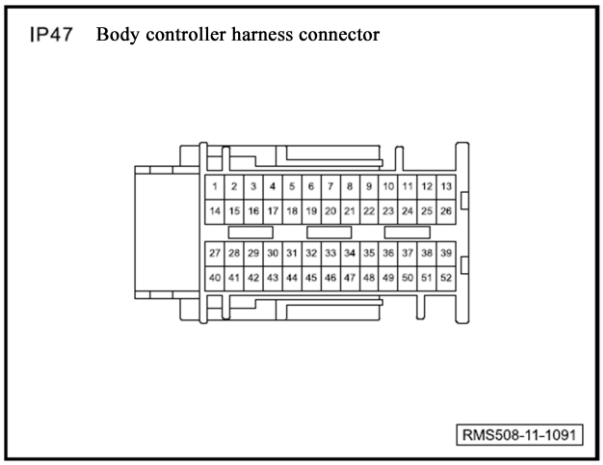
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

8.5.5.3 ECU terminals

Body controller harness connector (IP47)



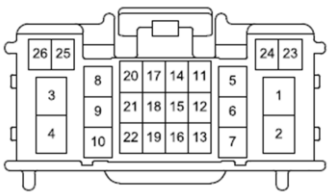
Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/gray-green	Pressure signal	—	—
3	0.35/Orange	Entertainment (Info)CAN-H	—	—
4	0.35/Light green	Chassis (CH)CAN-H	—	—
5	0.35/gray	Diagnosis CAN-H	—	—
6	0.35/brown	Body (Body)CAN-H	—	—
7	0.35/pink	Power (PT)CAN-H	—	—

8	0.35/gray-brown	LIN4(CHILLER)	—	—
9	0.35/yellow-brown	Wireless charging module disabled	—	—
10	0.35/white-blue	Mode damper position feedback signal	—	—
12	0.35/yellow-green	Right temperature damper position feedback signal	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
13	0.35/yellow-white	Internal/external circulation position feedback signal	—	—
15	0.35/brown-red	Temperature signal	—	—
16	0.35/Orange and white	Entertainment (Info)CAN-L	—	—
17	0.35/Light green and white	Chassis (CH)CAN-L	—	—
18	0.35/gray-white	Diagnosis CAN-L	—	—
19	0.35/brown-white	Body (Body)CAN-L	—	—
20	0.35/pink-white	Power (PT) CAN-L	—	—
21	0.35/light green-black	LIN5 (A/C system)	—	—
24	0.35/white-gray	PTC water pump relay control	—	—
26	0.35/gray-blue	Electric horn switch	—	—
28	0.35/white-orange	Evaporator temperature sensor signal	—	—
29	0.35/brown-orange	Room temperature sensor signal	—	—
31	0.35/white-blue	Motor circulating water pump signal output	—	—
32	0.35/red-yellow	Relay feedback (IGN1)	—	—
33	0.35 black-gray	Battery circulating water pump signal output	—	—
34	0.35/white-purple	PTC circulating water pump signal output	—	—
39	0.35/brown-yellow	LIN2 (switch and controller)	—	—
40	0.35/purple	Front blower feedback signal	—	—
41	0.35/orange-green	Battery coolant inlet temperature	—	—
42	0.35/gray-yellow	A/C pressure sensor signal	—	—
44	0.35/red-gray	Relay feedback (ACC)	—	—
50	0.35/green-purple	Start/stop switch 1	—	—
51	0.35/blue-purple	Start/stop switch 2	—	—

Body controller harness connector (IP48)

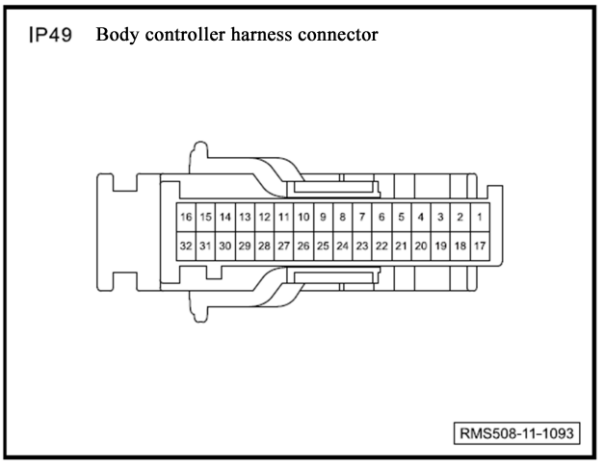
IP48 Body controller harness connector



RMS508-11-1092

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	1.5/red-yellow	Light power supply 3	—	—
2	1.5/red-gray	Light power supply 4	—	—
3	1.5/black	Power ground 1	—	—
4	0.75/yellow	Left high beam output	—	—
5	0.5/black-red	Rear washer motor	—	—
6	0.5/white-black	Front washer motor	—	—
7	0.35/black-green	Front wiper reset signal	—	—
8	0.75/green-yellow	Right high beam output	—	—
9	0.75/white-yellow	Right low beam output	—	—
10	0.75/yellow-white	Left low beam output	—	—
12	0.35/green-white	Right daytime running light	—	—
13	0.35/green-orange	Front wiper (low-speed)	—	—
16	0.35/yellow-black	Horn relay control	—	—
19	0.35/orange-green	Front wiper (high-speed)	—	—
24	0.35/white-green	Left daytime running light	—	—
25	0.5/gray	Brake signal (NO)	—	—
26	0.35/blue-white	Environment temperature signal	—	—

Body controller harness connector (IP49)

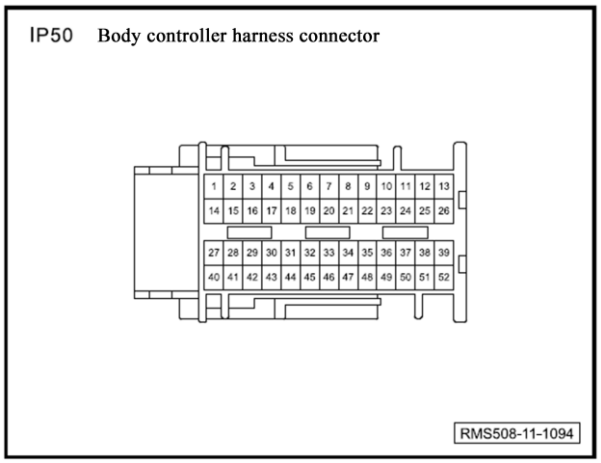


Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/gray-	IMMO-	—	—

	brown			
4	0.5/gray-red	Radar power 12V	—	—
5	0.35/green-blue	Cruise switch +	—	—
6	0.35/orange-blue	Rear bumper clearance light switching relay	—	—
7	0.35/yellow-white	A/C signal ground 5V-	—	—
8	0.35/orange-green	Power lift gate central control switch	—	—
9	0.35/green-black	Hazard alarm indicator switch	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
10	0.35/gray-green	Driving mode signal	—	—
12	0.35/gray-yellow	Circulation drive +12V external circulation	—	—
13	0.35 green	Circulation drive +12V defrosting	—	—
14	0.35/white-gray	Mode drive +12V air-to-face	—	—
16	0.35/gray-white	Auxiliary relay control	—	—
17	0.35/brown-black	IMMO+	—	—
18	0.35 brown-blue	Front blower speed regulation signal	—	—
19	0.35/blue-green	Cruise switch -	—	—
20	0.35/black-pink	A/C sensor power supply 5V+	—	—
21	0.35/white	Front blower relay control	—	—
23	0.35/gray-black	Power indicator (ON)	—	—
24	0.35/Yellow	Power indicator (ACC)	—	—
26	0.35/brown-gray	Backlight (PWM)	—	—
27	0.35/gray	Fan fault feedback	—	—
29	0.35/pink-black	Slow-charging lock 2	—	—
30	0.35 / pink-red	Slow-charging lock 1	—	—
31	0.35/pink-green	Charging port cover unlocking motor +	—	—

Body controller harness connector (IP50)



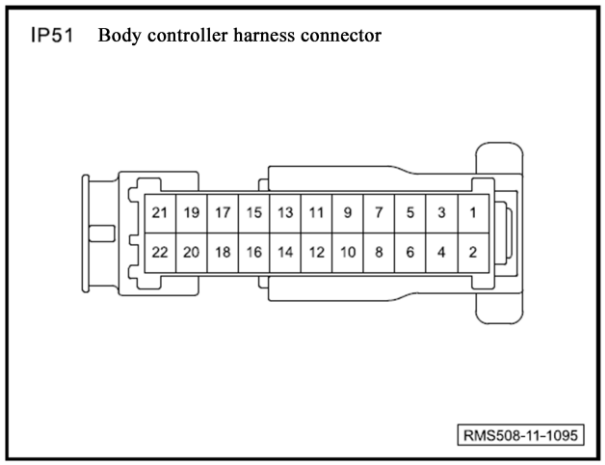
Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/light green-red	BSC activation enable	—	—
2	0.35/purple-yellow	Left blind spot indicator	—	—

3	0.35/white-green	Lift gate left turn signal light output	—	—
4	0.35/green-white	Lift gate right turn signal output	—	—
5	0.35 white-yellow	Rear bumper left turn signal output	—	—
6	0.35/yellow-white	Rear bumper right turn signal output	—	—
7	0.35/Yellow and purple	Rear left hub antenna 1-	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
8	0.35/Yellow	Rear left hub antenna 1+	—	—
9	0.35/white-blue	Rear right hub antenna 2+	—	—
10	0.35/white-purple	Rear right hub antenna 2-	—	—
13	0.35/orange-green	Left exterior antenna 1 +	—	—
14	0.35/gray	Refrigerant stop valve +	—	—
15	0.35/purple-pink	Right blind spot indicator	—	—
16	0.35/white-brown	Battery circulating water pump relay control	—	—
17	0.35/white	Drive motor water pump relay control	—	—
18	0.35/green-orange	Front right window down input	—	—
19	0.35/Orange	Rear right window up input	—	—
20	0.35 green-red	Rear left window up input	—	—
21	0.35/white-black	Rear right window down input	—	—
24	0.35/brown-yellow	Lift gate/rear bumper antenna+	—	—
25	0.35/brown-purple	Lift gate/rear bumper antenna-	—	—
26	0.35 / orange-purple	Left exterior antenna 1 -	—	—
27	0.35/green-black	Rear left window down input	—	—
28	0.35/black-red	Rear wiper reset signal	—	—
29	0.5/black	Power ground 2	—	—
33	0.35/black-green	Rear left door state switch	—	—
34	0.35/black	Domain controller power 4	—	—
35	0.35/Yellow and red	Driver PE locking switch	—	—
36	0.35/purple-orange	Power-saving relay	—	—
40	0.35/yellow-brown	Front right window up input	—	—
41	0.35/gray-red	PWM speed regulation	—	—
42	0.5/black	Power ground 3	—	—
44	0.35 / light green-yellow	Slow charging locking status	—	—
45	0.35/blue-black	Lift gate unlock switch	—	—

46	0.35/gray-yellow	Folding button for exterior rearview mirrors	—	—
47	0.35/black-blue	Lift gate status switch	—	—
48	0.35/white	Rear right door state switch	—	—
49	0.35/black-white	Front left door state switch	—	—
50	0.35/green-yellow	Driver lock state feedback	—	—
51	0.35/black-yellow	Front right door state switch	—	—

Body controller harness connector (IP51)

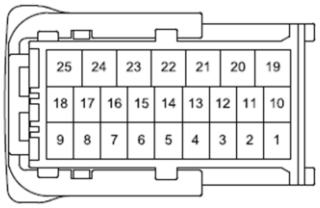


Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.5/green-blue	Exterior rearview mirror unfolding drive	—	—
2	0.5/blue-green	Exterior rearview mirror folding drive	—	—
3	1.5/black	Front/rear left window ground	—	—
4	0.5/yellow-red	High-mounted lift gate brake light output	—	—
5	1.0 / green	Raise front right glass	—	—
6	0.5/blue-yellow	Reversing light	—	—
7	1.0 / green-black	Front right window down	—	—
8	0.5/yellow-green	Rear fog light output	—	—
9	1.0 / green-yellow	Rear right window up	—	—
10	0.5/yellow-brown	Rear bumper brake light output	—	—
11	1.0 / green-white	Rear right window down	—	—
12	0.5/gray-yellow	Front left turn signal output	—	—
13	1.5/black	Front/rear right window ground	—	—
14	0.5/yellow-blue	Front right turn signal light output	—	—
15	1.0 / white	Lift the rear left window	—	—
16	1.0 / black-white	Four-door (fuel tank cap) lock	—	—
17	1.0 / white-green	Rear left window down	—	—
18	1.0 / white-black	Four-door (fuel tank cap) unlock	—	—

19	1.0 / blue	Lift the front left window	—	—
20	0.75/purple-black	Rear wiper motor	—	—
21	1.0 / blue-black	Front left glass down	—	—
22	0.5/blue-white	Lift gate unlocking	—	—

Body controller harness connector (IP52)

IP52 Body controller harness connector



RMS508-11-1096

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/brown-green	Right temperature drive +12V extremely warm	—	—
2	0.35/green-red	Logo light control	—	—
3	0.35/yellow-white	Rear defroster relay control	—	—
4	0.35/blue-green	Power relay control (IGN1)	—	—
5	0.5/light green-red	Background light/position light/lift gate rear bumper light	—	—
6	0.5/yellow-black	Interior light DOOR	—	—
7	0.35/white-black	Motor circulating water pump PWM speed regulation	—	—
8	0.35 white-orange	Battery circulating water pump PWM speed regulation	—	—
9	0.35/white-yellow	PTC circulating water pump PWM speed regulation	—	—
10	0.35/green-yellow	Right temperature drive +12V extremely cold	—	—
11	0.35/white-green	Circulation drive +12V internal circulation	—	—
12	1.5/red-blue	Reserved lighting power supply 0	—	—
14	0.35/green-blue	Power relay control (ACC)	—	—
19	1.5/red-green	System power supply	—	—
20	1.5/green-red	Light power supply 1	—	—
21	1.5/black-blue	Light power supply 2	—	—
22	1.5/red	Domain controller door lock / wiper	—	—
23	1.5/red	Domain controller door lock / wiper	—	—

24	1.5/red-white	Front right and rear right window power	—	—
25	1.5/white-gray	Front left and rear left window power	—	—

8.5.5.4 Active test

Overview:

To conduct an active test with a diagnostic scanner, you may operate the relay, actuator and other elements without removing any part. This can eliminate faults more effectively and quickly, greatly reducing the man-hours required for troubleshooting and improving the efficiency of fault diagnosis.

- Connect the intelligent tester to the vehicle.
- Turn the start switch to “ON” position.

- Perform the “active test” as displayed on the diagnostic scanner.

Note:

During the action test, do not operate for more than 3s; otherwise, ECU may be damaged. Repeated opening and closing within a period of time may damage parts.

S/N	Tester display items	
1	Front left window lifting control	Up
2		Down
3		Stop
4	Front right window lifting control	Up
5		Down
6		Stop
7	Rear left window lifting control	Up
8		Down
9		Stop
10	Rear right window lifting control	Up
11		Down
12		Stop

8.5.5.5 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
2881	Read front right button	0x00: button not pressed 0x01: manual rise 0x02: manual drop 0x03: automatic rise 0x04: automatic drop	-	-	-
2882	Read rear left button	0x00: button not pressed 0x01: manual rise 0x02: manual drop 0x03: automatic rise 0x04: automatic drop	-	-	-
2883	Read rear right button	0x00: button not pressed 0x01: manual rise 0x02: manual drop 0x03: automatic rise 0x04: automatic drop	-	-	-

8.5.5.6 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
B111717	Too high battery voltage	1. Record the DTC 2. Shield button input	Battery voltage is too low	Check the power supply
B111716	Too low battery voltage	1. Record the DTC 2. Shield button input	Battery voltage is too low	Check the power supply
U007688	CAN bus off	1. Record the DTC 2. Shield node loss fault 3. Periodic attempt of bus recovery	Bus fault (short circuit or open circuit)	Check CAN bus.
U014087	Lost communication with BDC	1. Record the DTC 2. Shield BDC node function	Node module CAN signal loss	Check whether the node module is installed

B221618	Front left door motor output current below threshold	1. Record the DTC 2. Shield output action	Motor connection circuit open	Check the motor connection wiring harness.
B221718	Front right door motor output current below threshold	1. Record the DTC	Motor connection circuit open	Check the motor connection wiring harness.

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
		2. Shield output action		
B221818	Rear left door motor output current below threshold	1. Record the DTC 2. Shield output action	Motor connection circuit open	Check the motor connection wiring harness.
B221918	Rear right door motor output current below threshold	1. Record the DTC 2. Shield output action	Motor connection circuit open	Check the motor connection wiring harness.
B221619	Front left door motor output current above threshold	1. Record the DTC 2. Shield output action	Positive and negative motor connection circuit open	Check the motor connection wiring harness.
B221719	Front right door motor output current above threshold	1. Record the DTC 2. Shield output action	Positive and negative motor connection circuit open	Check the motor connection wiring harness.
B221819	Rear left door motor output current above threshold	1. Record the DTC 2. Shield output action	Positive and negative motor connection circuit open	Check the motor connection wiring harness.
B221919	Rear right door motor output current above threshold	1. Record the DTC 2. Shield output action	Positive and negative motor connection circuit open	Check the motor connection wiring harness.
B221602	Front left motor position signal error	1. Record the DTC 2. Cancel automatic window lifting function	Motor ripple not meeting requirements	Check whether the motor is normal.
B221702	Front right motor position signal error	1. Record the DTC 2. Cancel automatic window lifting function	Motor ripple not meeting requirements	Check whether the motor is normal.
B221802	Rear left motor position signal error	1. Record the DTC 2. Cancel automatic window lifting function	Motor ripple not meeting requirements	Check whether the motor is normal.
B221902	Rear right motor position signal error	1. Record the DTC 2. Cancel automatic window lifting function	Motor ripple not meeting requirements	Check whether the motor is normal.
B222011	Passenger front right lifting manual button is short-circuited	1. Record the DTC 2. Shield all lifting actions of the button	Short circuit or intermittent short circuit	Check the button switch.
B222111	Passenger rear left lifting manual button is short-circuited	1. Record the DTC 2. Shield all lifting actions of the button	Short circuit or intermittent short circuit	Check the button switch.
B222211	Passenger rear right	1. Record the DTC	Short circuit or	Check the button

	lifting manual button is short-circuited	2. Shield all lifting actions of the button	intermittent short circuit	switch.
B222311	Passenger front right lowering manual button is short-circuited	1. Record the DTC 2. Shield all lowering actions of the button	Short circuit or intermittent short circuit	Check the button switch.
B222411	Passenger rear left lowering manual button is short-circuited	1. Record the DTC 2. Shield all lowering actions of the button	Short circuit or intermittent short circuit	Check the button switch.
B222511	Passenger rear right lowering manual button is short-circuited	1. Record the DTC 2. Shield all lowering actions of the button	Short circuit or intermittent short circuit	Check the button switch.

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
B222611	Passenger front right automatic button is short-circuited	1. Record the DTC 2. Shield all automatic actions of the button	Short circuit or intermittent short circuit	Check the button switch.
B222711	Passenger rear right automatic button is short-circuited	1. Record the DTC 2. Shield all automatic actions of the button	Short circuit or intermittent short circuit	Check the button switch.
B222811	Passenger rear left automatic button is short-circuited	1. Record the DTC 2. Shield all automatic actions of the button	Short circuit or intermittent short circuit	Check the button switch.

8.5.5.7 DTC: B111716, B111717

DTC	Description
B111716	Too low battery voltage
B111717	Too high battery voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.
Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses IF19, IF01, IF23, ISB02 and ISB03 of the body controller.

A Check whether fuses IF19, IF01, IF23, ISB02 and ISB03 are blown.

No → Go to Step 5.

Yes

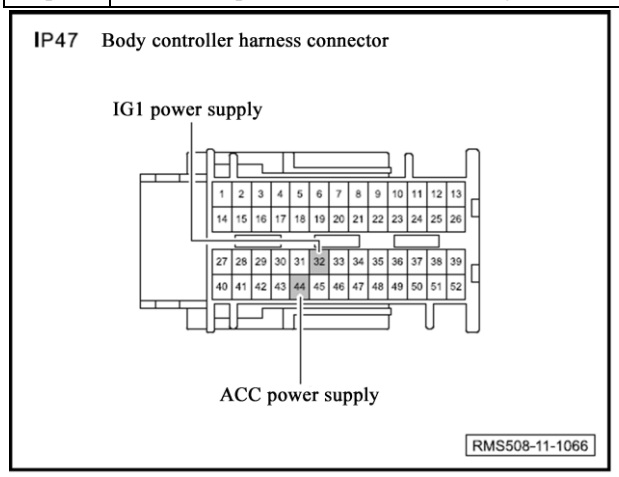
Step 4	Check and repair the circuits of fuses IF19, IF01, IF23, ISB02 and ISB03.

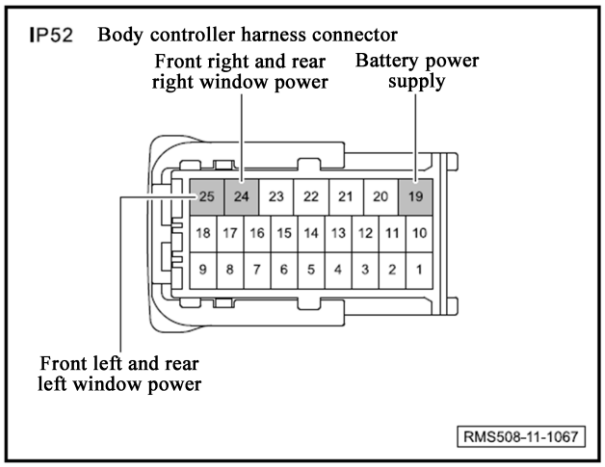
A Check whether the circuits of fuses IF19, IF01, IF23, ISB02 and ISB03 are short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
The rated values of fuses are **IF195A, IF235A, IF0120A, ISB0220A, ISB0320A**
D Confirm whether the body controller works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the body controller.



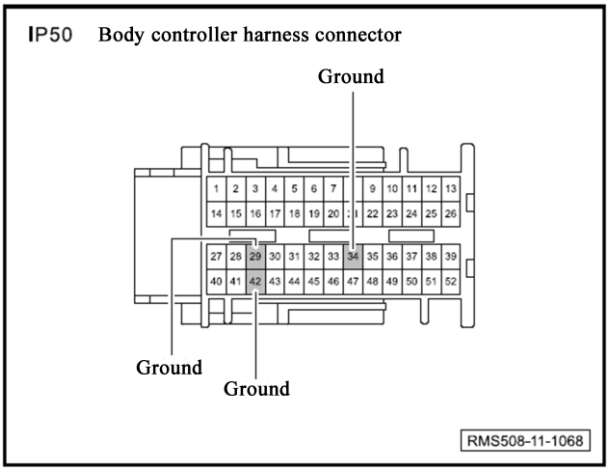


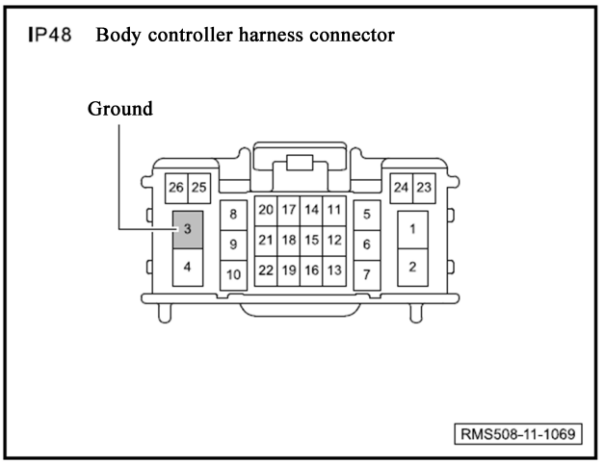
A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the body controller harness connector IP52.
D Put the Start switch to “ON” position.
E Measure the voltage of the circuit between terminal 32/44 of the body controller harness connector IP47 and the body ground.
F Measure the voltage of the circuit between terminal 19/24/25 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **11~14V**
G Make sure that the voltage conforms to the standard value.

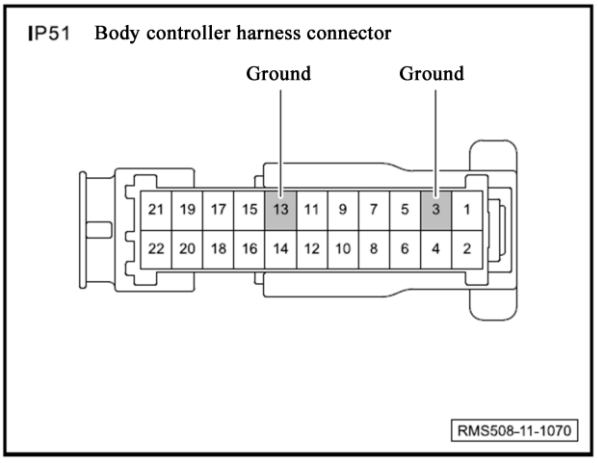
No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the body controller.







A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connectors IP48, IP51 and IP52.

C Measure the resistance of circuit between terminal 3 of the body controller harness connector IP48 and body ground.

D Measure the resistance of circuit between terminal 29/34/42 of the body controller harness connector IP50 and body ground.

E Measure the resistance of circuit between terminal 3/13 of the body controller harness connector IP51 and body ground.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.5.5.8 DTC: U007688

DTC	Description
U007688	CAN bus off

1. Diagnosis steps

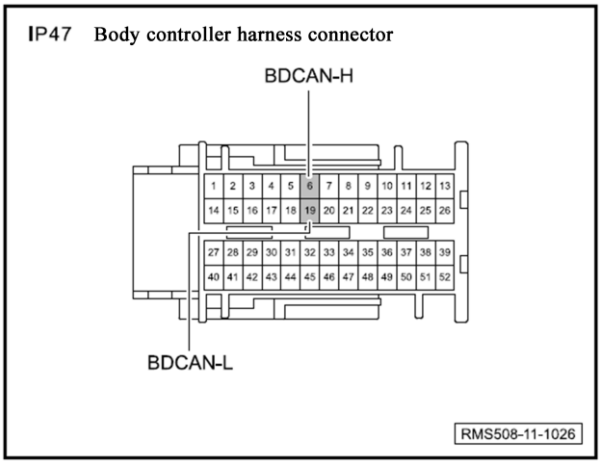
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit (with BDCAN as an example).



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Measure the resistance of circuit between terminals 6 and 19 of the body controller harness connector IP47.
Standard resistance value: about **120Ω**
D Confirm whether the resistance conforms to the standard.

No → Check whether the CAN circuit is open-circuited or short-circuited; repair or replace the harness or connector

Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.5.5.9 DTC: B221618, B221619.....

DTC	Description
B221618	Front left door motor output current below threshold
B221619	Front left door motor output current above threshold
B221602	Front left motor position signal error

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

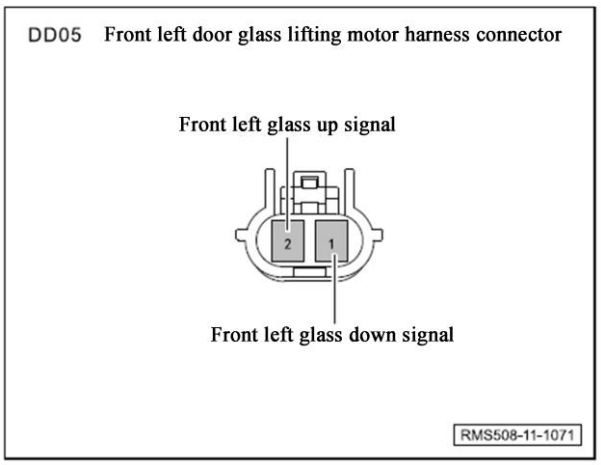
D Read the DTC again.

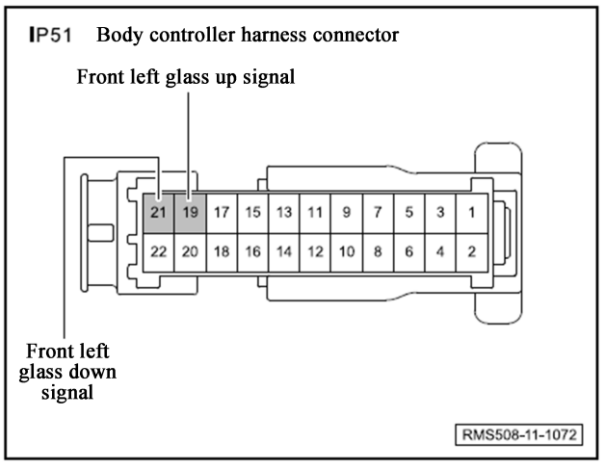
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of the front left door motor is open-circuited.



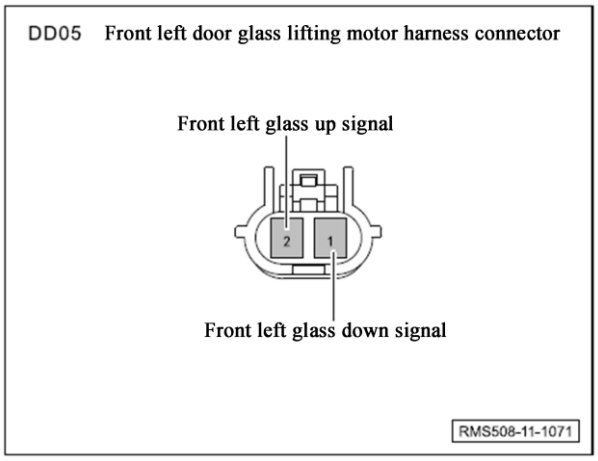


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front left door glass lifting motor harness connector DD05.
D Measure the resistance of circuit between terminal 21 of the body controller harness connector IP51 and terminal 1 of the front left door glass lifting motor harness connector DD05
E Measure the resistance of circuit between terminal 19 of the body controller harness connector IP51 and terminal 2 of the front left door glass lifting motor harness connector DD05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector

Yes

Step 3	Check whether the circuit of the front left door motor is short-circuited to the ground.

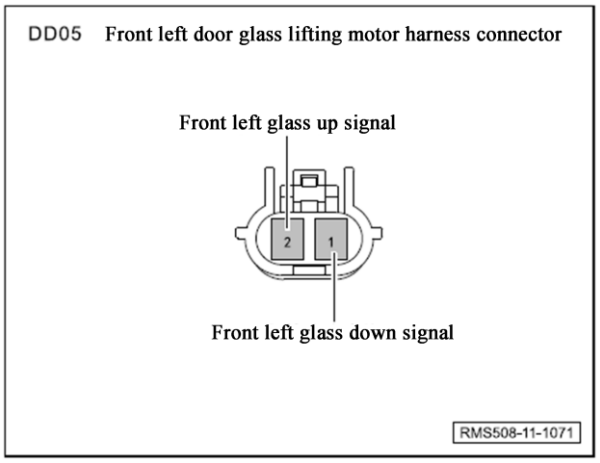


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front left door glass lifting motor harness connector DD05.
D Measure the resistance of the circuit between terminal 1/2 of the front left door glass lifting motor harness connector DD05 and the body ground.
Standard resistance value: greater than 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector

Yes

Step 4	Check whether the circuit of the front left door motor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front left door glass lifting motor harness connector DD05.
D Put the start switch to “ON” position.
E Measure the voltage of circuit between terminals 1 and 2 of the front left door glass lifting motor harness connector DD05 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness or connector

Yes

Step 5	Replace the front left door glass lifting motor.

A Replace the front left door glass lifting motor.
B Is the fault eliminated after replacing the front left door glass lifting motor?

Yes	The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

8.5.5.10 DTC: B221718, B221719.....

DTC	Description
B221718	Front right door motor output current below threshold
B221719	Front right door motor output current above threshold
B221702	Front right motor position signal error

1. Diagnosis steps

Step 1	Check the DTCs.

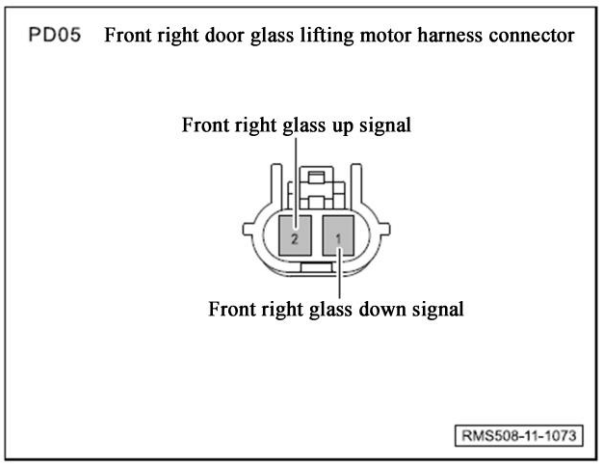
A Connect the diagnostic scanner to OBD interface.

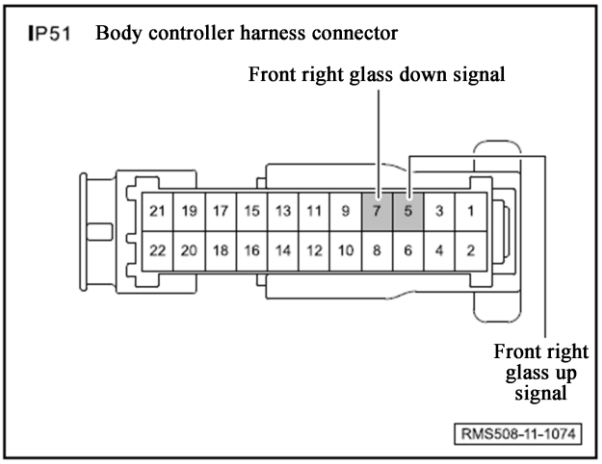
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of the front right door motor is open-circuited.



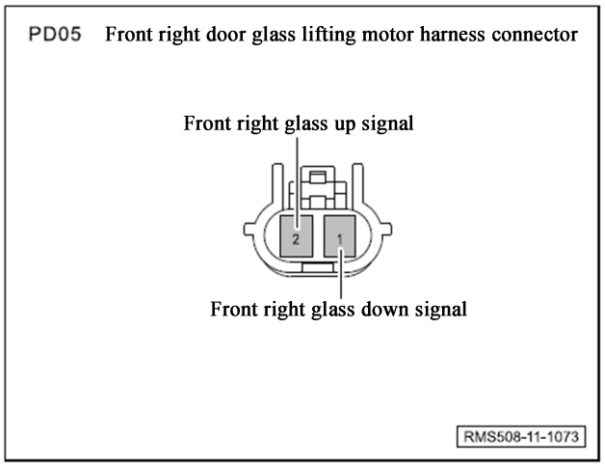


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front right door glass lifting motor harness connector PD05.
D Measure the resistance of circuit between terminal 7 of the body controller harness connector IP51 and terminal 1 of the front right door glass lifting motor harness connector PD05
E Measure the resistance of circuit between terminal 5 of the body controller harness connector IP51 and terminal 2 of the front right door glass lifting motor harness connector PD05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector

Yes

Step 3	Check whether the circuit of the front right door motor is short-circuited to the ground.

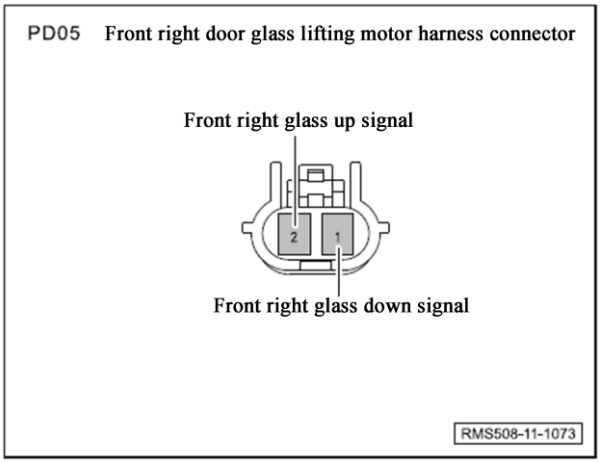


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front right door glass lifting motor harness connector PD05.
D Measure the resistance of circuit between terminals 1 and 2 of the front right door glass lifting motor harness connector PD05 and the body ground.
Standard resistance value: greater than 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector

Yes

Step 4	Check whether the circuit of the front right door motor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front right door glass lifting motor harness connector PD05.
D Put the start switch to “ON” position.
E Measure the voltage of circuit between terminals 1 and 2 of the front right door glass lifting motor harness connector PD05 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness or connector

Yes

Step 5	Replace the front right door glass lifting motor.

A Replace the front right door glass lifting motor.
B Is the fault eliminated after replacing the front right door glass lifting motor?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.5.5.11 DTC: B221818, B221819.....

DTC	Description
B221818	Rear left door motor output current below threshold
B221819	Rear left door motor output current above threshold
B221802	Rear left motor position signal error

1. Diagnosis steps

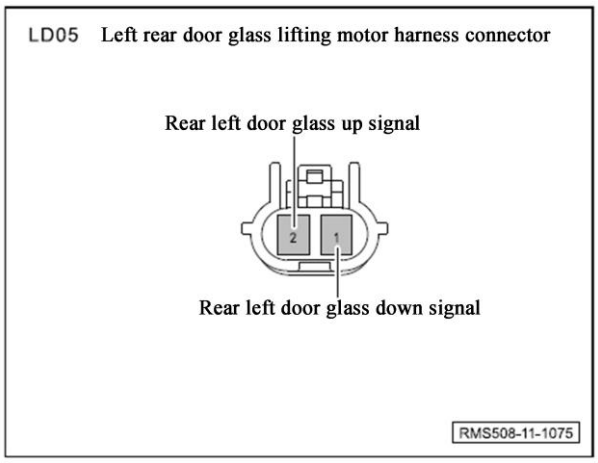
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

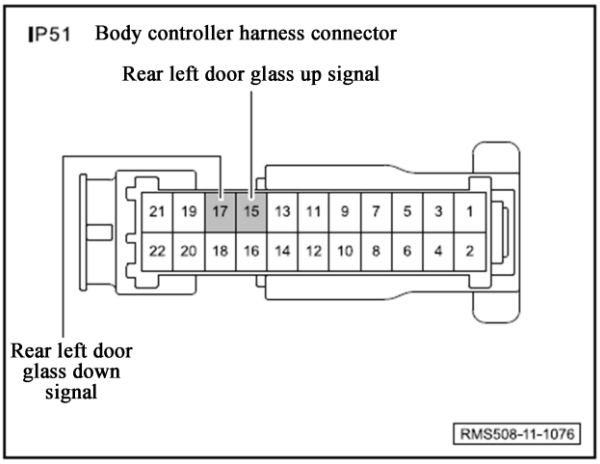
Yes

Step 2	Check whether the circuit of the rear left door motor is open-circuited.



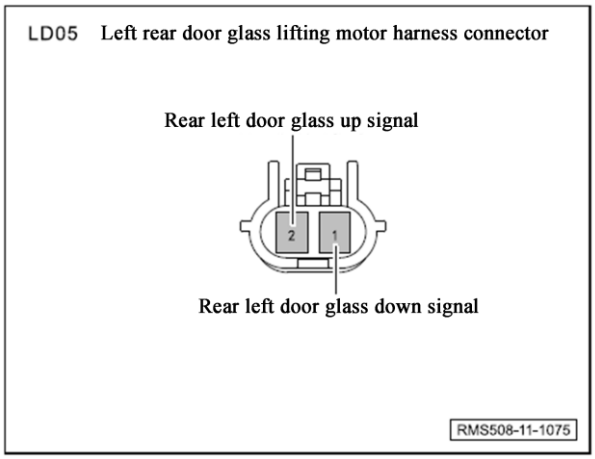
A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the rear left door glass lifting motor harness connector LD05.
D Measure the resistance of circuit between terminal 17 of the body controller harness connector IP51 and terminal 1 of the rear left door glass lifting motor harness connector LD05
E Measure the resistance of circuit between terminal 15 of the body controller harness connector IP51 and terminal 2 of the rear left door glass lifting motor harness connector LD05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness or connector



Yes

Step 3	Check whether the circuit of the rear left door motor is short-circuited to the ground.

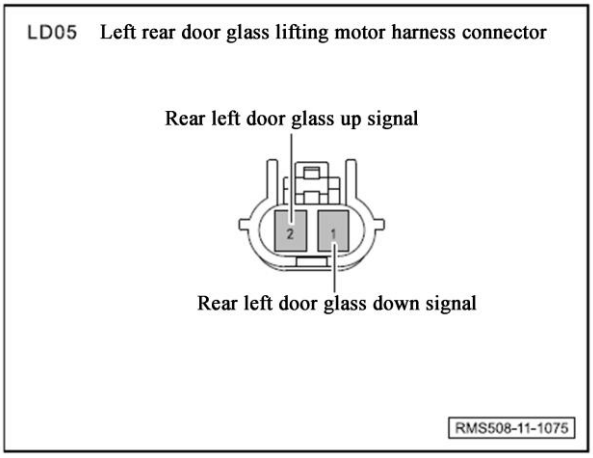


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the rear left door glass lifting motor harness connector LD05.
D Measure the resistance of the circuit between terminal 1/2 of the rear left door glass lifting motor harness connector LD05 and the body ground.
Standard resistance value: greater than 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector

Yes

Step 4	Check whether the circuit of the rear left door motor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the rear left door glass lifting motor harness connector LD05.
D Put the start switch to “ON” position.
E Measure the voltage of the circuit between terminal 1/2 of the rear left door glass lifting motor harness connector LD05 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness or connector

Yes

Step 5	Replace the rear left door glass lifting motor.

A Replace the rear left door glass lifting motor.
B Is the fault eliminated after replacing the rear left door glass lifting motor?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.5.5.12 DTC: B221918, B221919.....

DTC	Description
B221918	Rear right door motor output current below threshold
B221919	Rear right door motor output current above threshold
B221902	Rear right motor position signal error

1. Diagnosis steps

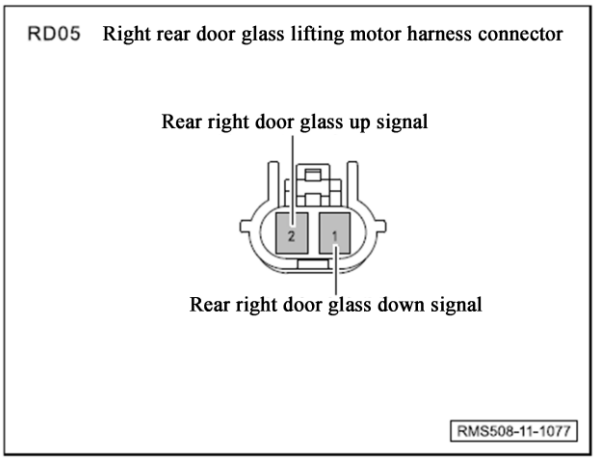
Step 1	Check the DTCs.

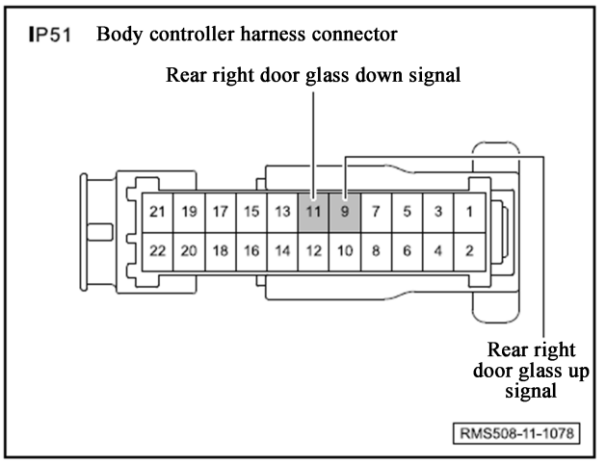
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit of the rear right door motor is open-circuited.



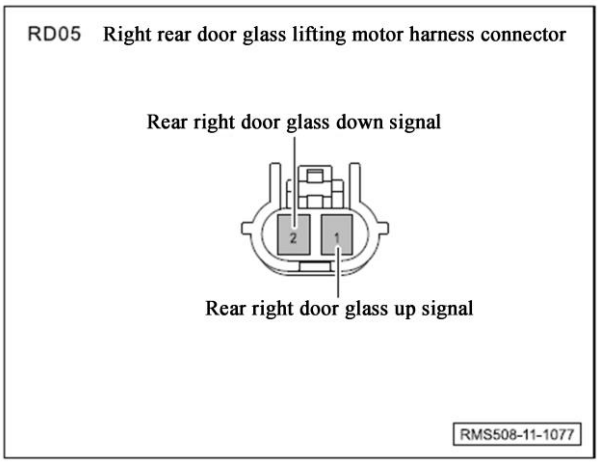


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the rear right door glass lifting motor harness connector RD05.
D Measure the resistance of circuit between terminal 11 of the body controller harness connector IP51 and terminal 1 of the rear right door glass lifting motor harness connector RD05
E Measure the resistance of circuit between terminal 9 of the body controller harness connector IP51 and terminal 2 of the rear right door glass lifting motor harness connector RD05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector

Yes

Step 3	Check whether the circuit of the rear right door motor is short-circuited to the ground.

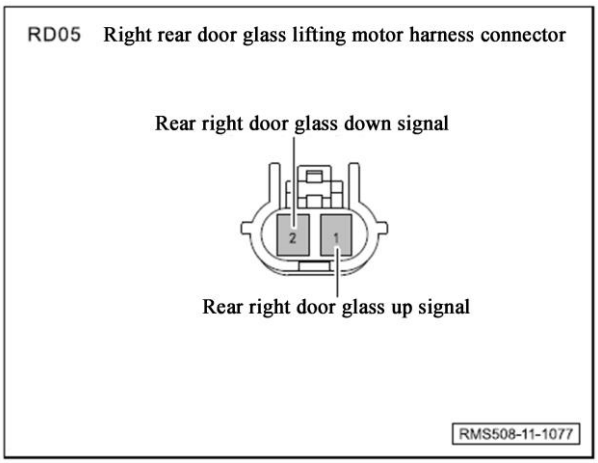


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the rear right door glass lifting motor harness connector RD05.
D Measure the resistance of the circuit between terminal 1/2 of the rear right door glass lifting motor harness connector RD05 and the body ground.
Standard resistance value: greater than 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector

Yes

Step 4	Check whether the circuit of the rear right door motor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the rear right door glass lifting motor harness connector RD05.
D Put the start switch to “ON” position.
E Measure the voltage of circuit between terminals 1 and 2 of the rear right door glass lifting motor harness connector RD05 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No	Repair or replace the harness or connector

Yes

Step 5	Replace the rear right door glass lifting motor.

A Replace the rear right door glass lifting motor.
B Is the fault eliminated after replacing the rear right door glass lifting motor?

Yes	The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

Next

Step 7	The diagnosis is over.

8.5.5.13 DTC: B222011, B222311.....

DTC	DTC definition
B222011	Passenger front right lifting manual button is short-circuited
B222311	Passenger front right lowering manual button is short-circuited
B222611	Passenger front right automatic button is short-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

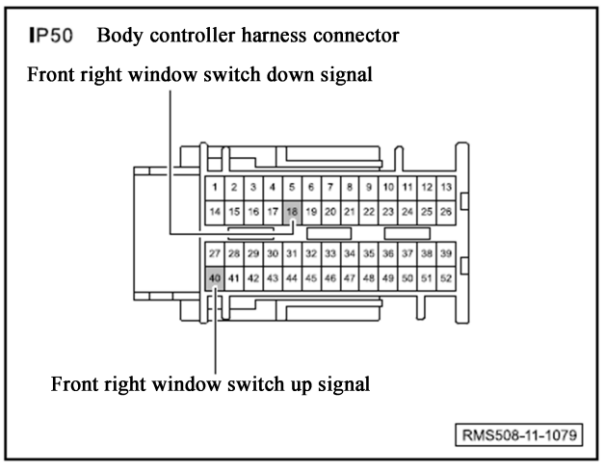
Step 2	Check the front right window switch.

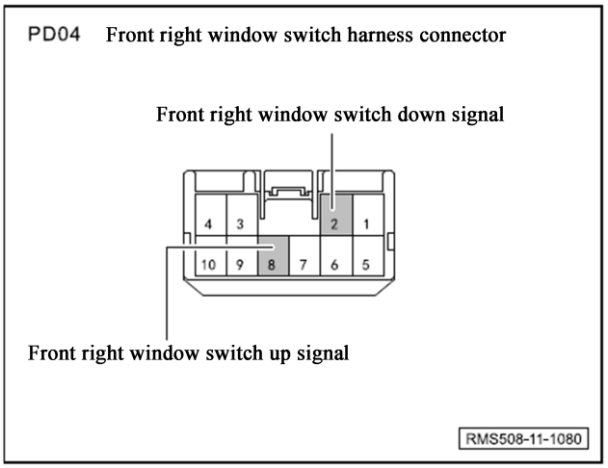
A Check whether the front right window switch is watered or stuck.

Yes → Replace the front right window switch.

No

Step 3	Check whether the circuit of the front right window switch is open-circuited.



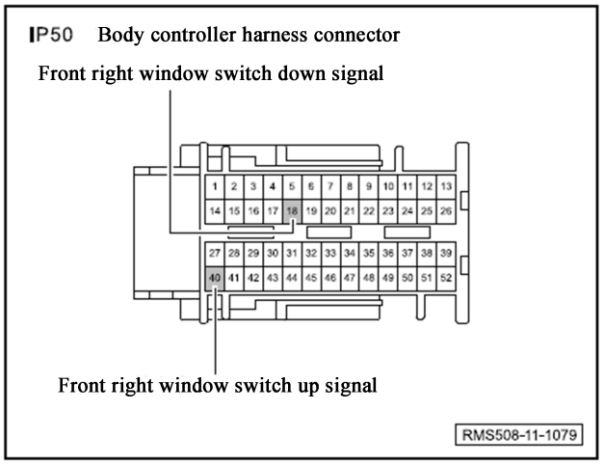


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the front right window switch harness connector PD04.
D Measure the resistance between terminal 40 of the body controller harness connector IP50 and terminal 8 of the front right window switch harness connector PD04.
E Measure the resistance between terminal 18 of the body controller harness connector IP50 and terminal 2 of the front right window switch harness connector PD04.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the front right window switch is short-circuited to the ground.

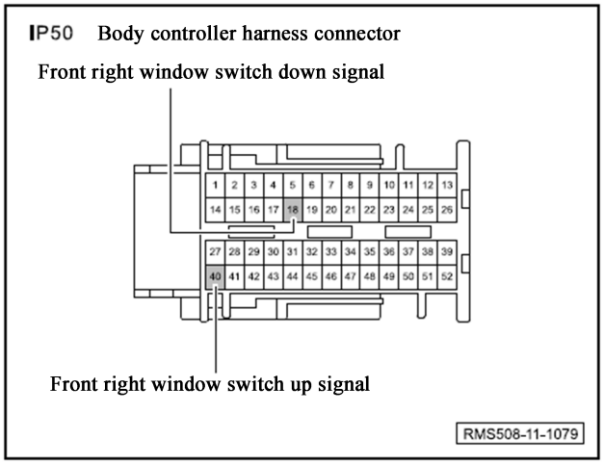


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the front right window switch harness connector PD04.
D Measure the resistance between terminal 40/18 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the front right window switch is short-circuited to the power supply.

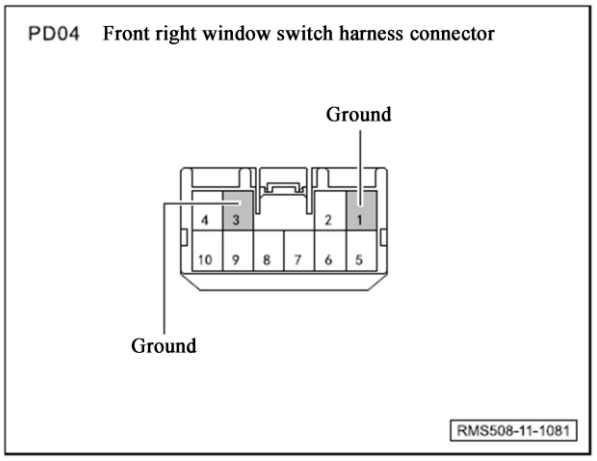


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the front right window switch harness connector PD04.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 40/18 of the body controller harness connector IP50 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Check the ground circuit of the front right window switch.



A Turn the start switch to "OFF" position.
B Disconnect the front right window switch harness connector PD04.
C Measure the resistance between terminal 1/3 of the front right window switch harness connector PD04 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the front right window switch.

A Replace the front right window switch.
B Is the fault eliminated after replacing the front right window switch?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.5.5.14 DTC: B222111, B222411.....

DTC	DTC definition
B222111	Passenger rear left lifting manual button is short-circuited
B222411	Passenger rear left lowering manual button is short-circuited
B222811	Passenger rear left automatic button is short-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

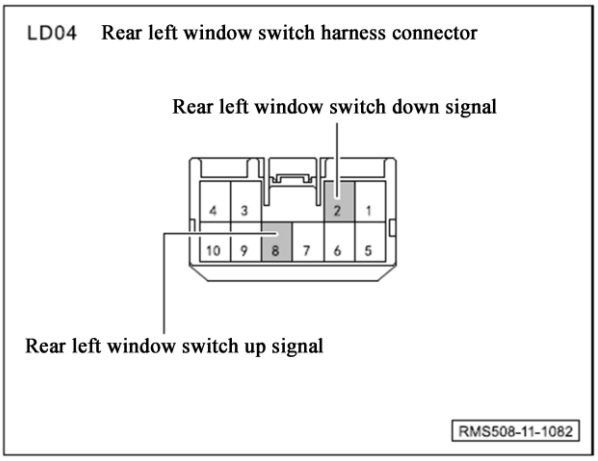
Step 2	Check the rear left window switch.

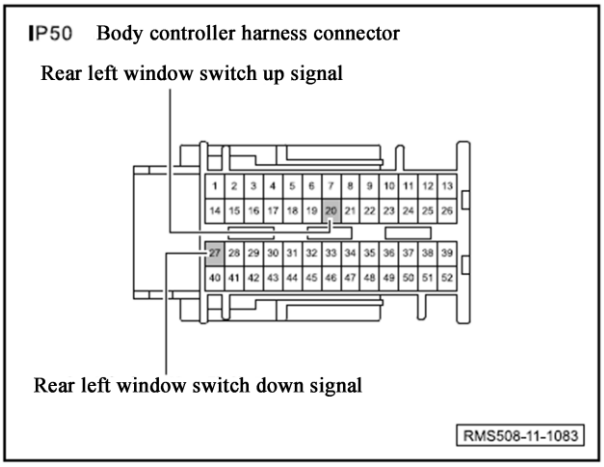
A Check whether the rear left window switch is watered or stuck.

Yes → Replace the rear left window switch.

No

Step 3	Check whether the circuit of the rear left window switch is open-circuited.



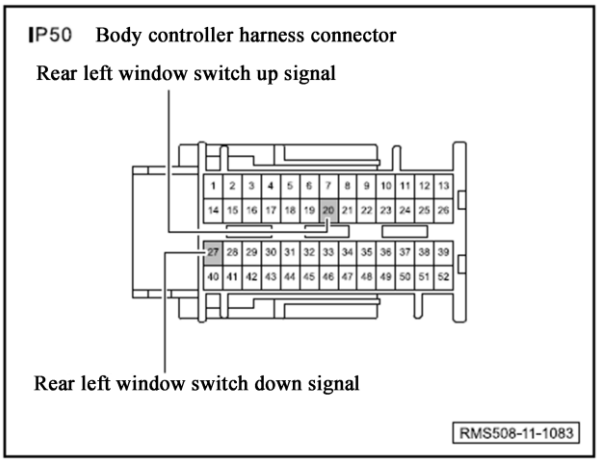


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear left window switch harness connector LD04.
D Measure the resistance between terminal 20 of the body controller harness connector IP50 and terminal 8 of the rear left window switch harness connector LD04
E Measure the resistance between terminal 27 of the body controller harness connector IP50 and terminal 2 of the rear left window switch harness connector LD04.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the circuit of the rear left window switch is short-circuited to the ground.

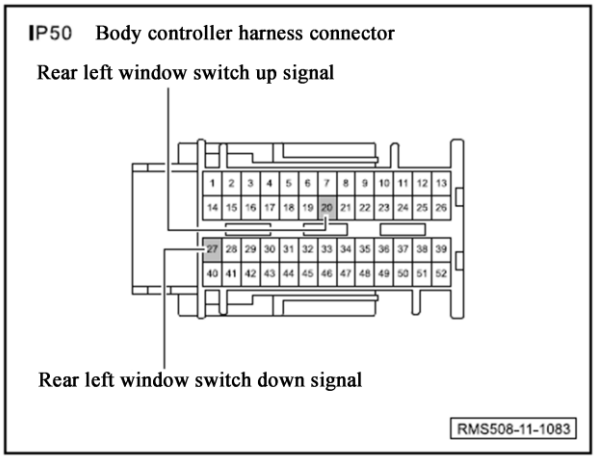


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear left window switch harness connector LD04.
D Measure the resistance between terminal 20/27 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the rear left window switch is short-circuited to the power supply.

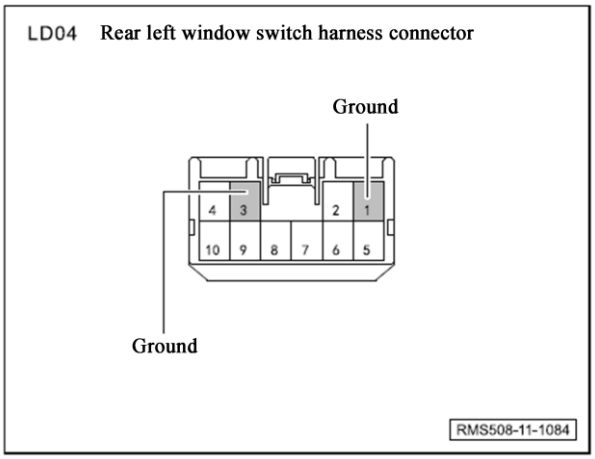


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear left window switch harness connector LD04.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 20/27 of the body controller harness connector IP50 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Check the ground circuit of the rear left window switch.



A Turn the start switch to "OFF" position.
B Disconnect the rear left window switch harness connector LD04.
C Measure the resistance between terminal 1/3 of the rear left window switch harness connector LD04 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the rear left window switch.

A Replace the rear left window switch.
B Is the fault eliminated after replacing the rear left window switch?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.5.5.15 DTC: B222211, B222511.....

DTC	DTC definition
B222211	Passenger rear right lifting manual button is short-circuited
B222511	Passenger rear right lowering manual button is short-circuited
B222711	Passenger rear right automatic button is short-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

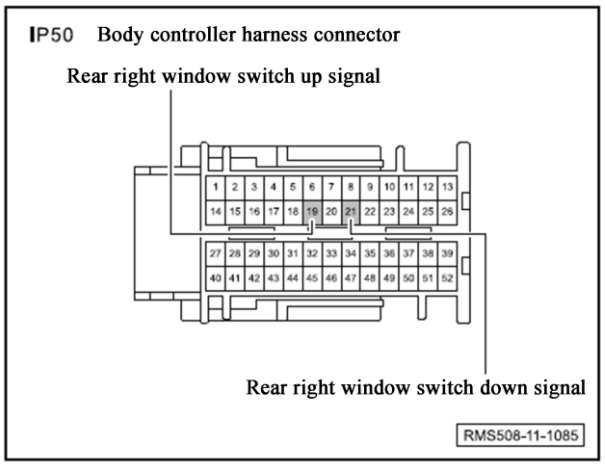
Step 2	Check the rear right window switch.

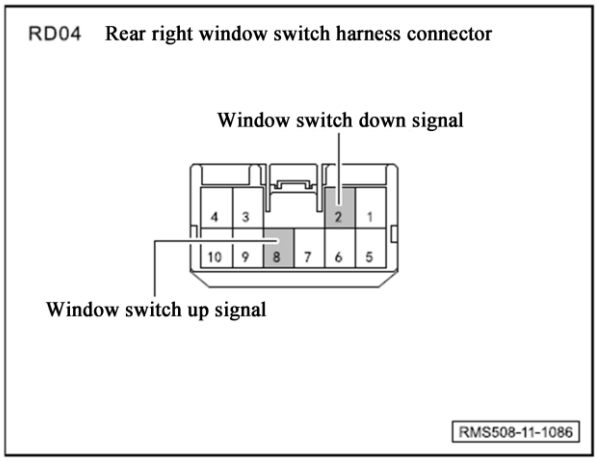
A Check whether the rear right window switch is watered or stuck.

Yes → Replace the rear right window switch.

No

Step 3	Check whether the circuit of the rear right window switch is open-circuited.



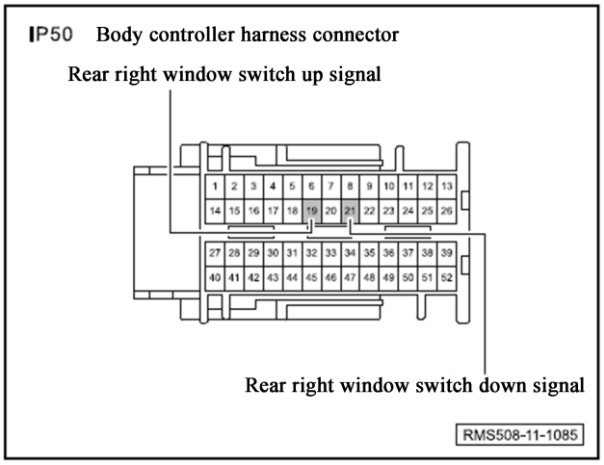


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear right window switch harness connector RD04.
D Measure the resistance between terminal 19 of the body controller harness connector IP50 and terminal 8 of the rear right window switch harness connector RD04
E Measure the resistance between terminal 21 of the body controller harness connector IP50 and terminal 2 of the rear right window switch harness connector RD04.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the rear right window switch is short-circuited to the ground.

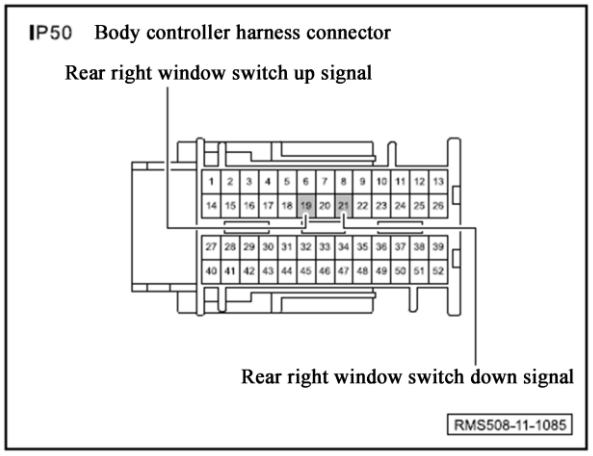


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear right window switch harness connector RD04.
D Measure the resistance between terminal 19/21 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the rear right window switch is short-circuited to the power supply.

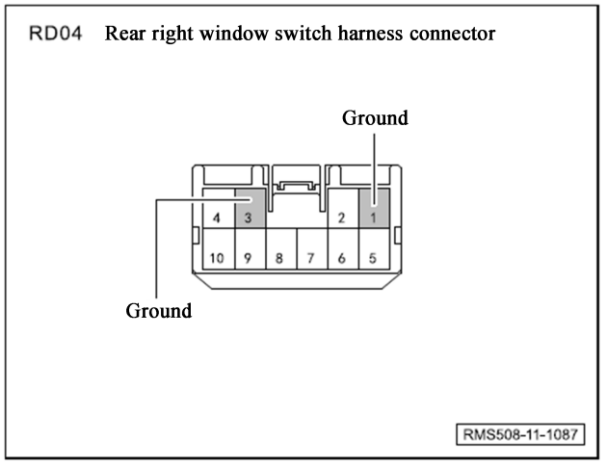


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear right window switch harness connector RD04.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 19/21 of the body controller harness connector IP50 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Check the ground circuit of the rear right window switch.



A Turn the start switch to "OFF" position.
B Disconnect the rear right window switch harness connector RD04.
C Measure the resistance between terminal 1/3 of the rear right window switch harness connector RD04 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the rear right window switch.

A Replace the rear right window switch.
B Is the fault eliminated after replacing the rear right window switch?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.5.5.16 DTC: U014087

DTC	Description
U014087	Lost communication with BDC

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses IF19, IF01, IF23, ISB02 and ISB03 of the body controller.

A Check whether fuses IF19, IF01, IF23, ISB02 and ISB03 are blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuits of fuses IF19, IF01, IF23, ISB02 and ISB03.

A Check whether the circuits of fuses IF19, IF01, IF23, ISB02 and ISB03 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

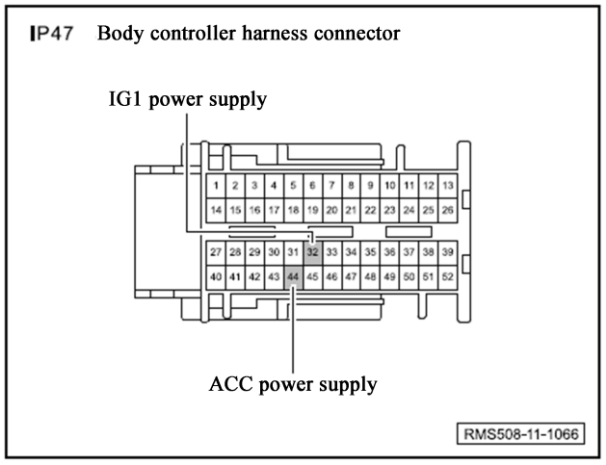
C Replace blown fuses with fuses of rated current.
The rated values of fuses are **IF195A, IF235A, IF0120A, ISB0220A, ISB0320A**

D Confirm whether the body controller works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the body controller.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the body controller harness connector IP52.

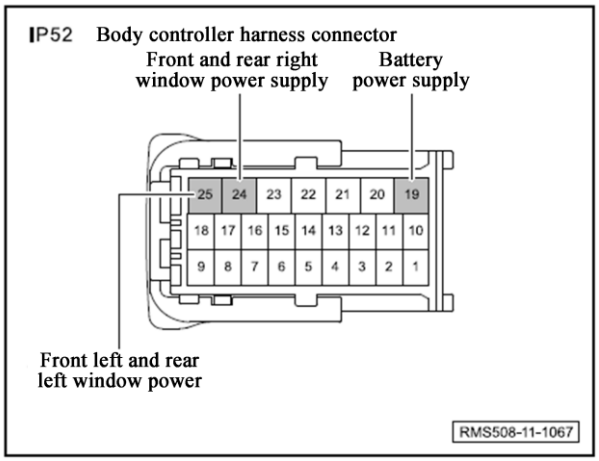
D Put the Start switch to “ON” position.

E Measure the voltage of the circuit between terminal 32/44 of the body controller harness connector IP47 and the body ground.

F Measure the voltage of the circuit between terminal 19/24/25 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **11~14V**

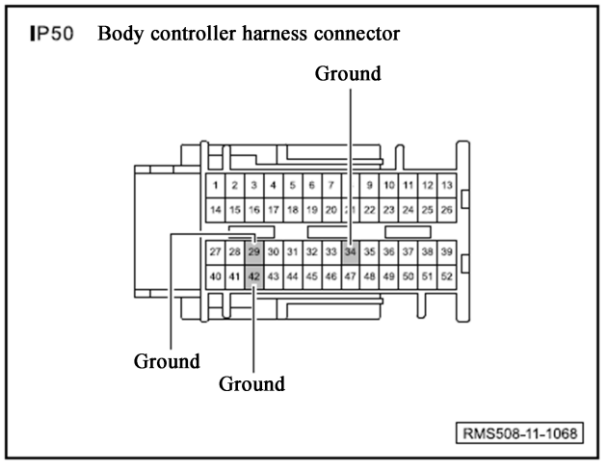
G Make sure that the voltage conforms to the standard value.

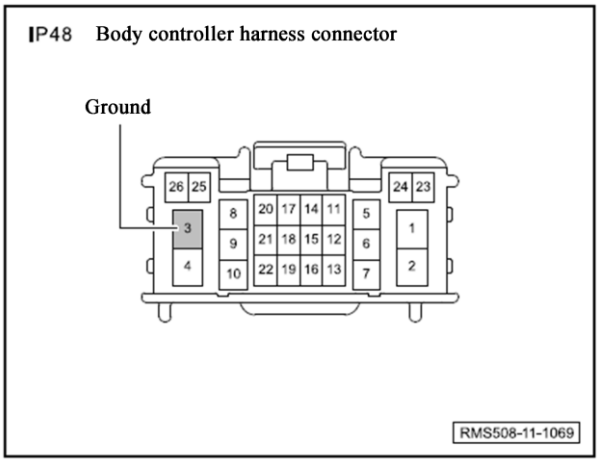
No → Repair or replace the harness.



Yes

Step 5	Check the ground circuit of the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connectors IP48, IP50 and IP51.

C Measure the resistance of circuit between terminal 3 of the body controller harness connector IP48 and body ground.

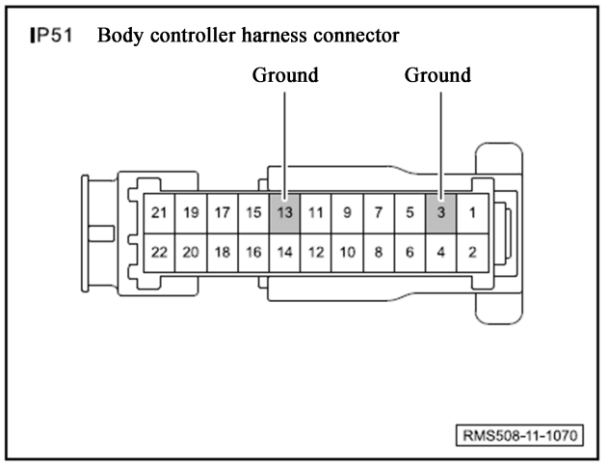
D Measure the resistance of circuit between terminal 29/34/42 of the body controller harness connector IP50 and body ground.

E Measure the resistance of circuit between terminal 3/13 of the body controller harness connector IP51 and body ground.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.



Yes

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

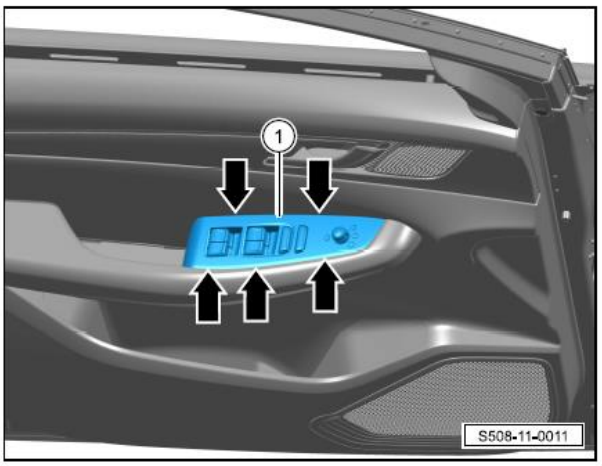
8.5.6 Removal and installation

8.5.6.1 Removal and installation of electric window main switch

Disassembly procedures

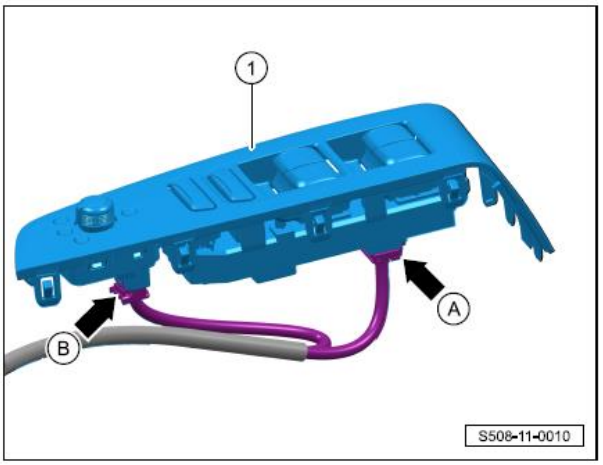
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

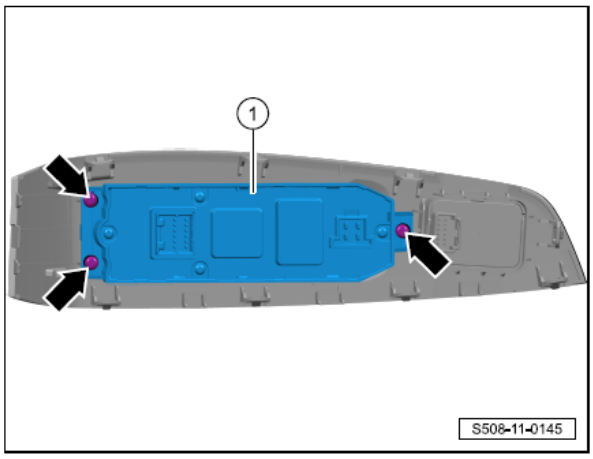


3 Remove the electric window main switch

a. Use interior trim removal tools to remove the front left door switch panel assembly ① (see arrow).



b. Disconnect the connector (see arrows A and B), and take out the front left door switch panel assembly ①.



c. Unscrew the fixing screw (see arrow), and take out the electric window main switch ①.

- Tightening torque of screw: **3±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the electric window main switch and the power rearview mirror switch.

8.5.6.2 Removal and installation of electric window auxiliary switch

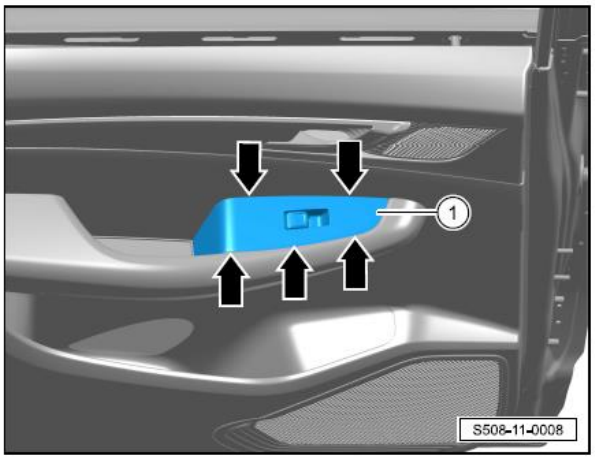
Disassembly procedures

Tip:

The removal and installation procedures are only for the electric window auxiliary switch of the left rear door, which can be basically referred to for other doors.

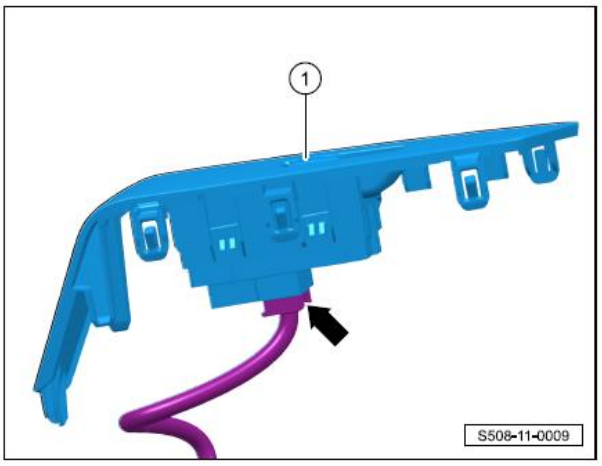
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

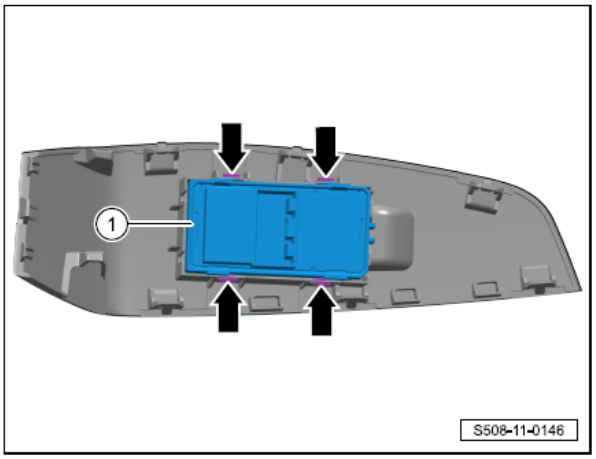


3 Remove the electric window auxiliary switch

a. Use interior trim removal tools to remove the rear door switch panel assembly ① in the position of the arrow.



b. Disconnect the connector (see arrow), and take out the rear door switch panel assembly ①.



c. Disengage the fixing clip (see the arrow), and remove the electric window auxiliary switch ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the electric window auxiliary switch.

8.5.6.3 Removal and installation of front door glass

Disassembly procedures

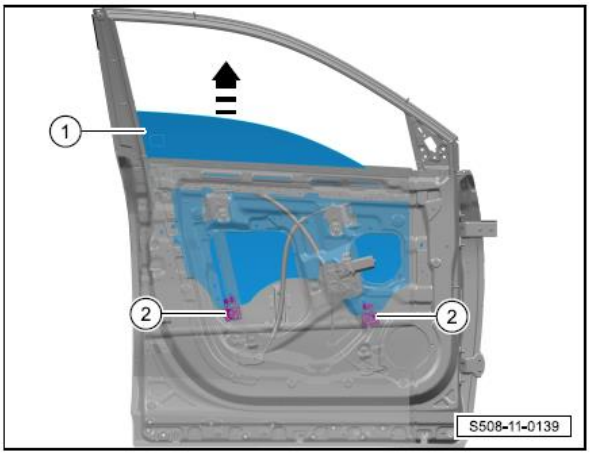
Tip:

The removal and installation steps are only for the front left door glass, which can be basically referred to for the front right one.

1 Remove the front door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

2 Remove the front door waterproof film. Refer to 9.6.3.18 Removal and installation of front door waterproof film

3 Remove the interior weatherstrip of front door glass. Refer to 9.6.3.9 Removal and installation of interior weatherstrip of front door glass



4 Remove the front door glass

a. Lower the front door glass ① till the fixing jaws ② on both sides of the front door glass can be seen.

b. Use interior trim removal tools to disengage the fixing jaws ② on both sides of the front door glass ①.

c. Remove the front door glass ① in the direction of the arrow.

Notes

If the working steps fail to be continued due to the fault of the front door window regulator, remove the front door window regulator assembly so that the front door glass can be adjusted to the proper removal position.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, perform a function test on the front door glass lifting.

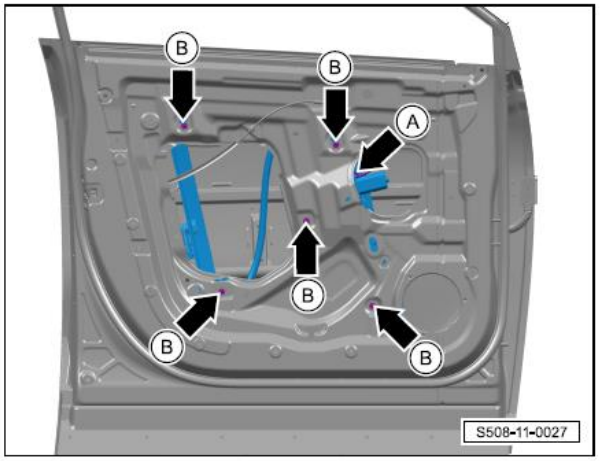
8.5.6.4 Removal and installation of front door window regulator assembly

Disassembly procedures

Tip:

The removal and installation steps are only for the front left door window regulator, which can be basically referred to for the front right one.

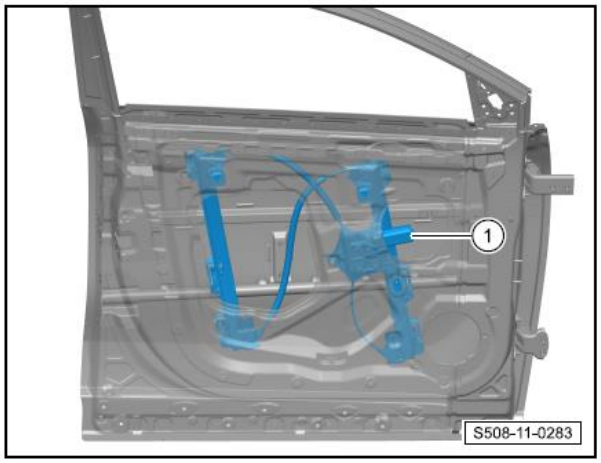
1 Remove the front door glass. Refer to 8.5.6.3 Removal and installation of front door glass



2 Remove the front door window regulator assembly

a. Disconnect the connector of the front door window regulator assembly (see arrow A).

b. Unscrew the fixing bolts of the front door window regulator assembly (see arrow B).



c. Remove the front door window regulator assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the front door window regulator assembly.

8.5.6.5 Removal and installation of front door glass peripheral rubber strip

Disassembly procedures

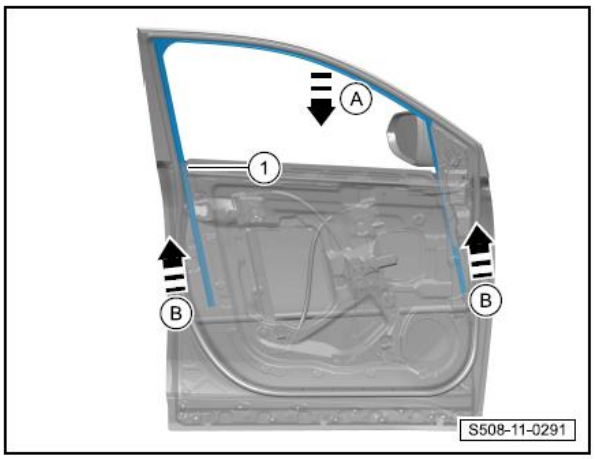
Tip:

The removal and installation steps are only for the front left door glass peripheral rubber strip, which can be basically referred to for the front right one.

1 Lower the front door glass to a proper position.

2 Remove the front door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

3 Remove the interior weatherstrip of front door glass. Refer to 9.6.3.9 Removal and installation of interior weatherstrip of front door glass



4 Remove the front door glass peripheral rubber strip

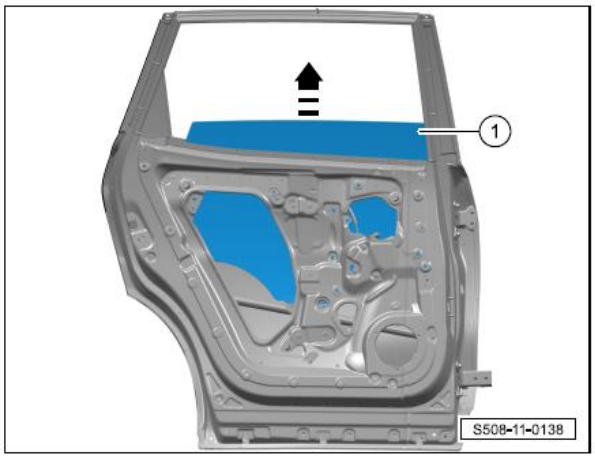
a. Disengage the front door glass peripheral rubber strip ① in the direction of arrow A.

b. Remove the front door glass peripheral rubber strip ① in the direction of arrow B.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- During installation, apply a little lubricating oil to the glass slip rubber strip, slowly push the front door glass peripheral rubber strip into the guide slot, and open the front door waterproof film to check whether the front door glass peripheral rubber strip is installed in place.



8.5.6.6 Removal and installation of rear door glass

Disassembly procedures

Tip:

The removal and installation steps are only for the rear left door glass, which can be basically referred to for the rear right one.

1 Remove the rear door rear chute component. Refer to 8.5.6.10 Removal and installation of rear door rear chute component

2 Remove the rear door glass.

a. Take out the rear door window ① in the direction of the arrow.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, test the rear door glass lifting function.

8.5.6.7 Removal and installation of rear door window regulator assembly

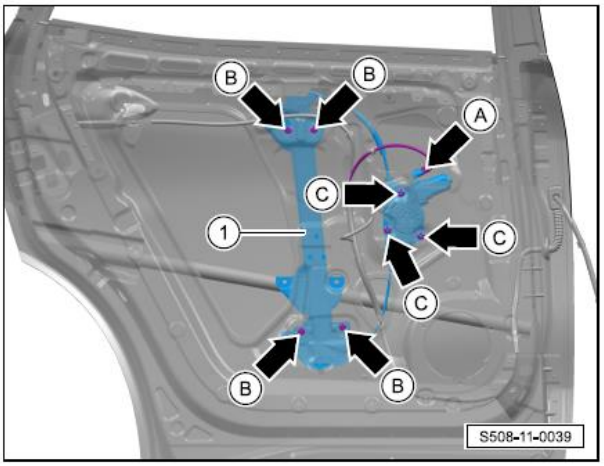
Disassembly procedures

Tip:

The removal and installation steps are only for the rear left door window regulator, which can be basically referred to for the rear right one.

1 Remove the rear door rear chute component. Refer to 8.5.6.10 Removal and installation of rear door rear chute component

2 Remove the rear door glass. Refer to 8.5.6.6 Removal and installation of rear door glass



3 Remove the rear door window regulator assembly

a. Disconnect the connector (see arrow A) of the rear door window regulator assembly ①.

b. Unscrew the fixing bolt of the rear door window regulator assembly ① (see arrow B).

c. Unscrew the fixing nut (see arrow C), and remove the rear door window regulator assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear door window regulator.

8.5.6.8 Removal and installation of rear door glass peripheral rubber strip

Disassembly procedures

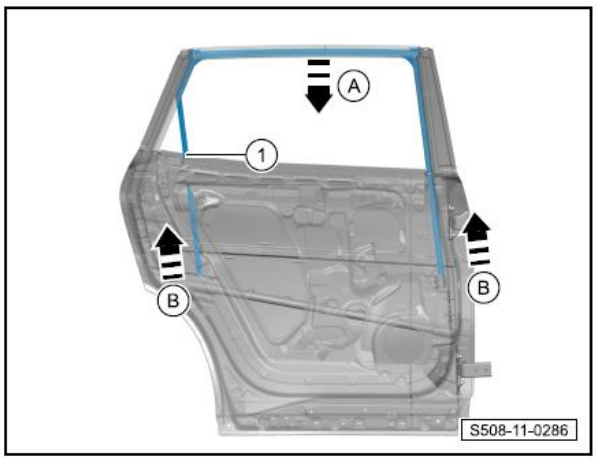
Tip:

The removal and installation steps are only for the rear left door glass peripheral rubber strip, which can be basically referred to for the rear right one.

1 Lower the rear door glass to a proper position.

2 Remove the rear door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly

3 Remove the interior weatherstrip of rear door glass. Refer to 9.7.3.8 Removal and installation of interior weatherstrip of rear door glass



4 Remove the rear door glass peripheral rubber strip

a. Disengage the rear door glass peripheral rubber strip ① in the direction of arrow A.

b. Remove the rear door glass peripheral rubber strip ① in the direction of arrow B.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- During installation, apply a little lubricating oil to the glass slip rubber strip, slowly push the rear door glass peripheral rubber strip into the guide slot, and open the rear door waterproof film to check whether the rear door

glass peripheral rubber strip is installed in place.

8.5.6.9 Removal and installation of front door rear chute component

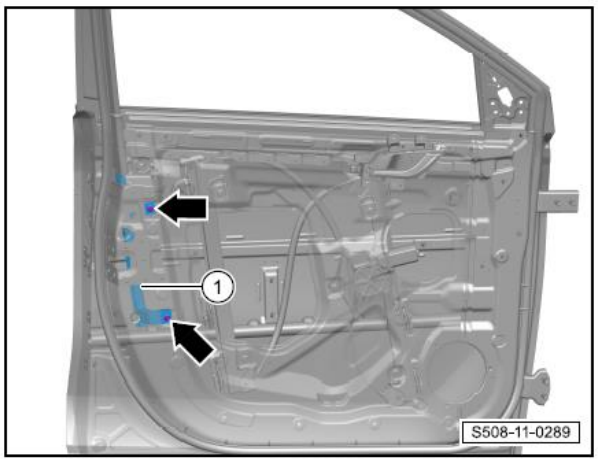
Disassembly procedures

Tip:

The removal and installation steps are only for the front left door rear chute component, which can be basically referred to for the front right one.

1 Remove the front door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

2 Remove the front door glass peripheral rubber strip. Refer to 8.5.6.5 Removal and installation of front door glass peripheral rubber strip



3 Remove the front door rear chute component

a. Unscrew the fixing bolt of the front door rear chute assembly ① (see arrow).

b. Adjust the position of the front door glass assembly, and take out the front door rear chute component ①.

Notes

If the working steps fail to be continued due to the fault of the front door window regulator, remove the front door window regulator assembly so that the front door glass assembly can be adjusted to the proper removal position.

Installation procedures

The installation procedure is to be performed in reverse order.

8.5.6.10 Removal and installation of rear door rear chute component

Disassembly procedures

Tip:

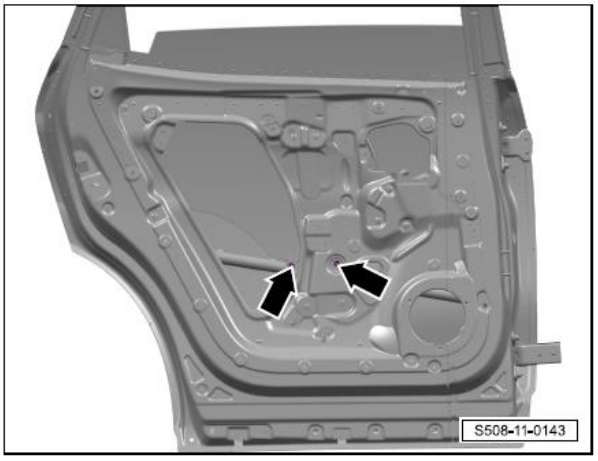
The removal and installation steps are only for the rear left door chute component, which can be basically referred to for the rear right one.

1 Remove the rear door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly

2 Remove the interior weatherstrip of rear door glass. Refer to 9.7.3.8 Removal and installation of interior weatherstrip of rear door glass

3 Remove the rear door glass outer weatherstrip. Refer to 9.7.3.7 Removal and installation of rear door glass outer weatherstrip

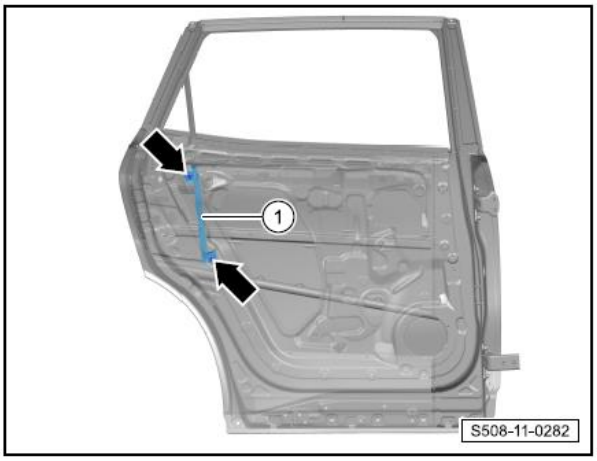
4 Remove the rear door glass peripheral rubber strip. Refer to 8.5.6.8 Removal and installation of rear door glass peripheral rubber strip



5 Remove the rear door rear chute component

a. Lower the rear door glass assembly till the fixing bolts can be seen (see the arrow).

b. Unscrew the fixing bolts (see the arrows) of the rear door glass assembly.



c. Unscrew the fixing bolt of the rear door rear chute assembly ① (see arrow).

d. Adjust the position of the rear door glass assembly, and take out the rear door rear chute component ①.

Notes

If the working steps fail to be continued due to the fault of the rear door window regulator, remove the rear door window regulator assembly so that the rear door glass assembly can be adjusted to the proper removal position.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.6 Rearview mirror

8.6.1 System description

8.6.1.1 System description

System Overview

Rearview mirrors are divided into interior rearview mirrors and exterior rearview mirrors, which are fixed on the top of the middle part of the front windshield and outside the left/right body respectively to observe the situation inside the compartment and behind the vehicle. The exterior rearview mirror can be adjusted to relevant angle conveniently in the vehicle, and the driver may adjust the mirror to a suitable vision range as needed.

Function and operation of exterior rearview mirror

Exterior rearview mirror electric adjustment

- The angle of the exterior rearview mirror can be adjusted via the exterior rearview mirror adjustment switch, including up/down and left/right adjustment.
- When adjusting the left exterior rearview mirror, turn the power supply to ACC or ON, rotate the exterior rearview mirror adjustment knob to "L", and turn the exterior rearview mirror adjustment knob in up, down, left and right directions to adjust the exterior rearview mirror to a proper angle.
- When adjusting the right exterior rearview mirror, turn the power supply to ACC or ON, rotate the exterior rearview mirror adjustment knob to "R", and turn the exterior rearview mirror adjustment knob in up, down, left and right directions to adjust the exterior rearview mirror to a proper angle.

Exterior rearview mirror heating control

- When the rear defrosting function is enabled through the A/C control panel, the exterior rearview mirror heating function will be enabled at the same time; when the rear defrosting function is disabled, the exterior rearview mirror heating function will also be disabled at the same time. Power folding control of exterior rearview mirror
- The left and right exterior rearview mirrors are simultaneously folded or unfolded by operating the power exterior rearview mirror folding switch.

Function and operation of interior rearview mirror

The automatic anti-glare interior rearview mirror monitors rear light intensity in real time, and automatically adjusts mirror reflection effect to dim and prevent glare of the strong light reflected to the eyes of the driver through the interior rearview mirror.

To ensure the normal function of the anti-glare interior rearview mirror sensor, do not cover the sensor with fingers or cloth.

Tip:

Before driving the vehicle, do adjust the interior rearview mirror to a proper angle.

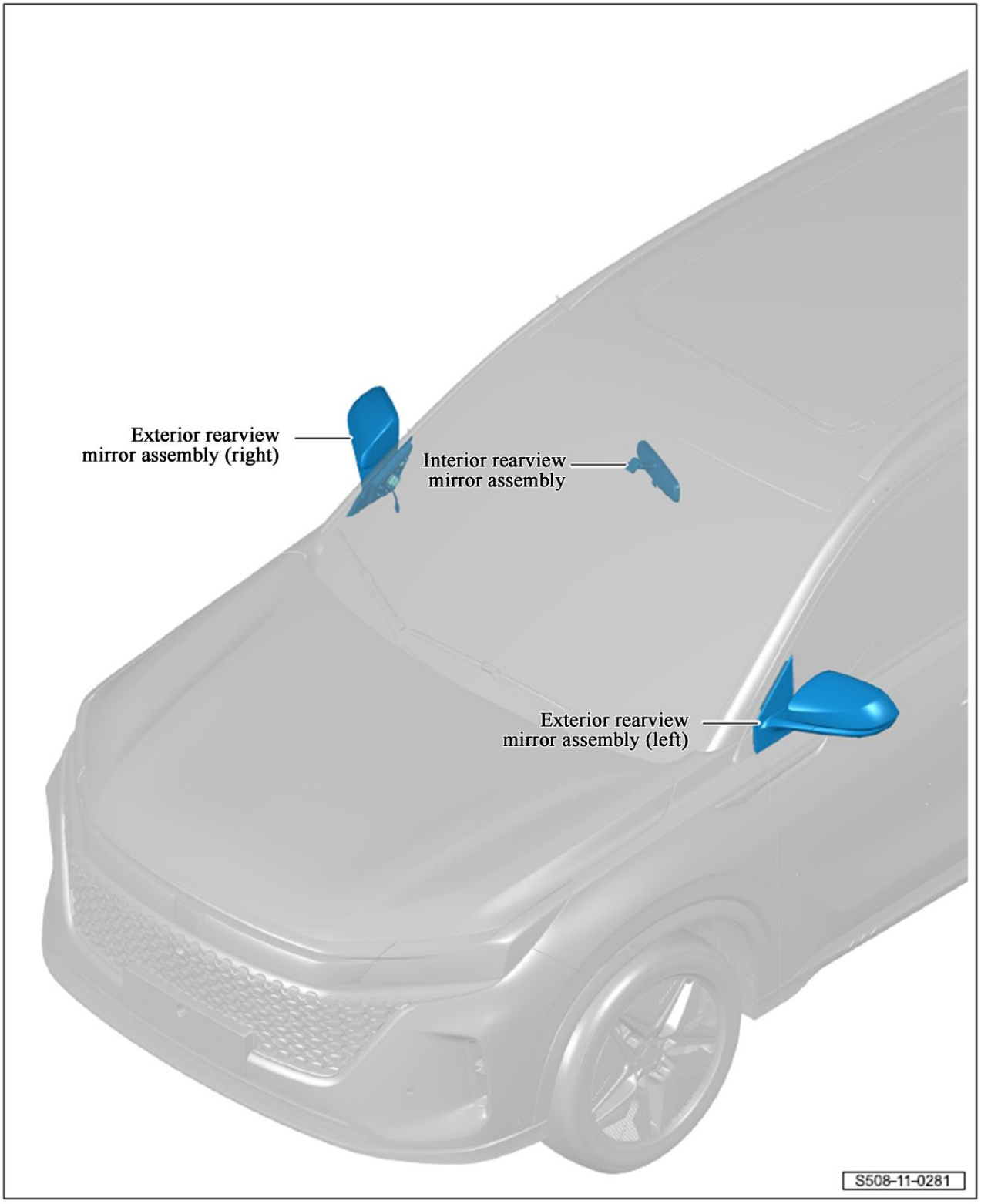
Hold the interior rearview mirror, and adjust it up, down, left and right to the optimal position.

Do not adjust the interior rearview mirror when driving the vehicle to avoid distraction to result in loss of control and danger.

8.6.2 Component position

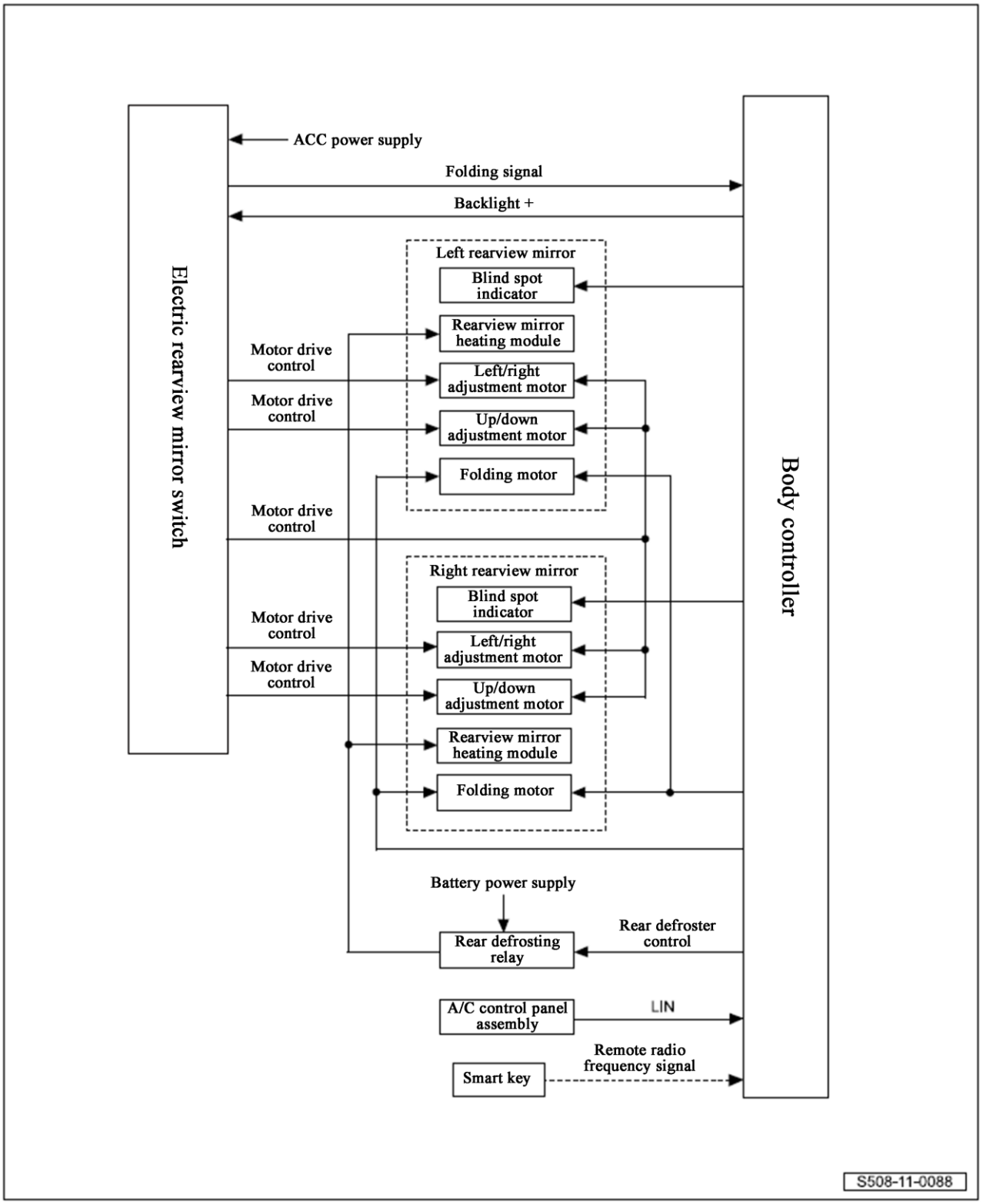
8.6.2.1 Component position

Component position



8.6.3 Electrical schematic diagram

8.6.3.1 Electrical schematic diagram



8.6.4 Removal and installation

8.6.4.1 Removal and installation of exterior rearview mirror assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the right exterior rearview mirror assembly, which can be basically referred to for the left one.

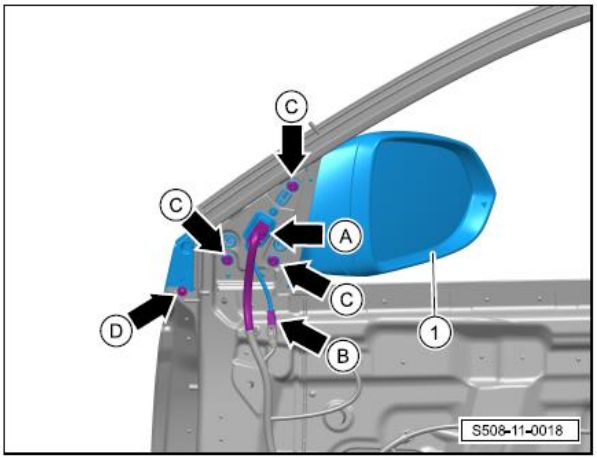
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front door triangle trim assembly. Refer to 9.6.3.16 Removal and installation of front door triangle trim assembly

3 Remove the front door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

4 Open the front door, and disengage a corner of front door rubber strip.



5 Remove the exterior rearview mirror assembly

a. Disconnect the connectors (see arrows A and B) of the exterior rearview mirror assembly ①.

b. Unscrew the fixing bolt (see arrow C) of the exterior rearview mirror assembly ①.

c. Unscrew the fixing screw (see arrow D), and remove the exterior rearview mirror assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

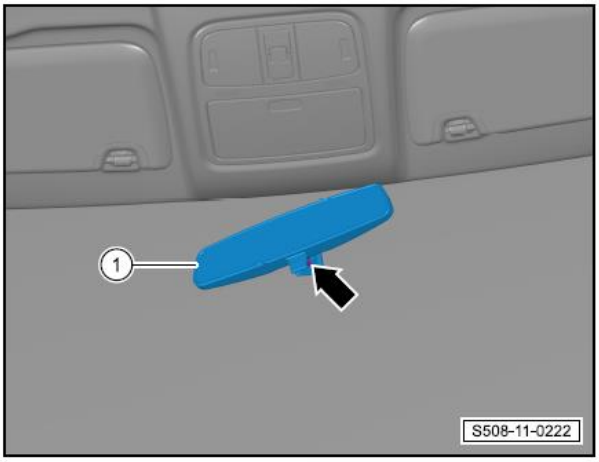
- After the installation, perform a function test on the exterior rearview mirror assembly.

8.6.4.2 Removal and installation of interior rearview mirror assembly (manual anti-glare)

Disassembly procedures

Tip:

When removing the interior rearview mirror assembly, be sure to remove and install it carefully to prevent damage to the front windshield.



1 Remove the interior rearview mirror assembly

a. Unscrew the fixing bolts (see the arrows), and remove the interior rearview mirror assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.6.4.3 Removal and installation of interior rearview mirror assembly (automatic, anti-glare)

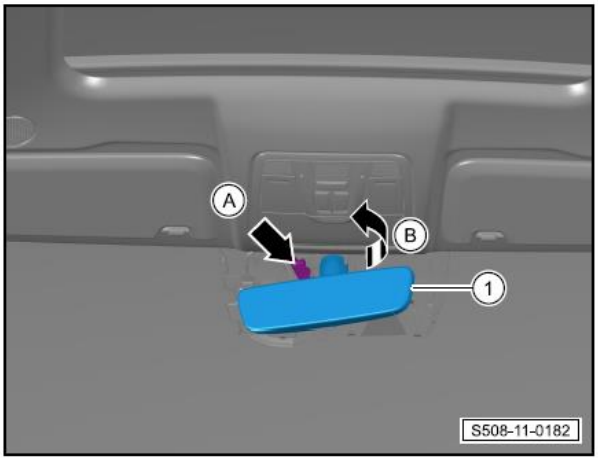
Disassembly procedures

Tip:

When removing the interior rearview mirror assembly, be sure to remove and install it carefully to prevent damage to the front windshield.

1 Remove the front windshield mirror base trim cover I. Refer to 9.14.2.1 Removal and installation of front windshield mirror base trim cover I

2 Remove the front windshield mirror base trim cover II. Refer to 9.14.2.2 Removal and installation of front windshield mirror base trim cover II



3 Remove the interior rearview mirror assembly

a. Disconnect the connector (see arrow A) of the interior rearview mirror assembly ①.

b. Remove the interior rearview mirror assembly ① in the direction of arrow B.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the interior rearview mirror assembly (automatic, anti-glare).

8.6.4.4 Removal and installation of exterior rearview mirror lens

Disassembly procedures

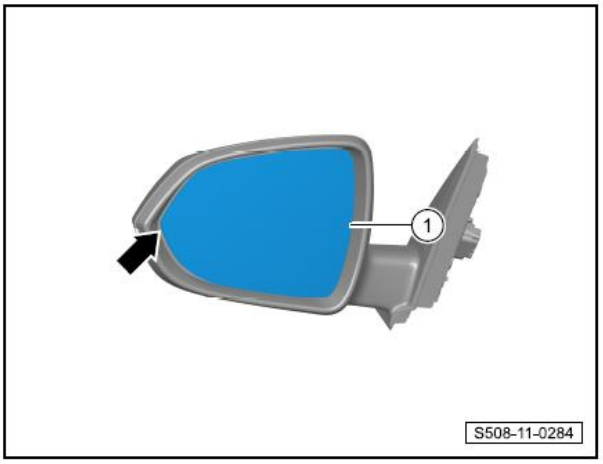
Tip:

The removal and installation steps are only for the left exterior rearview mirror lens, which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

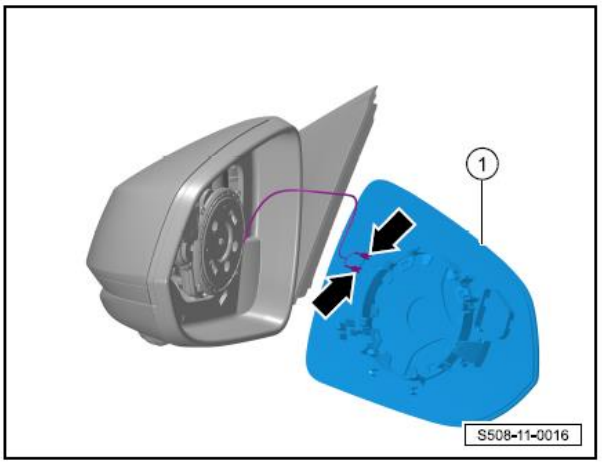
3 Remove the exterior rearview mirror lens



a. Insert a removal wedge (see the arrow) and remove the exterior rearview mirror lens ①.

Tip:

Do not remove the exterior rearview mirror violently to prevent damage to the lens.



b. Disconnect the connectors (see the arrows) and take out the exterior rearview mirror lens ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- When installing the lens of the exterior rearview mirror, press the lens to the rearview mirror adjustment unit till hearing lens stuck sound.
- After the installation, perform a function test on the exterior rearview mirror.

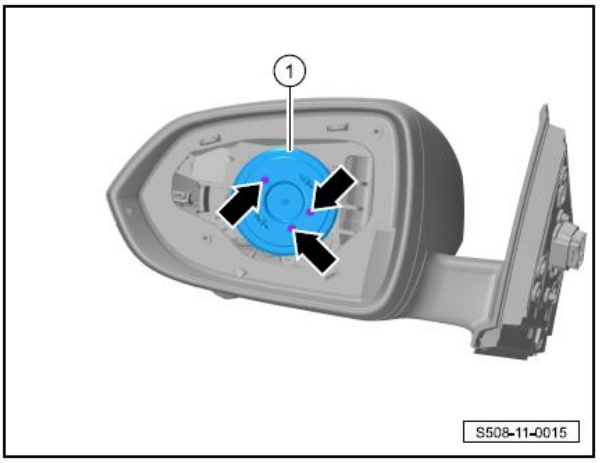
8.6.4.5 Removal and installation of adjustment motor assembly

Disassembly procedures

Tip:

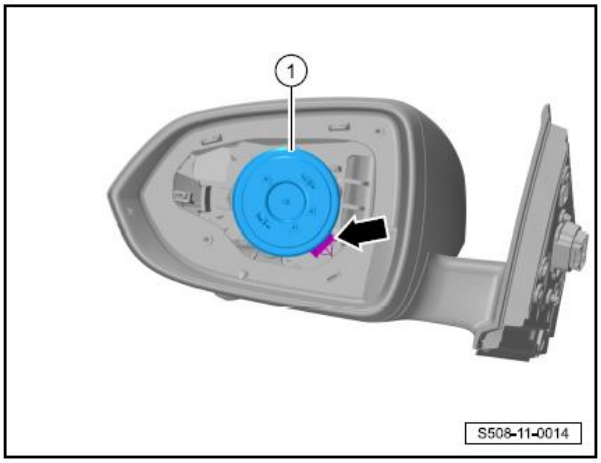
The removal and installation steps are only for the left adjustment motor assembly, which can be basically referred to for the right one.

1 Remove the exterior rearview mirror lens. Refer to 8.6.4.4 Removal and installation of exterior rearview mirror lens



2 Remove the adjustment motor assembly

a. Unscrew the fixing screw (see arrow), and remove the adjustment motor assembly ①.



b. Disconnect the connector (see the arrow), and take out the adjustment motor assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

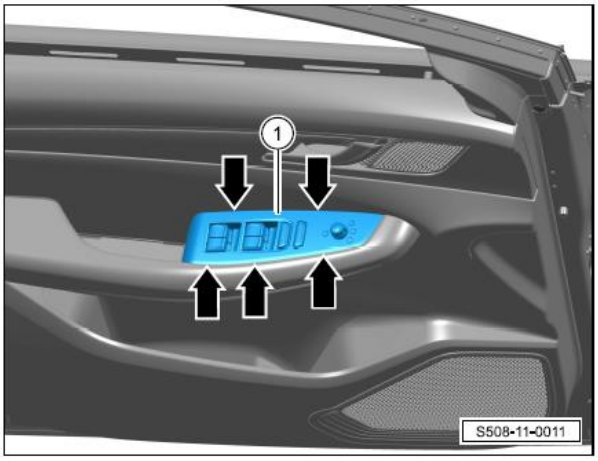
- After the installation, perform a function test on the exterior rearview mirror assembly.

8.6.4.6 Removal and installation of power rearview mirror switch

Disassembly procedures

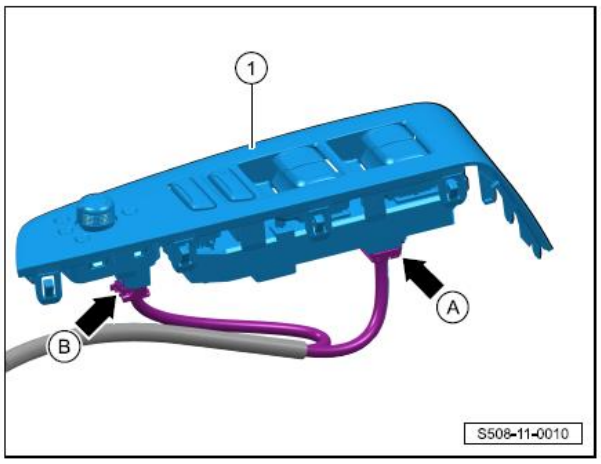
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

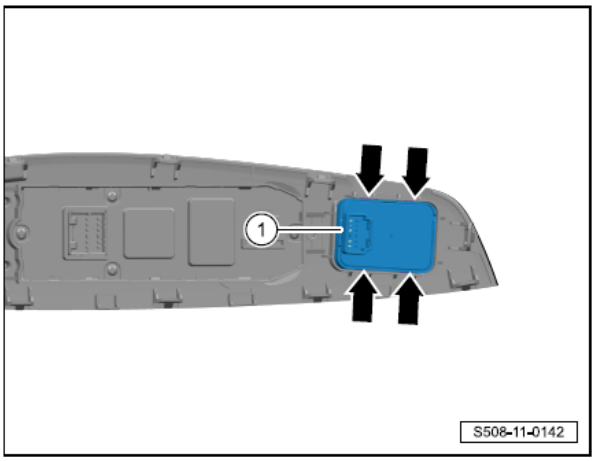


3 Remove the power rearview mirror switch

a. Use interior trim removal tools to remove the front left door switch panel assembly ① (see arrow).



b. Disconnect the connector (see arrows A and B), and take out the front left door switch panel assembly ①.



c. Disengage the fixing clip (see arrow), and remove the power rearview mirror switch ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the electric window main switch and the power rearview mirror.

8.7 Wiper/washer system

8.7.1 Specification

8.7.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between the washer water reservoir and motor and the body	Cross recessed hexagon head flange bolt M6×16	6±1
	Hexagon flange nut M6	
Connection between the front wiper motor and bracket assembly and the wiper linkage fixing plate	Hexagon head bolt c/w spring washer & flat washer cluster M6×35	10±1
Connection between the front wiper arm and the front wiper motor and bracket assembly	Hexagon flange nut	25±2
Connection between the rear wiper motor bracket and the lift gate inner skin	Hexagon flange bolt M6×25	8±1
Connection between the rear wiper arm and the rear wiper motor and bracket	Hexagon head flange nut M8	16±2

8.7.2 System description

8.7.2.1 System description

1. Overview

The wiper/washer system is a windshield washing unit that guarantees the driver's field of view and is composed of the front wiper, rear wiper, front washer system and rear washer system. The front wiper has two running speeds: intermittent service and continuous service at a single speed, while the rear wiper is a single-speed type; the front wiper system is composed of wiper motor, connecting rod mechanism, wiper arm, scraper, etc.; the rear wiper system is composed of wiper motor, wiper arm, scraper, etc.; the front and rear washer systems are composed of washer reservoir, front/rear washer motor, front/rear cleaning pipelines, front/rear washer jets, etc. The wiper/washer is controlled by the body domain controller.

2. Function and operation

- Turn the start switch to ON, turn the wiper control handle to AUTO, and enable automatic wiping function. The wiper automatically adjusts the wiping speed according to the rainfall, and the sensitivity of the wiper system to rainwater can be adjusted by rotating the sensitivity adjustment knob. The sensitivity display bar changes from narrow to wide, indicating that the sensitivity of the wiper system to rainwater changes from low to high.
- Turn the start switch to ON, and turn the wiper control handle to "1x". The wiper will complete a cycle and return to position automatically.
- Turn the start switch to ON, and turn the wiper control handle to "1". The wiper works at a low speed.
- Turn the start switch to ON, and turn the wiper control handle to "2". The wiper works at a high speed.
- Turn the start switch to ON, and turn the wiper control handle to OFF. The wiper is shut down.
- Turn the start switch to ON, and turn on and off the rear wiper manually through the switch.
- Turn the start switch to ON, and enable front washing manually. The front washer system sprays water for cleaning.
- Turn the start switch to ON, enable the rear washing manually, hold the knob till the rear windshield glass is sprayed with the required amount of detergent, release the knob, the knob returns automatically, and the rear window washing is disabled.

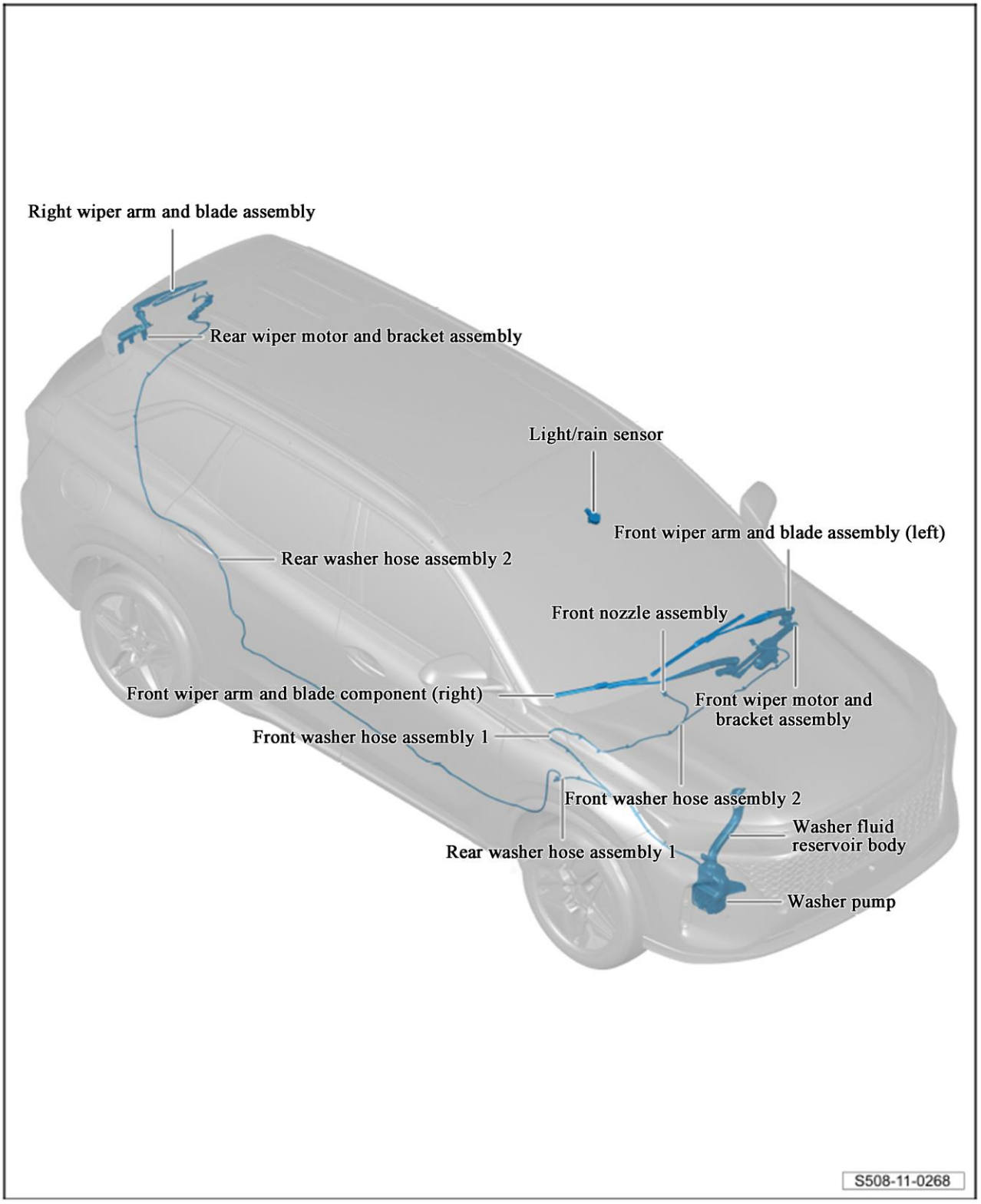
Notes

If the operation of the rear window wiper is interrupted due to snow or ice, the wiper will stop to protect the motor, in case of this situation, turn the wiper switch to "OFF", remove snow or ice from and around the wiper arm, and turn on the switch again to let the wiper work.

8.7.3 Component position

8.7.3.1 Component position

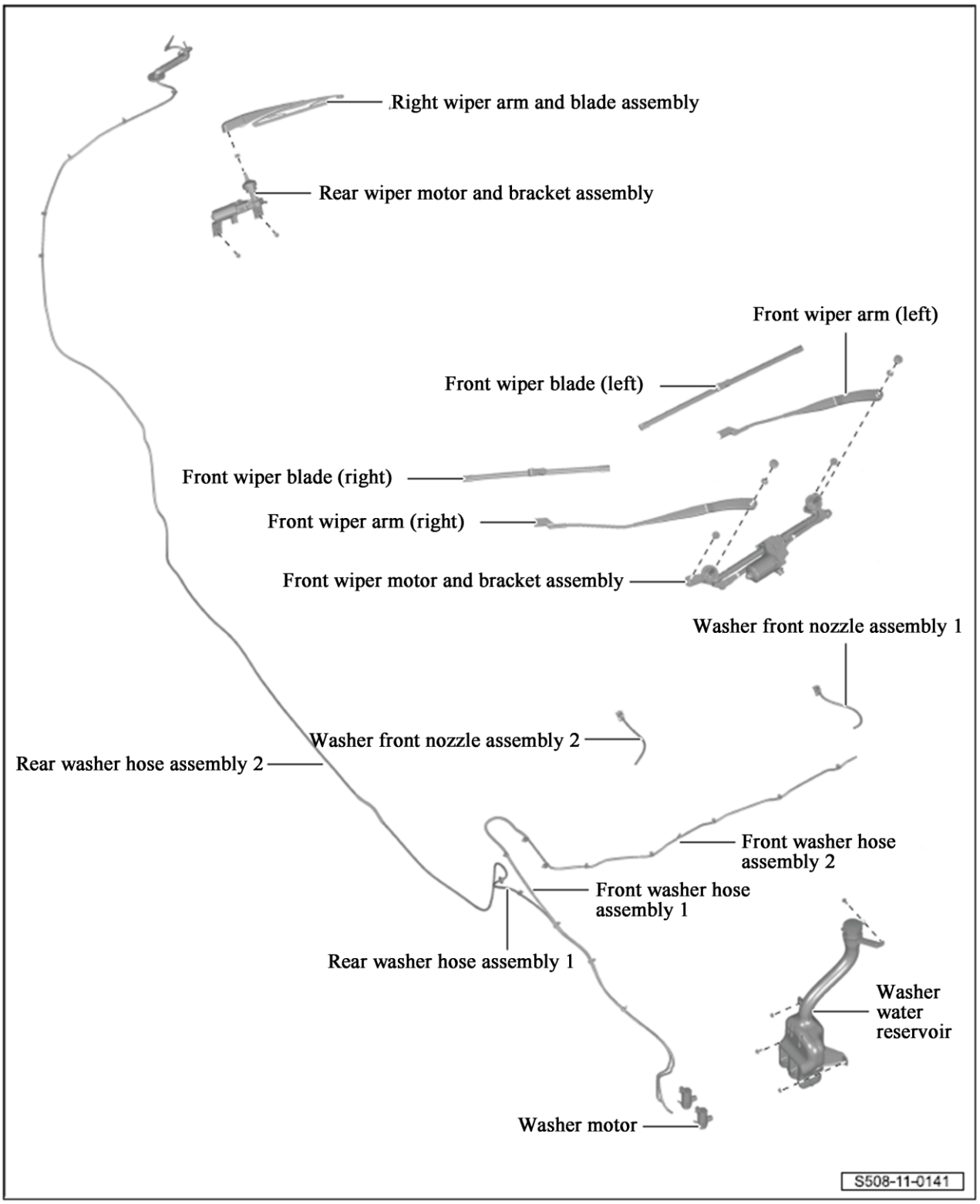
Component position



8.7.4 Exploded view

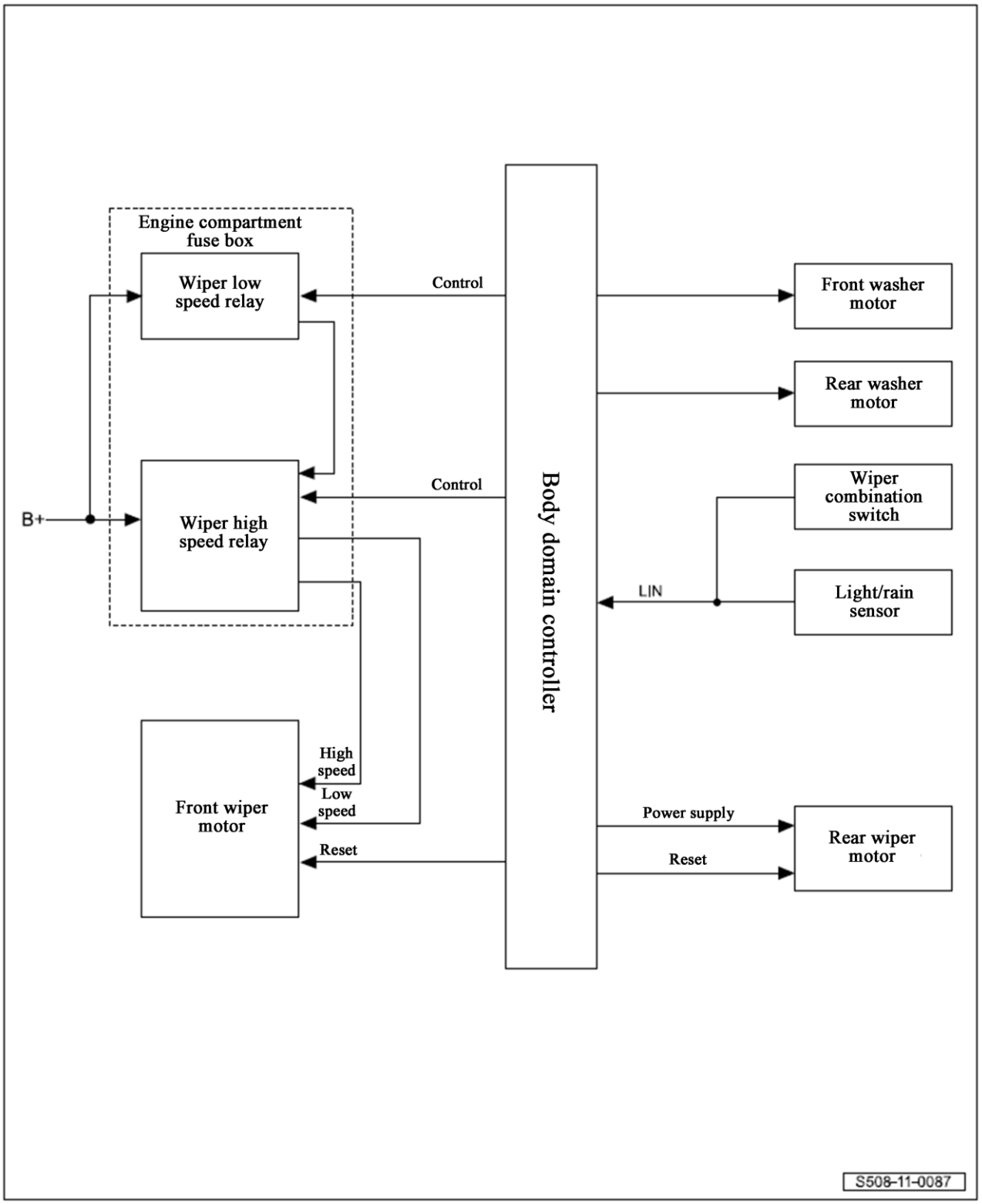
8.7.4.1 Exploded view

Exploded view of wiper/washer system



8.7.5 Electrical schematic diagram

8.7.5.1 Electrical schematic diagram



8.7.6 Removal and installation

8.7.6.1 Removal and installation of washer water reservoir

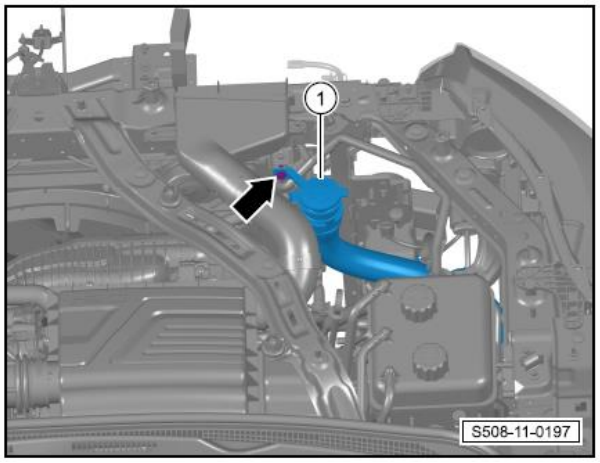
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

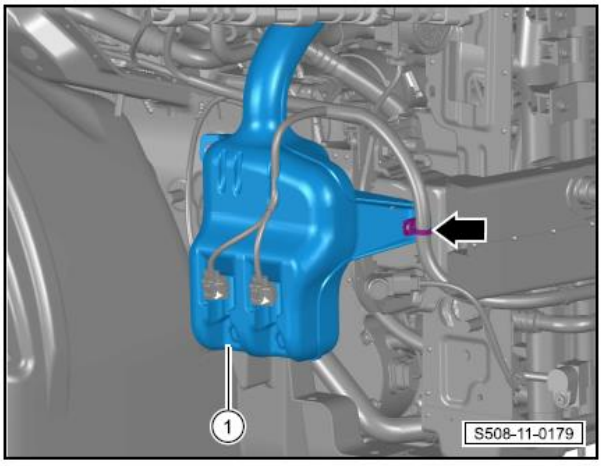
4 Remove the washer water reservoir motor. Refer to 8.7.6.2 Removal and installation of washer water reservoir motor



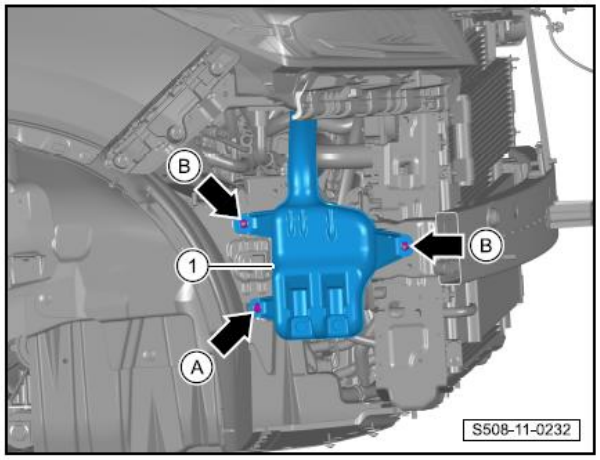
5 Remove the washer water reservoir

a. Unscrew the fixing bolt (see arrow) of the washer water reservoir.

- Tightening torque of bolt: **6±1 N·m**



b. Disengage the fixing clip (see arrow), and disconnect the engine compartment harness assembly from the washer water reservoir ①.



c. Unscrew the fixing bolt (see arrow A) and nut (see arrow B), and remove the washer water reservoir ①.

- Tightening torque of bolt (see arrow **A**): **6±1 N·m**
- Tightening torque of nut (see arrow **B**): **6±1 N·m**

Installation procedures

The installation procedure is to be performed in reverse order.

8.7.6.2 Removal and installation of washer water reservoir motor

Disassembly procedures

Tip:

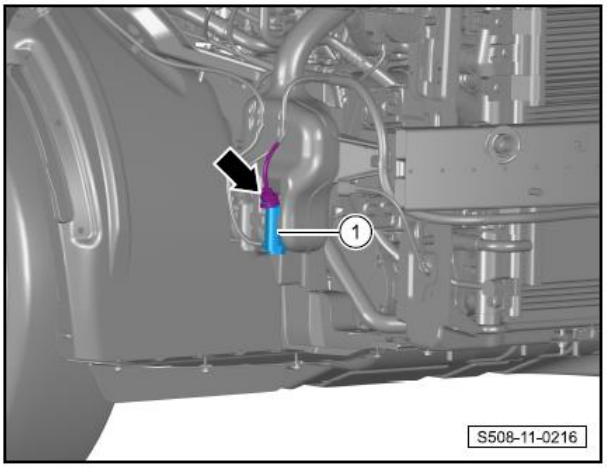
The removal and installation procedures are only for the front washer water reservoir motor, which can be basically referred to for the rear one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

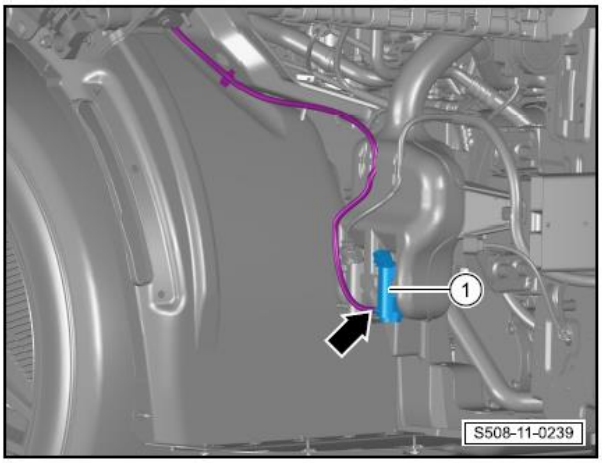
3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 Place the washer water collection container at the bottom of the vehicle.



5 Remove the washer water reservoir motor

a. Disconnect the front washer water reservoir motor ① connector (see arrow).



b. Disengage the front washer hose assembly 1 from the front washer water reservoir motor ①, and remove the front washer water reservoir motor ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the front washer water reservoir motor.

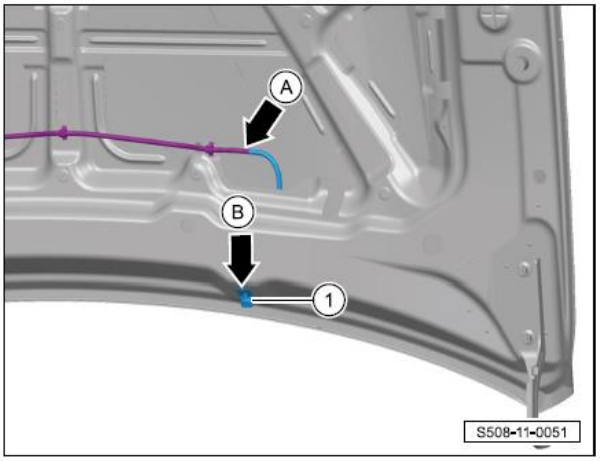
8.7.6.3 Removal and installation of front washer jet assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove engine hood heat insulation pad. Refer to 9.2.3.15 Removal and installation of engine hood heat insulation pad



4 Remove the front washer jet assembly

a. Disengage the front washer jet assembly ① from the front washer hose 2 (see arrow A).

b. Disengage the fixing clip (see arrow B), and remove the washer front washer jet assembly ①.

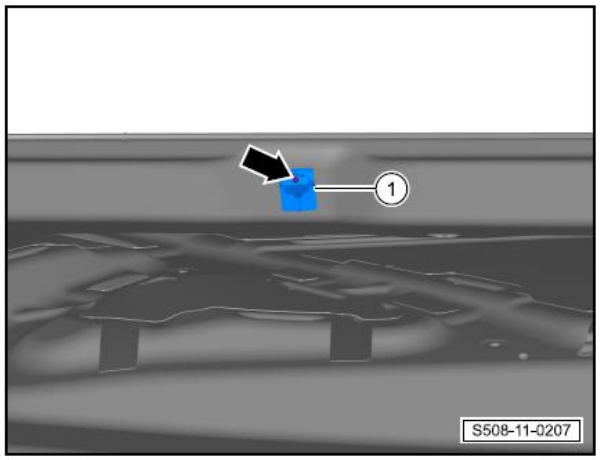
Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check and adjust the installation position of the front washer jet assembly. Refer to 8.7.6.4 Adjustment of front washer jet assembly

8.7.6.4 Adjustment of front washer jet assembly

Adjustment procedure



1 Adjust the front washer jet assembly

a. Use a mini straight screwdriver to adjust the water spraying direction of the front washer jet ① (see arrow).

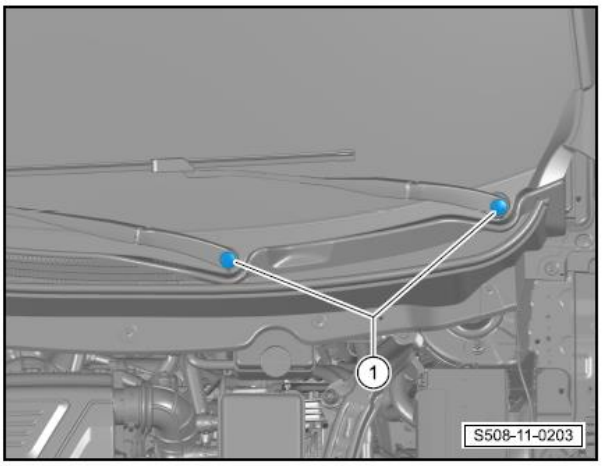
8.7.6.5 Removal and installation of front wiper arm and blade component

Disassembly procedures

Tip:

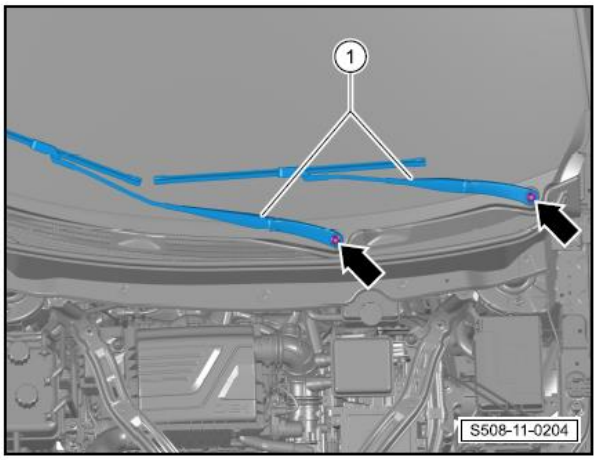
When removing wiper arm and brush subassembly, make sure that the wiper arm is at the normal stop position.

Cover the front windshield with cotton cloth to prevent damage during removal.



1 Remove the front wiper arm and blade component

a. Remove the front wiper arm and blade component nut blank cover ①.



b. Unscrew the fixing nut (see arrow), and remove the front wiper arm and blade component ①.

- Tightening torque of nut: **25±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

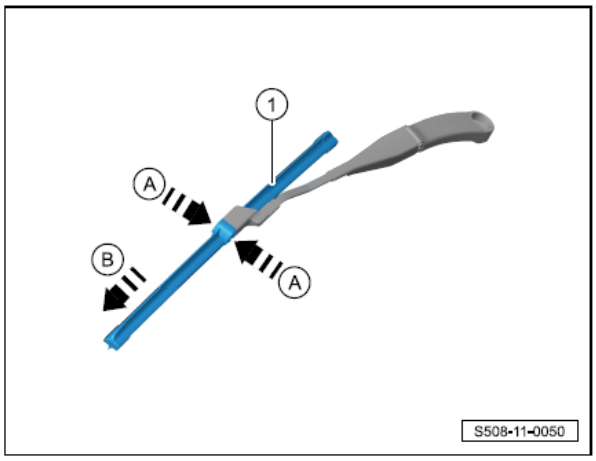
- When installing the wiper arm and blade components, install the left and right ones respectively.
- Check and adjust the wiper blade installation position. Refer to 1.4.3.16 Inspection of extreme position of windshield wiper blade

8.7.6.6 Removal and installation of front wiper blade

Disassembly procedures

Tip:

Cover the front windshield with cotton cloth to prevent damage during removal.



1 Remove the front wiper

a. Pull up the front wiper arm and blade assembly.

b. Press the clip in the direction given (see arrow A) and remove the front wiper blade ① in the direction given (see arrow B).

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check and adjust the wiper blade installation position. Refer to 1.4.3.16 Inspection of extreme position of windshield wiper blade

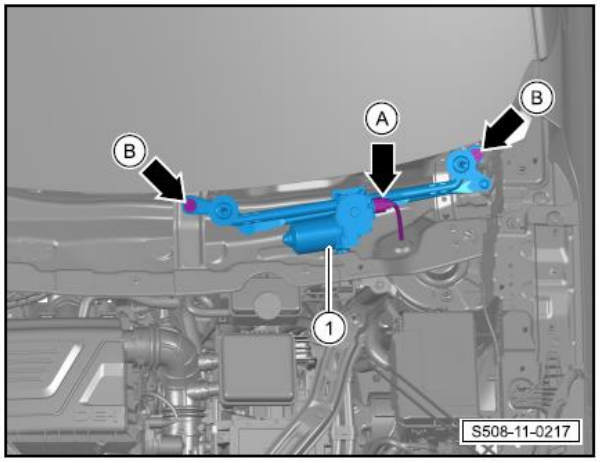
8.7.6.7 Removal and installation of front wiper motor and bracket assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component



4 Remove the front wiper motor and bracket assembly

a. Disconnect the connector (see arrow A) of the front wiper motor.

b. Unscrew the fixing bolt (see arrow B), and remove the front wiper motor and bracket assembly ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

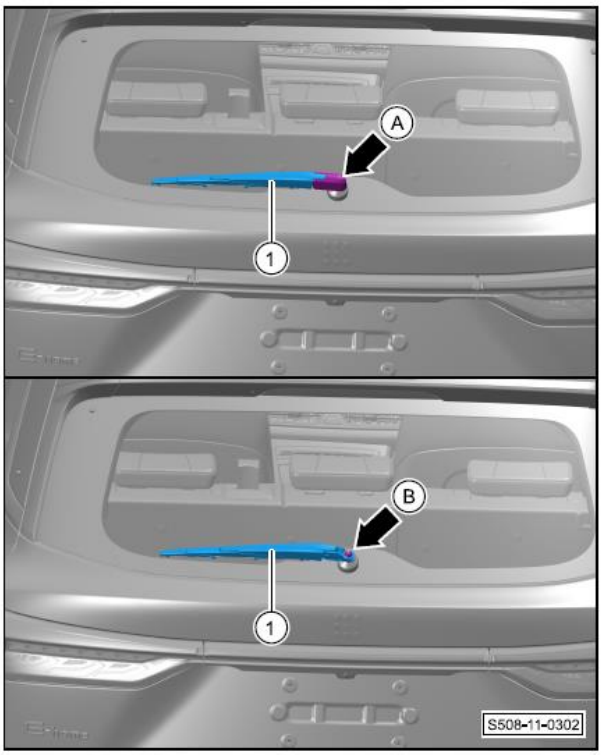
- After the installation, perform a function test on the front wiper motor.

8.7.6.8 Removal and installation of front wiper arm and blade component

Disassembly procedures

Tip:

Cover the tail door glass with cotton cloth to prevent damage during removal.



1 Remove the rear wiper arm and blade component

a. Open the rear wiper arm end cover (see arrow A). b. Unscrew the fixing nut (see arrow B), and remove the rear wiper arm and blade component ①.

- Tightening torque of nut (see arrow **B**): **16±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

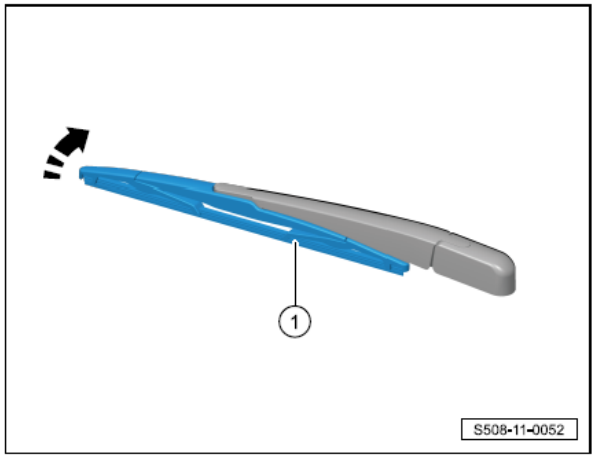
- Check and adjust the installation position of the wiper blades

8.7.6.9 Removal and installation of rear wiper blade

Disassembly procedures

Tip:

Cover the tail door glass with cotton cloth to prevent damage during removal.



1 Remove the rear wiper.

a. Pull up the rear wiper arm and blade assembly.

b. Rotate in the direction given (see the arrow) to remove the rear wiper blade ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.7.6.10 Removal and installation of rear wiper motor and bracket assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

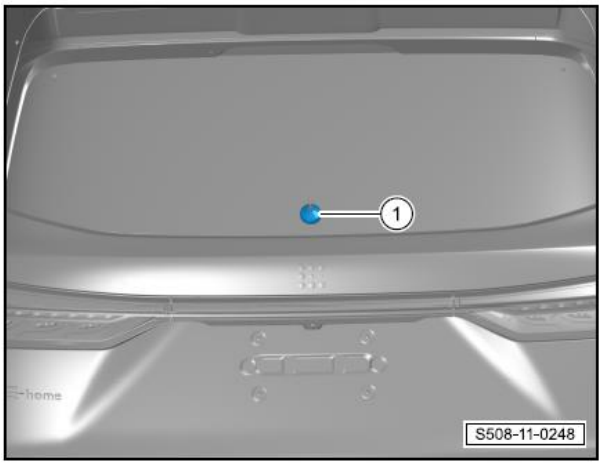
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly

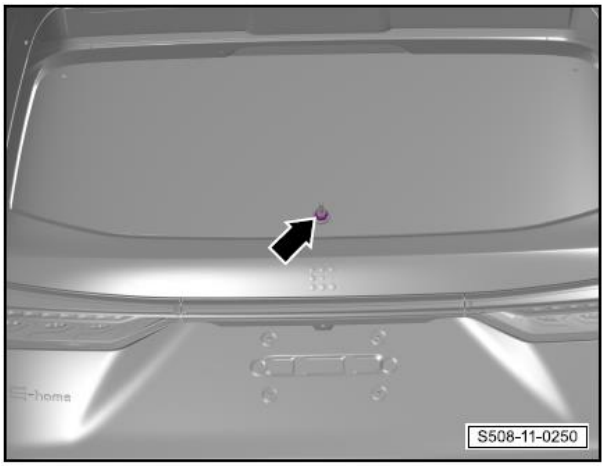
4 Remove the rear wiper arm and blade components. Refer to 8.7.6.8 Removal and installation of rear wiper arm and blade components

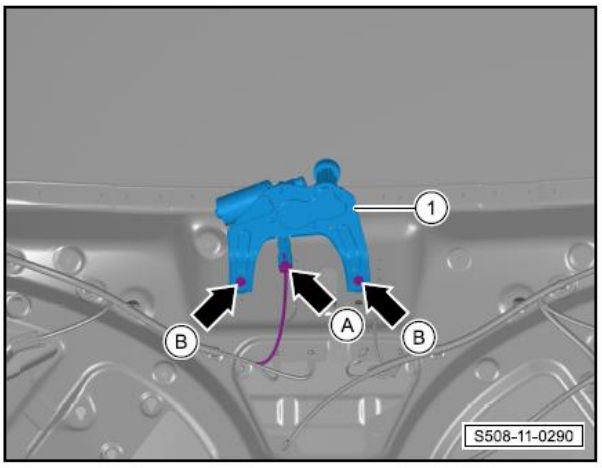
5 Remove the rear wiper motor and bracket assembly

a. Take out rear wiper motor nut waterproof jacket ①.



b. Unscrew the rear fixing nuts of the wiper motor and bracket assembly (see the arrow).





c. Disconnect the connector of rear wiper motor and bracket assembly (see arrow A).

d. Unscrew the fixing bolt (see arrow B), and take out the rear wiper motor and bracket assembly ①.

- Tightening torque of bolt (see arrow B): 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the rear wiper motor.

8.7.6.11 Removal and Installation of light/rain sensor

Disassembly procedures

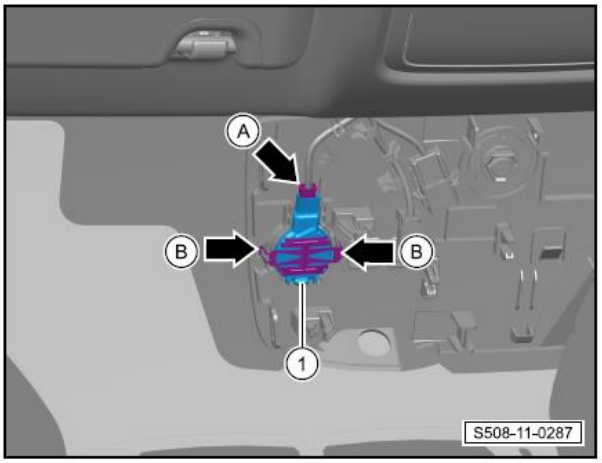
Notes

When removing the light/rain sensor, be sure to remove and install it carefully to prevent damage to the front windshield.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the driving recorder assembly. Refer to 8.23.4.1 Removal and installation of driving recorder assembly



4 Remove the light/rain sensor

a. Disconnect the light/rain sensor ① connector (see arrow A).

b. Disengage the fixing clip (see arrow B), and remove the light/rain sensor ①.

Notes

Please operate carefully to avoid damaging the enamel. Tip:

Wipe off the residual adhesive on the locating plate of the interior rear-view mirror.

Remove the residual adhesive on the front windshield with a glass scraper and expose the enamel.

Wash the bonding surface with cleaner.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Remove the protective cover or protective film of the light/rain sensor before installation;

- Avoid dust or fingerprints on the silicone surface of the light/rain sensor;
- Check whether the clips are tight after installation;
- Check whether the light/rain sensor fully fits from the outside of the front windshield, and make adjustments if there are still bubbles.

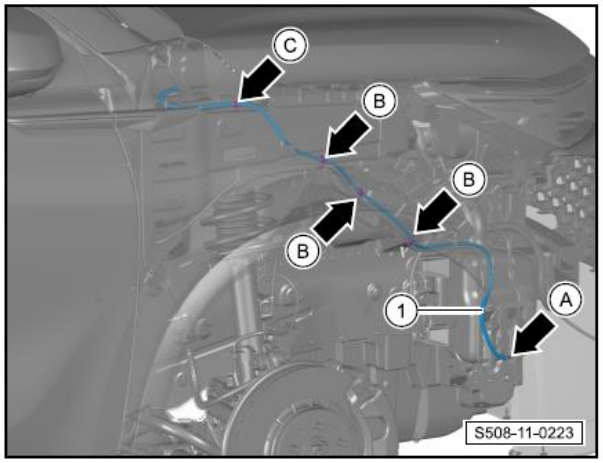
8.7.6.12 Removal and installation of front washer hose assembly 1

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the front right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

3 Remove the front right hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

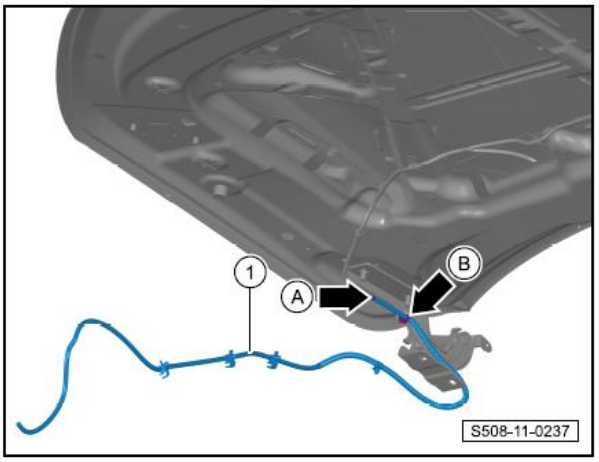


4 Remove the front washer hose assembly 1

a. Disconnect the front washer hose assembly 1 ① from the washer pump (see arrow A).

b. Disengage the fixing clip of the front washer hose assembly 1 ① (see arrow B).

c. Disengage the fixing clip of the front washer hose assembly 1 ① (see arrow C).



d. Disengage the front washer hose assembly 1 ① from the front washer hose assembly 2 (see arrow A).

e. Disengage the fixing clip of the front washer hose assembly 1 ① (see arrow B).

f. Remove the front washer hose assembly 1 ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the fixing clip is damaged and replace it if necessary.

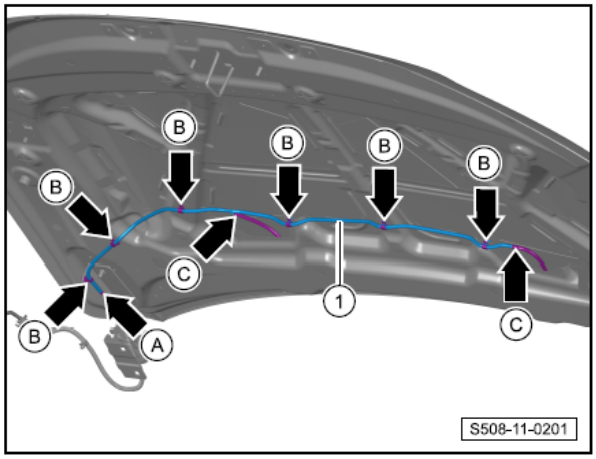
8.7.6.13 Removal and installation of front washer hose assembly 2

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove engine hood heat insulation pad. Refer to 9.2.3.15 Removal and installation of engine hood heat insulation pad



4 Removal and installation of front washer hose assembly 2

a. Disengage the front washer hose assembly 2 ① from the front washer hose 1 (see arrow A).

b. Disengage the fixing clip of the front washer hose assembly 2 ① (see arrow B).

c. Disengage the front washer hose assembly 2 ① from the front washer jet assembly (see arrow C).

d. Remove the front washer hose assembly 2 ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the fixing clip is damaged and replace it if necessary.

8.7.6.14 Removal and installation of rear washer hose assembly 1

Disassembly procedures

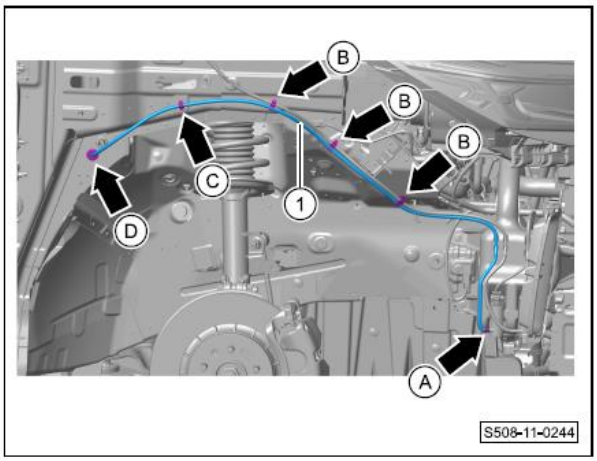
1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the front right wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

3 Remove the front right hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

4 Remove the A-pillar lower interior trim panel assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly

5 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly



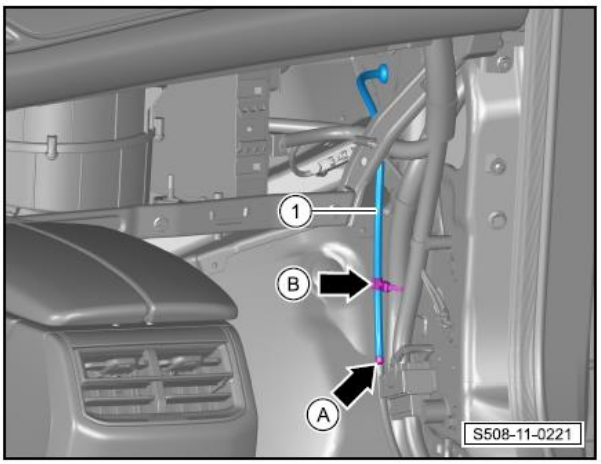
6 Remove the rear washer hose assembly 1

a. Disconnect the rear washer hose assembly 1 ① from the rear washer pump (see arrow A).

b. Disengage the fixing clip of the rear washer hose assembly 1 ① (see arrow B).

c. Disengage the fixing clip of the rear washer hose assembly 1 ① (see arrow C).

d. Disconnect the protective jacket of the rear washer hose assembly 1 ① (see arrow D).



e. Disengage the rear washer hose assembly 1 ① from the rear washer hose assembly 2 (see arrow A).

f. Disengage the fixing clip of the rear washer hose assembly 1 ① (see arrow B).

g. Remove the rear washer hose assembly 1 ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the fixing clip is damaged and replace it if necessary.

8.7.6.15 Removal and installation of rear washer hose assembly 2

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

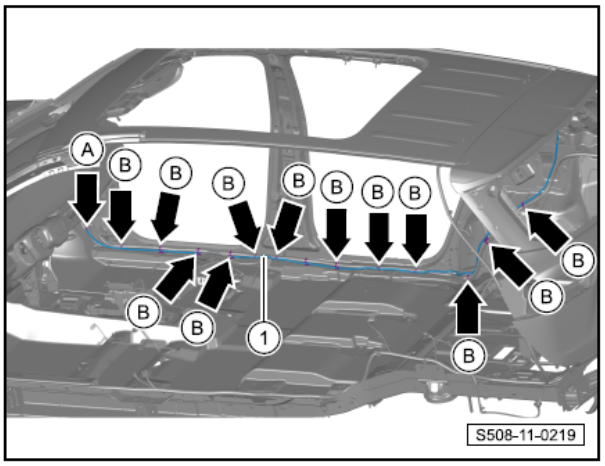
2 Remove the A-pillar lower interior trim panel assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly

3 Remove the B-pillar lower interior trim panel assembly. Refer to 9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly

4 Remove the rear side wall lower interior trim panel assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

5 Remove the rear side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly

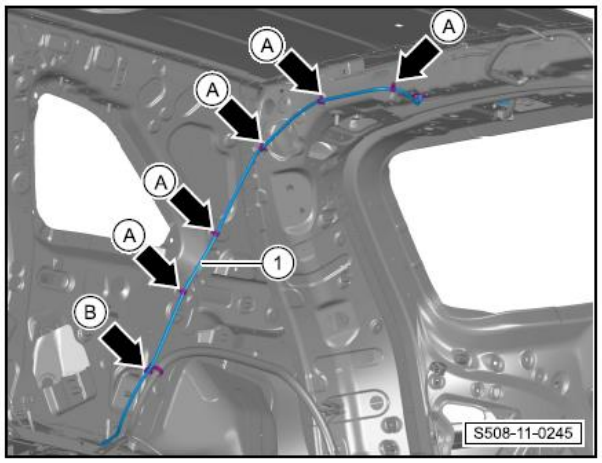
6 Remove the upper interior trim panel of lift gate frame. Refer to 9.3.3.12 Removal and installation of upper interior trim panel of lift gate frame



7 Remove the rear washer hose assembly 2

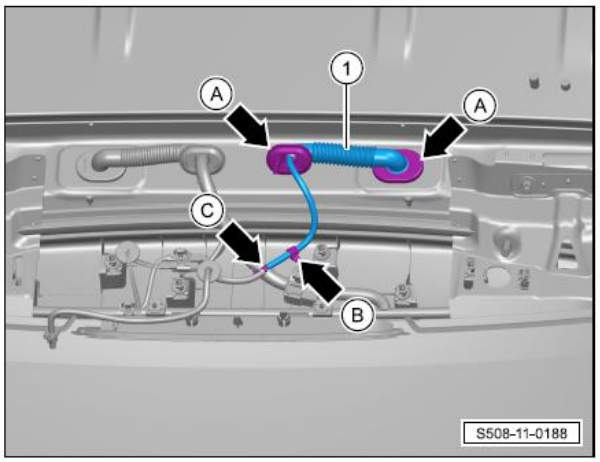
a. Disengage the rear washer hose assembly 2 ① from the front washer hose 1 (see arrow A).

b. Disengage the fixing clip of the rear washer hose assembly 2 ① (see arrow B).



c. Disengage the fixing clip of the rear washer hose assembly 2 ① (see arrow A).

d. Disengage the fixing clip of the rear washer hose assembly 2 ① (see arrow B).



e. Disconnect the protective jacket of the rear washer hose assembly 2 ① (see arrow A).

f. Disengage the fixing clip of the rear washer hose assembly 2 ① (see arrow B).

g. Disconnect the rear washer hose assembly 2 ① from the spoiler assembly (see arrow C).

h. Remove the rear washer hose assembly 2 ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the fixing clip is damaged and replace it if necessary.

8.8 Instrument/driver's information system

8.8.1 Specification

8.8.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Instrument cluster assembly	Cross recessed pan head self-tapping screw	2±1
	Cross recessed hexagon head flange bolt	10±1

8.8.2 Operation and description

8.8.2.1 System description

System Overview

The model is equipped with a dual screen (7-inch LCD instrument + 12.3-inch MP5), which mainly displays SOC meter, fuel gauge, power mode, gear display, time, exterior temperature, driving computer, settings, multimedia, navigation, phone, tip pop-up information, alarm pop-up information, driving range, subtotal mileage, total mileage, etc.

SOC meter

Display the power battery level. When in the "F" position, it indicates that the power battery is fully charged, and when in the "E" position, it indicates that the power battery is dead.

Power mode

Display the power mode "EV", "EV" (EVMAX) and "HEV".

Gear display

P/R/N/D (no display if invalid).

Fuel Gauge

It displays the fuel load of the fuel tank. When in the "F" position, it indicates that the fuel tank is full of fuel; when in the "E" position, it indicates that the fuel tank is empty. When the battery level is lower than 25% and the fuel level is in 1 segment, the low fuel indicator flashes; when the battery is sufficient and the fuel level is in 1 segment, the low fuel indicator stays on. Please refuel in time before the fuel gauge indicates position (E).

Driving range

Display the remaining percentage of power battery, pure electric driving range, and fuel driving range separately.

Subtotal mileage / EV mileage / HEV mileage (only one mileage mode is displayed, which can be switched between each other in the mileage display)

Display range (subtotal mileage: 0.0-9999.9 km; EV mileage and HEV mileage: 0-999999.9 km), display accuracy (subtotal mileage: 0.1 km, EV mileage and HEV mileage: 1 km), when the maximum value is reached: subtotal mileage automatically starts accumulating again from 0.0 km, while EV mileage and HEV mileage remain unchanged at 999999.9 km.

Total mileage

Display range (0-999999 km), display accuracy (1 km), when the total mileage reaches the maximum value: keep 999999 km unchanged.

Trip computer information

The driving computer interface includes long-term travel information, comprehensive energy consumption for the last 100 km, cumulative travel information, instantaneous fuel consumption, tire pressure display, energy flow, etc.

- Tire pressure display: The tire pressure and temperature can be detected by the tire pressure sensor and fed back to the instrument through the domain controller, which is displayed in real-time on the instrument LCD.
- Long-term travel information: Record the driving distance, average speed, driving time, average fuel consumption, and average electricity consumption of the long-term journey. Press and hold the OK button on the steering wheel to reset the above information.
- Comprehensive energy consumption for the last 100 km: Record the comprehensive energy consumption information for the last 100 km.
- Cumulative travel information: Record the cumulative total mileage, cumulative average speed, cumulative average fuel consumption, and cumulative average electricity consumption of the cumulative travel.
- Instantaneous fuel consumption: Display the current instantaneous fuel consumption of the vehicle, in units of L/100 km when the vehicle is in running, and in units of L/h when the vehicle is stationary.
- Energy flow: Display the current state of vehicle energy flow.

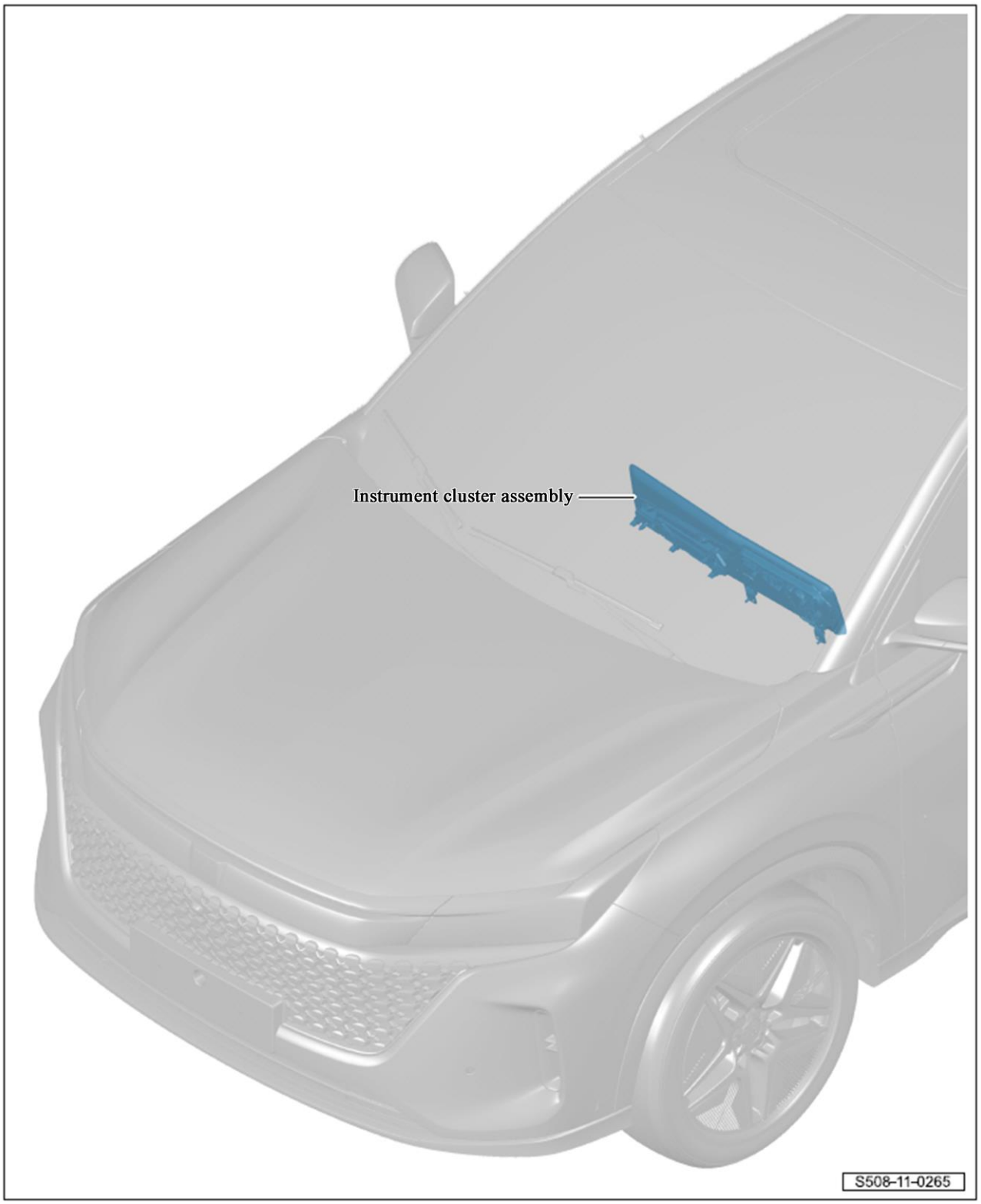
Tire pressure, tire temperature information display and alarm

- After the vehicle is started, if the vehicle is static, the instrument cluster displays specific tire pressure before parking.
- After the vehicle is started and reaches a certain speed, the instrument cluster displays the tire pressure information of 4 tires.
- The alarm of tire pressure system includes five alarm mechanisms: low pressure alarm, high pressure alarm, high temperature alarm, low sensor battery power alarm and sensor signal loss alarm. When the tire pressure system alarms, the tire pressure system fault indicator on the instrument cluster will be on, and there will be a corresponding fault symptom text prompt.

8.8.3 Component position

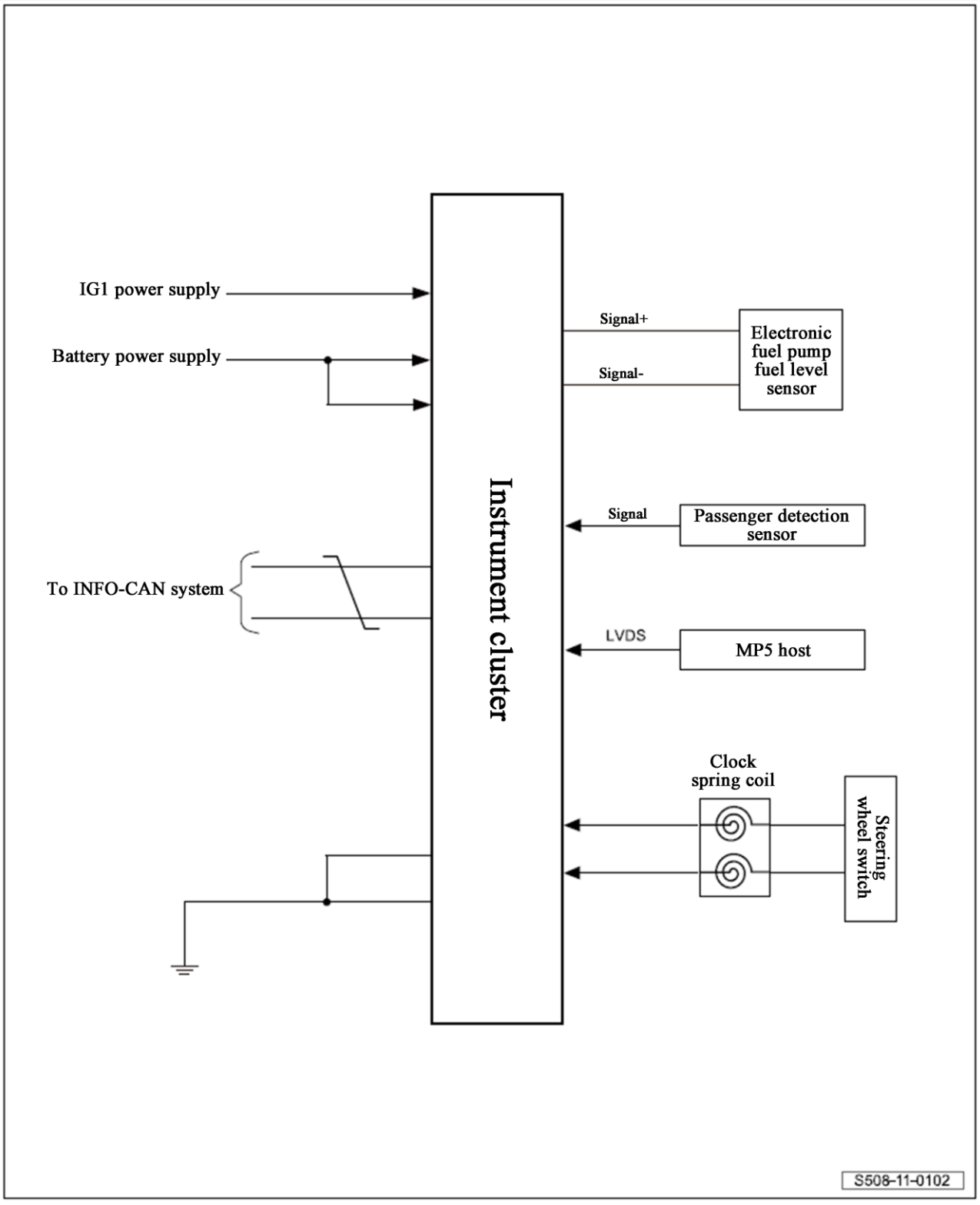
8.8.3.1 Component position

Component position



8.8.4 Electrical schematic diagram

8.8.4.1 Electrical schematic diagram



8.8.5 Diagnosis information and steps

8.8.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the instrument cluster (IC) with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

8.8.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.
- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

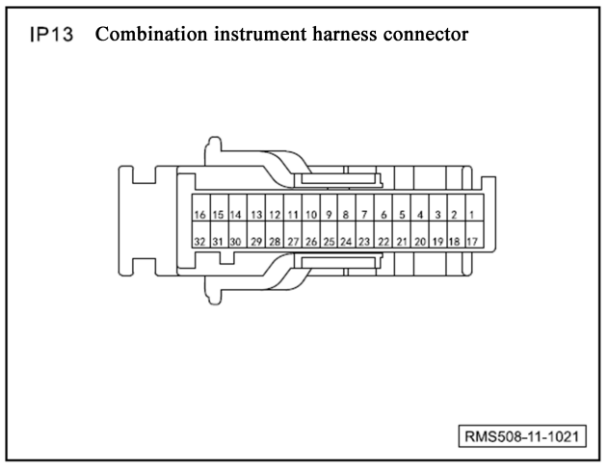
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

8.8.5.3 ECU terminals

Instrument cluster harness connector (IP13)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
11	0.35/yellow-black	SBR+	—	—
14	0.5/red-brown	Battery power supply	The start switch is put to any position	Battery voltage
15	0.5/red-brown	Battery power supply	The start switch is put to any position	Battery voltage
16	0.35/red-black	IG1 power	Put the start switch to “ON” position	Battery voltage
17	0.5/black	GND	—	0V
18	0.5/black	GND	—	0V
23	0.35/red-purple	Fuel signal +	—	—

24	0.35/pink-black	Fuel signal -	—	—
29	0.35/brown-red	Instrument signal + (KEY)	—	—
30	0.35/brown-yellow	Instrument signal - (KEY)	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
31	0.35/Orange	Entertainment CAN-H	—	—
32	0.35/Orange and white	Entertainment CAN-L	—	—

8.8.5.4 Active test

Overview:

To conduct an active test with a diagnostic scanner, you may operate the relay, actuator and other elements without removing any part. This can eliminate faults more effectively and quickly, greatly reducing the man-hours required for troubleshooting and improving the efficiency of fault diagnosis.

- Connect the intelligent tester to the vehicle.
- Turn the start switch to “ON” position.
- Perform the “active test” as displayed on the diagnostic scanner.

Note:

During the action test, do not operate for more than 3s; otherwise, ECU may be damaged. Repeated opening and closing within a period of time may damage parts.

S/N	Tester display items	
1	The indicator is on	Position light
2		EPB MIL
3		High beam
4		Left turn
5		Right turn
6		Coolant temperature indicator (red)
7		Fuel indicator (yellow)
8		ABS
9		ESC
10		ESCOFF
11		EBD
12		Engine fault warning light
13		Engine anti-theft indicator
14		Tire pressure indicator
15		Front fog light
16		Rear fog light
17		Oil pressure indicator
18		Parking state light (P light)
19		EPS fault indicator
20		Unfastened seat belt indicator
21		Cruise indicator
22		Battery charging/discharging indicator
23		Front parking sensor indicator
24		Airbag
25		Front passenger seat belt

S/N	Tester display items	
26		Low beam
27		AUTOHOLD ON indicator
28		AUTOHOLD activation indicator (green)
29		HDC indicator
30	Header indication	8 bar fuel gauge
31		7 bar fuel gauge
32		6 bar fuel gauge
33		5 bar fuel gauge
34		4 bar fuel gauge
35		3 bar fuel gauge
36		2 bar fuel gauge
37		1 bar fuel gauge
38		8 bar SOC meter
39		7 bar SOC meter
40		6 bar SOC meter
41		5 bar SOC meter
42		4 bar SOC meter
43		3 bar SOC meter
44		2 bar SOC meter
45		1 bar SOC meter
46	LCD display inspection	LCD display in red
47		LCD display in green
48		LCD display in blue
49		LCD display in red/white
50		LCD display in black
51	Loudspeaker sound inspection	Ready prompt sound
52		ACC safe distance/BSD
53		Door open prompt
54		Radar prompt sound
55		Front collision prompt sound
56		Seat belt prompt tone
57		Turn signal prompt tone

8.8.5.5 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F184	Flash fingerprint information	Tool supplier identification	0	255	-

		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
CF00	Battery voltage (ECU supply voltage)	Battery voltage (ECU supply voltage)	0	25.4	V
CF01	Vehicle speed at time of fault	Vehicle speed at time of fault	0	270	km/h
CF02	Speed at time of fault	Speed at time of fault	0	16383.75	rpm
CF03	Mileage at time of fault	Mileage at time of fault	0	1677721.4	km
CF04	Mileage (for the first fault)	Mileage (for the first fault)	0	1677721.4	km
CF05	Time of fault (year)	Year	2000	2059	-
	Time of fault (month)	Month	0	12	-
	Time of fault (day)	Day	0	31	-
	Time of fault (hour)	Hour	0	23	-
	Time of fault (minute)	Minute	0	59	-
	Time of fault (second)	Second	0	59	-
2000	Mileage for first maintenance	-	3000	15000	km
2001	Interval maintenance mileage	-	3000	15000	km
2002	First maintenance flag	-	0	1	-
2003	Maintenance mileage	-	0	999999	km
2005	Alarm shielding flag	-	0	1	-
2006	Average fuel consumption shielding flag	-	0	1	-
2007	Current driving information	-	0	1	-
F222	OTA configuration information	Model No.	0	255	-
		PartID - supplier code	-	-	-
		PartID - controller name number	0	255	-
		PartID - secondary supplier number	0	15	-
		PartID - generation of products	1	15	-
		ConfigID - hardware version	1	255	-
		ConfigID - software configuration	1	255	-

8.8.5.6 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
U007688	BUS-OFF detected	Abnormal	1. CAN bus has	1. Check the CAN bus

	on INFOCAN bus	communication	physical fault 2. Bus is interfered with	level 2. Check CAN harness connection 3. Check controller battery, ignition wire and grounding

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
B111717	Too high battery voltage	Abnormal work	Battery voltage is too high	Check the power supply
B111716	Too low battery voltage	Abnormal work	Battery voltage is too low	Check the power supply
U100587	INFOCAN network management, limp home	No corresponding function	The node is not in the network system	1. Check the CAN bus level 2. Check CAN harness connection 3. Check controller battery, ignition wire and grounding
U010087	Lost communication with EMS	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U014087	Lost communication with BCM	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U011D87	Lost communication with GSM	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U019887	Lost communication with TBOX	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U015187	Lost communication with ABM	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U016487	Lost communication with AC	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U012887	Lost communication with EPB	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness

				connection 3. Check the state of ECU loss
U029387	Lost communication with VCU	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U029287	Lost communication with MCU	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U011187	Lost communication with BMS	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
U031187	Lost communication with GCU	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U01C087	Lost communication with LSPM	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U023287	Lost communication with SRR	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U019987	Lost communication with PCM	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U012287	Lost communication with ESP	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U016487	Lost communication with AC	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U023087	Lost communication with PLG	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss
U018687	Lost communication with IVI	No corresponding function	ECU lost	1. Check the CAN bus level 2. Check CAN harness connection 3. Check the state of ECU loss

8.8.5.7 DTC: U007688, U100587

DTC	DTC definition
U007688	Controller BusOff
U100587	INFOCAN network management, limp home

1. Diagnosis steps

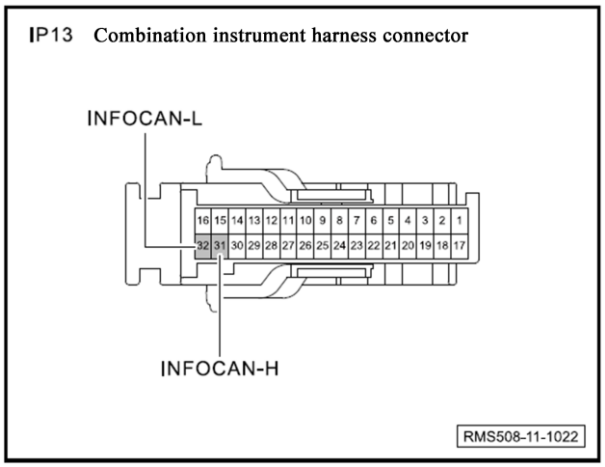
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.
B Disconnect the instrument cluster harness connector IP13.
C Measure the resistance of circuit between terminal 31 and terminal 32 of instrument cluster harness connector IP13.
Standard resistance value: about **120Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the instrument cluster.

A Replace the instrument cluster.
B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.8.5.8 DTC: B111717 &B111716

DTC	DTC definition
B111717	Too high battery voltage
B111716	Too low battery voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.
Standard voltage value: **11~14V**
B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the battery.

A Check whether the fuses IF11 and IF24 are blown.

No → Go to Step 5.

Yes

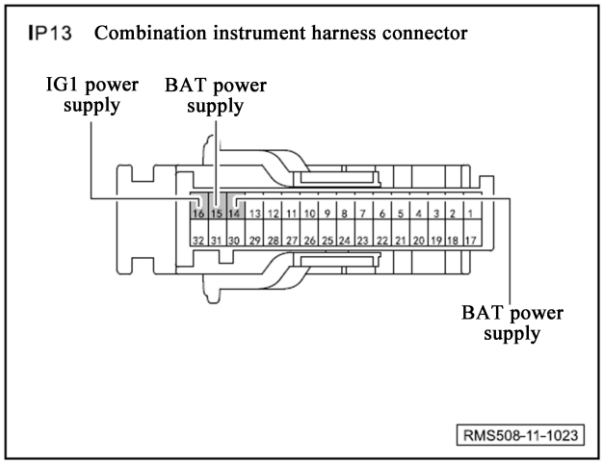
Step 4	Check and repair the circuits of fuses IF11 and IF24.

A Check whether the fuses IF11 and IF24 are short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF1110A, IF245A**
D Confirm whether the instrument cluster works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the instrument cluster.

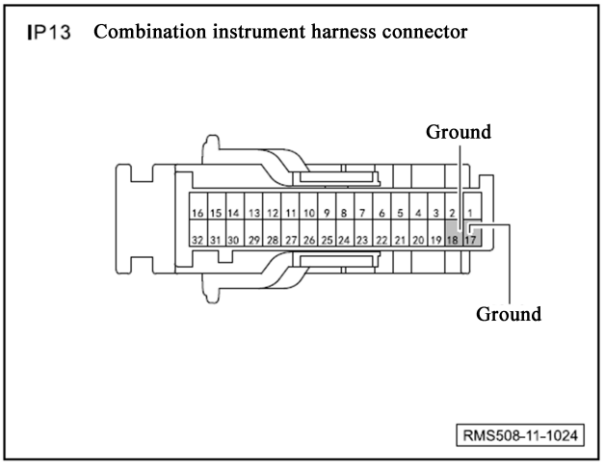


A Turn the start switch to "OFF" position.
B Disconnect the instrument cluster harness connector IP13.
C Put the Start switch to “ON” position.
D Measure the voltage between terminals 14, 15 and 16 of instrument cluster harness connector IP13 and body ground.
Standard voltage value: **11~14V**
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the instrument cluster.



A Turn the start switch to "OFF" position.
B Disconnect the instrument cluster harness connector IP13.
C Measure the resistance between terminals 17 and 18 of instrument cluster harness connector IP13 and body ground.
Standard resistance value: **<1Ω**
D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.
B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.9 DTC: U010087

DTC	DTC definition
U010087	Failure in communication with EMS

1. Diagnosis steps

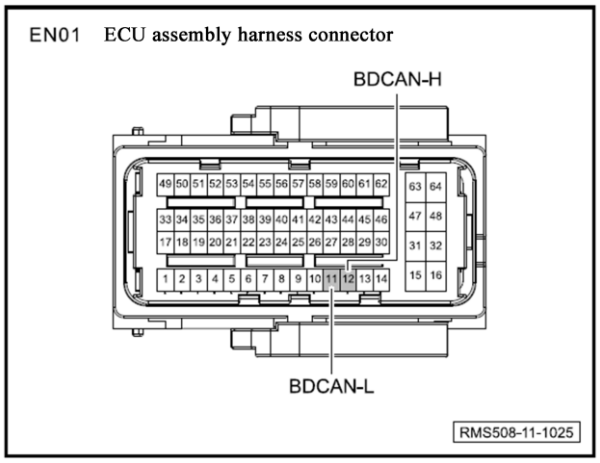
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

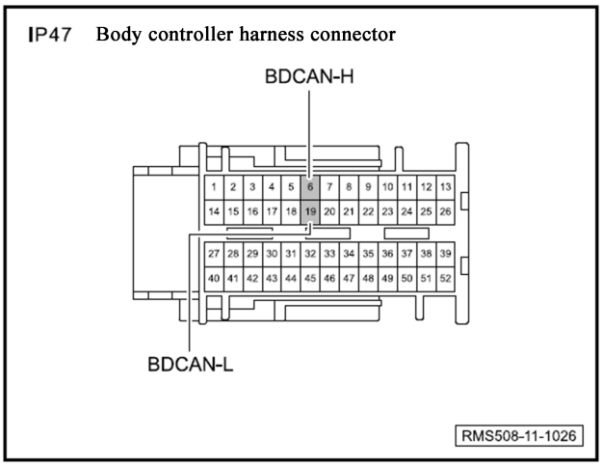
Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the body controller.



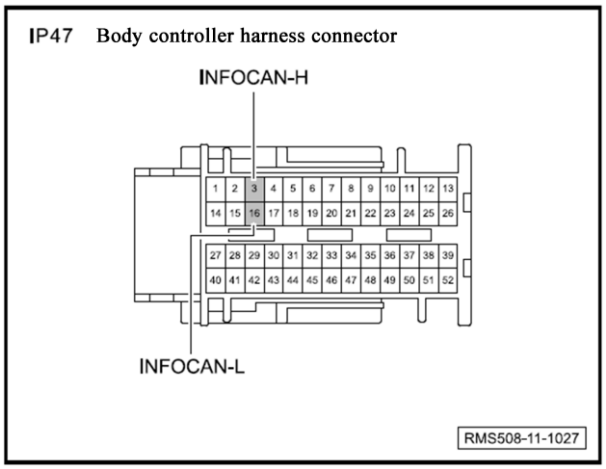
A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

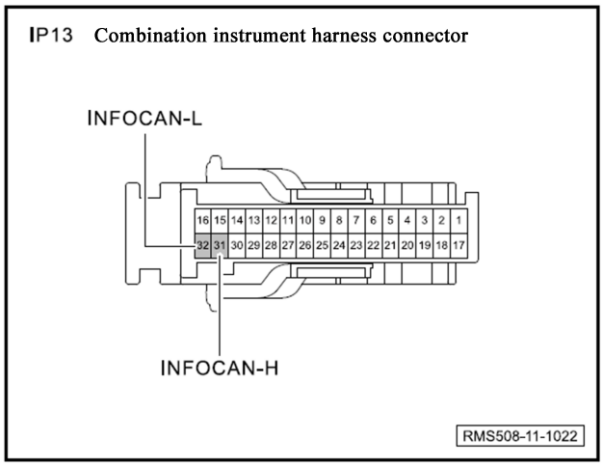
No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.10 DTC: U014087, U016487

DTC	DTC definition
U014087	Failure in communication with BCM
U016487	Lost communication with AC

1. Diagnosis steps

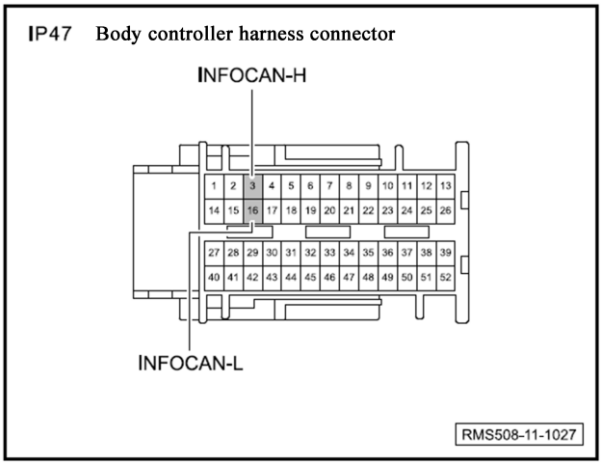
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

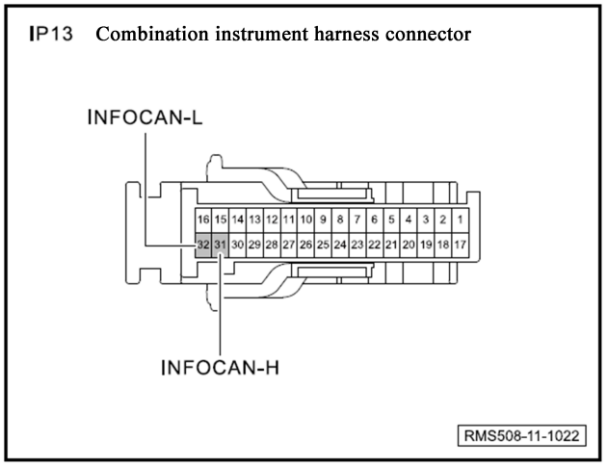
Yes

Step 2	Check the CAN data communication wire between the body controller and the instrument cluster.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the instrument cluster harness connector IP13.
D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.8.5.11 DTC: U011D87

DTC	DTC definition
U011D87	Lost communication with GSM

1. Diagnosis steps

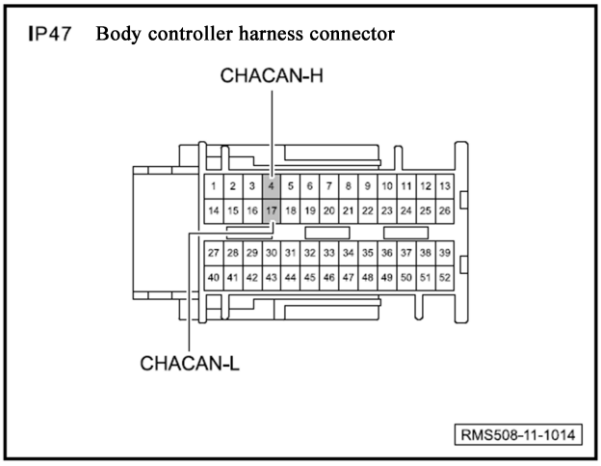
Step 1	Check the DTCs.

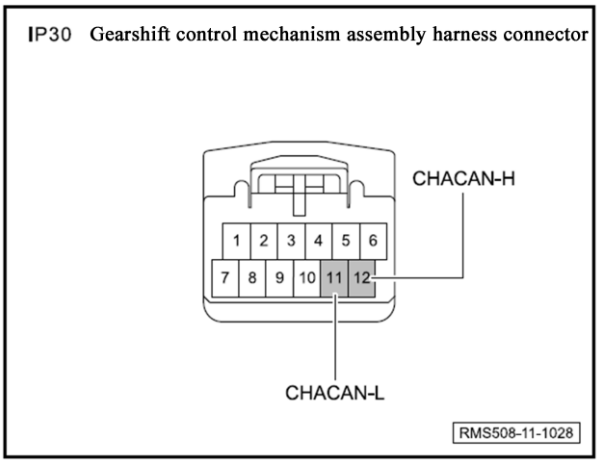
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the gearshift control mechanism assembly and the body controller.



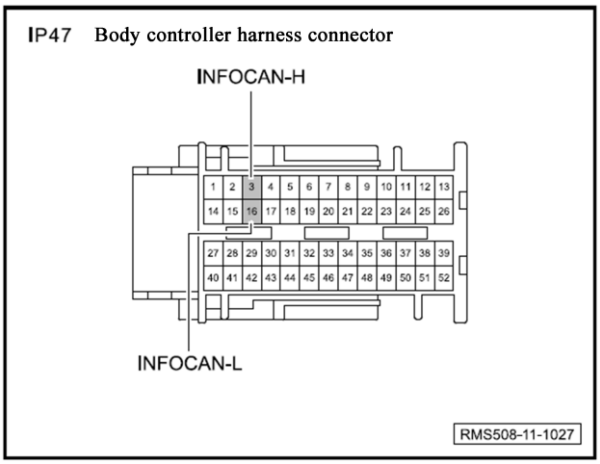


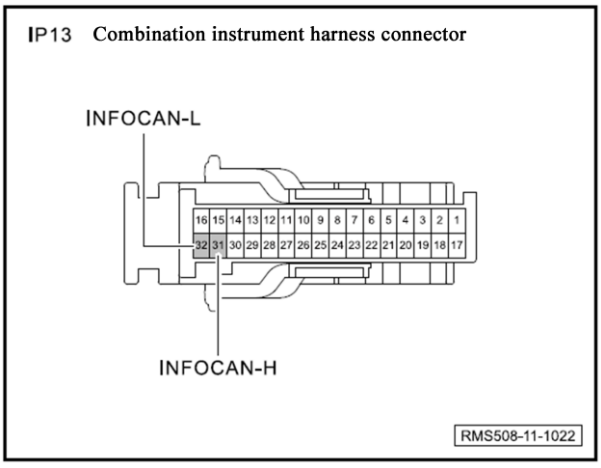
A Turn the start switch to "OFF" position.
B Disconnect the gearshift control mechanism assembly harness connector IP30.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the gearshift control mechanism assembly harness connector IP30 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 11 of the gearshift control mechanism assembly harness connector IP30 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.12 DTC: U019887

DTC	DTC definition
U019887	Lost communication with TBOX

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

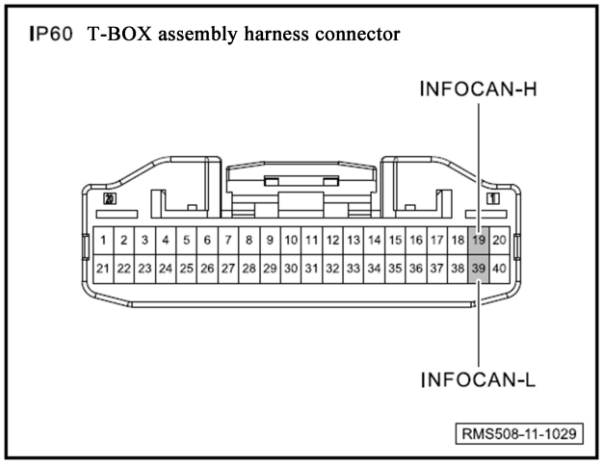
D Read the DTC again.

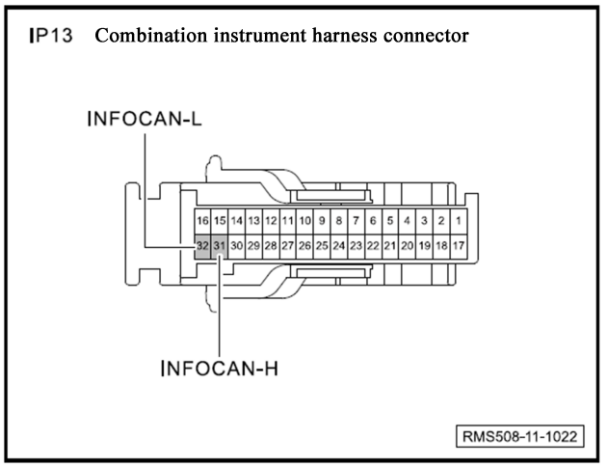
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the T-BOX assembly and the instrument cluster.





A Turn the start switch to "OFF" position.
B Disconnect the T-BOX assembly harness connector IP60.
C Disconnect the instrument cluster harness connector IP13.
D Measure the resistance between terminal 19 of the T-BOX assembly harness connector IP60 and terminal 31 of the instrument cluster harness connector IP13.
E Measure the resistance between terminal 39 of the T-BOX assembly harness connector IP60 and terminal 32 of the instrument cluster harness connector IP13.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the T-BOX assembly.

A Check whether the power supply ground wire of the T-BOX assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

No

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.
B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.8.5.13 DTC: U015187

DTC	DTC definition
U015187	Lost communication with ABM

1. Diagnosis steps

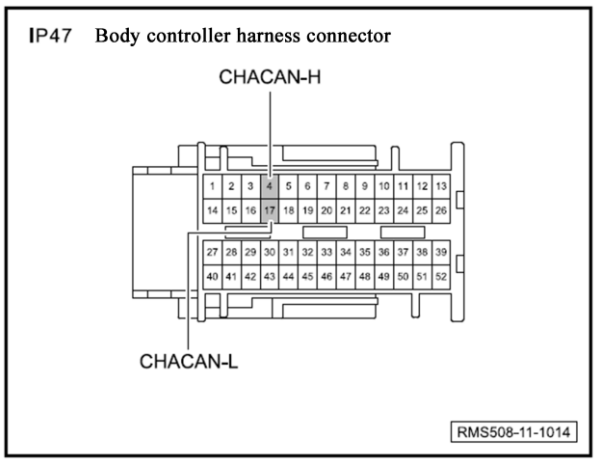
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

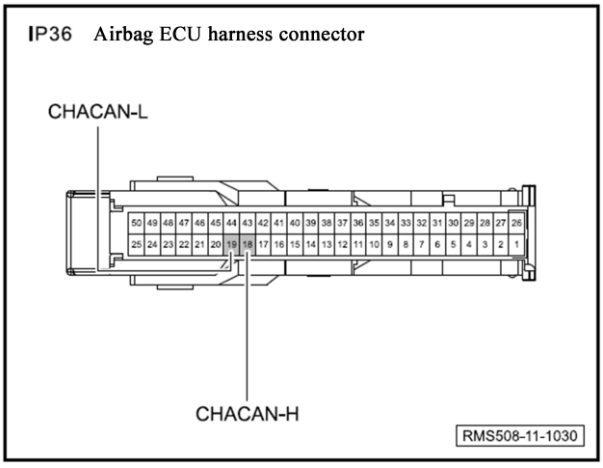
Yes

Step 2	Check the CAN data communication wire between the airbag ECU and the body controller.



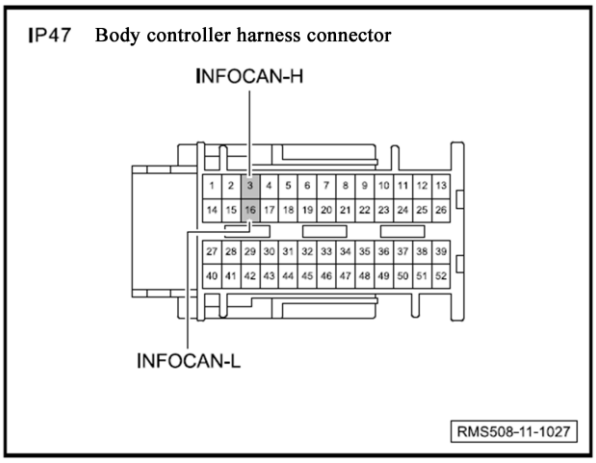
A Turn the start switch to "OFF" position.
B Disconnect airbag ECU harness connector IP36.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 18 of the airbag ECU harness connector IP36 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 19 of the airbag ECU harness connector IP36 and terminal 17 of the body controller harness connector IP48.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

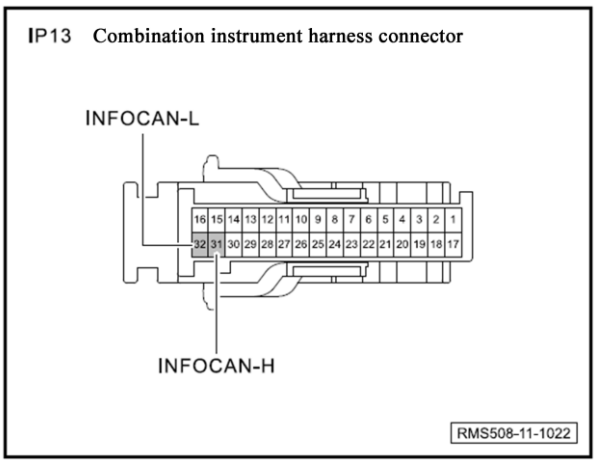
No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.14 DTC: U023287

DTC	DTC definition
U023287	Lost communication with SRR

1. Diagnosis steps

Step 1	Check the DTCs.

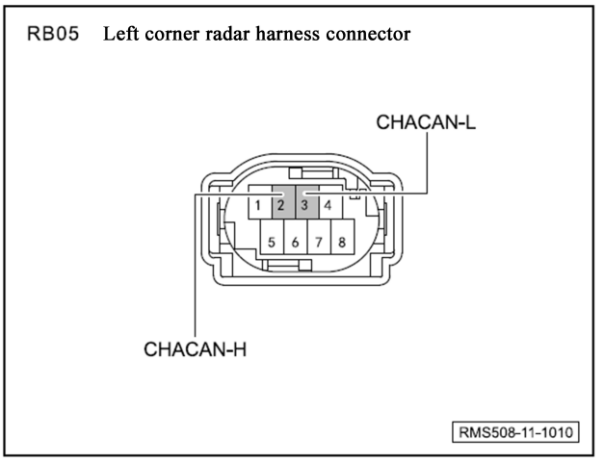
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

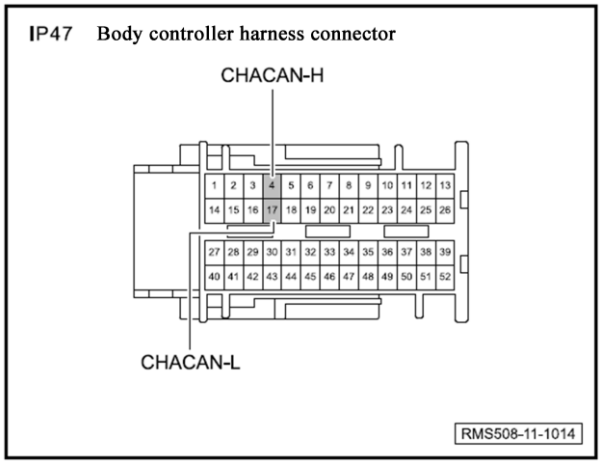
Yes

Step 2	Check the CAN data communication wire between the left corner radar and the body controller.

RB05 Left corner radar harness connector



IP47 Body controller harness connector

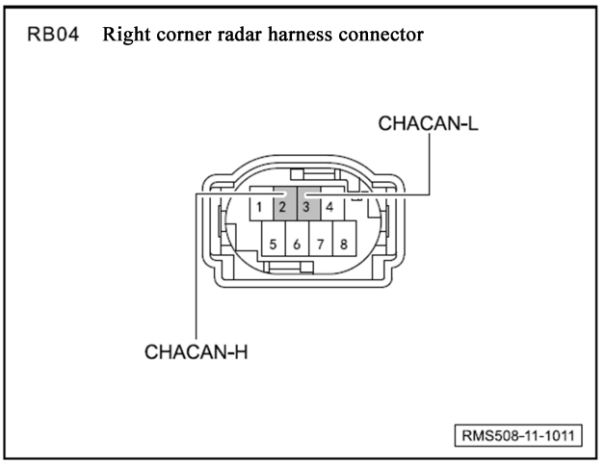


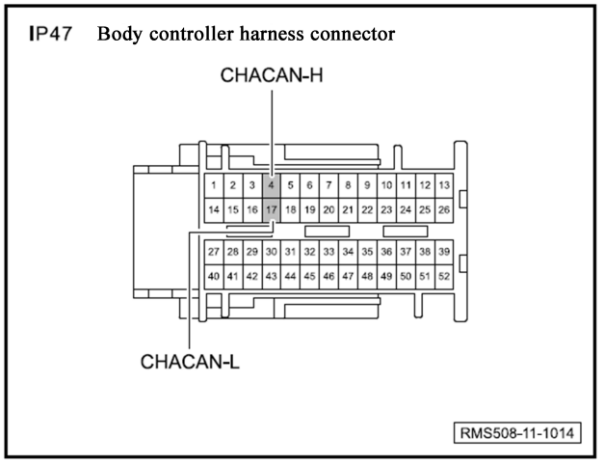
A Turn the start switch to "OFF" position.
B Disconnect the left corner radar harness connector RB05.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 2 of the left corner radar harness connector RB05 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 3 of the left corner radar harness connector RB05 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the right corner radar and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the right corner radar harness connector RB04.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 2 of the right corner radar harness connector RB04 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 3 of the right corner radar harness connector RB04 and terminal 17 of the body controller harness connector IP47.

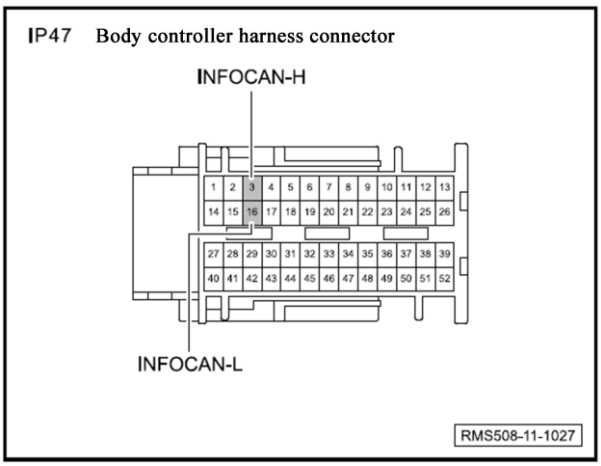
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the body controller and the instrument cluster.



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP48.

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP48 and terminal 31 of the instrument cluster harness connector IP13.

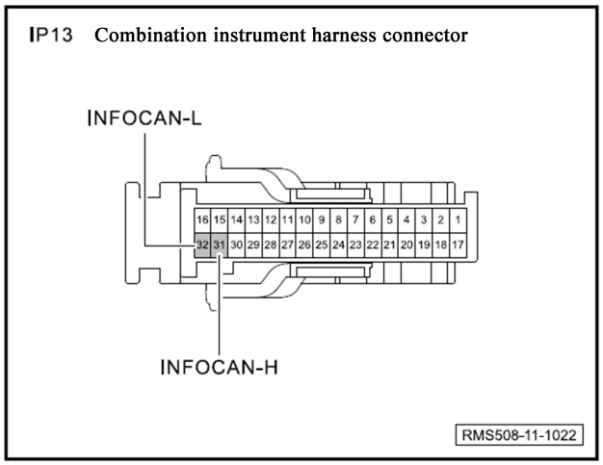
E Measure the resistance between terminal 16 of the body controller harness connector IP48 and terminal 32 of the instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open

circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply ground wire of corner radars.

A Check whether the power supply ground wire of corner radars is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.8.5.15 DTC: U012887

DTC	DTC definition
U012887	Failure in communication with EPB

1. Diagnosis steps

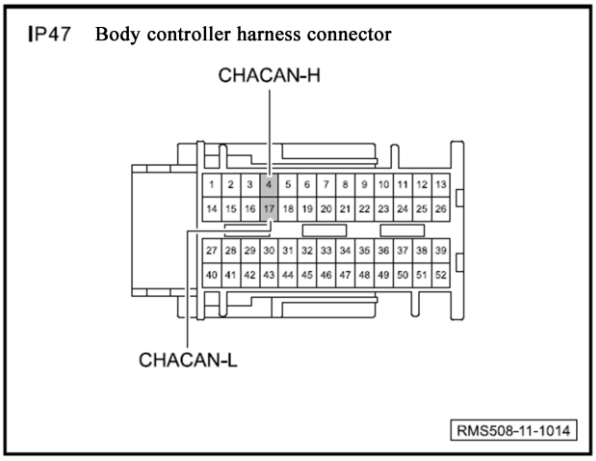
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

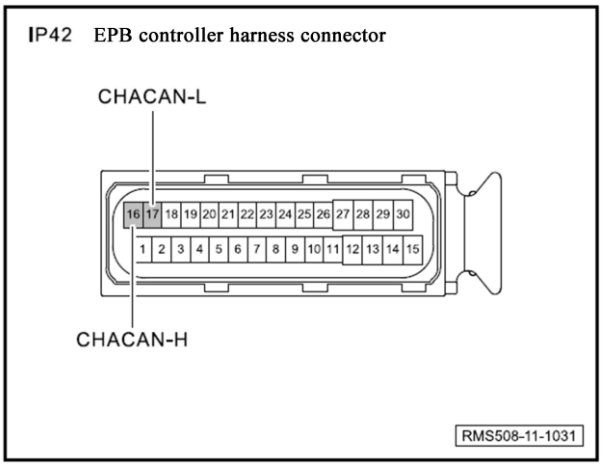
Yes

Step 2	Check the CAN data communication wire between the EPB controller and the body controller.



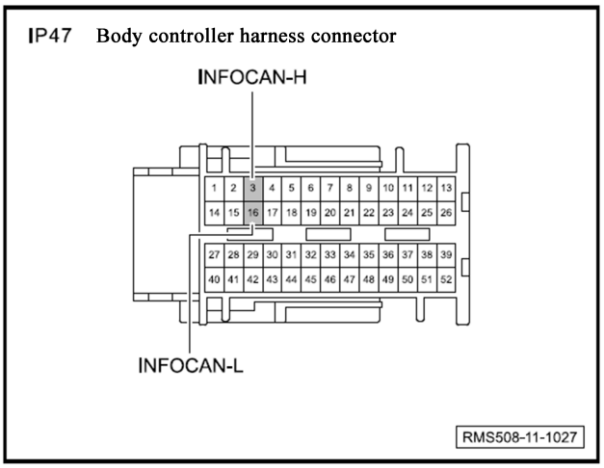
A Turn the start switch to "OFF" position.
B Disconnect EPB controller harness connector IP42.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 16 of EPB controller harness connector IP42 and terminal 4 of body controller harness connector IP47.
E Measure the resistance between terminal 17 of EPB controller harness connector IP42 and terminal 17 of body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

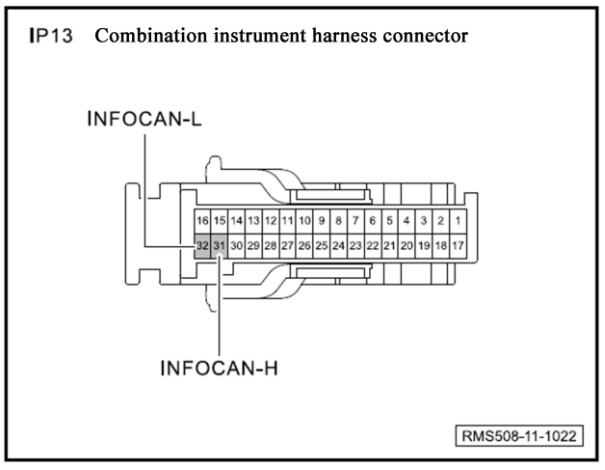
No →



Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.16 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

Step 1	Check the DTCs.

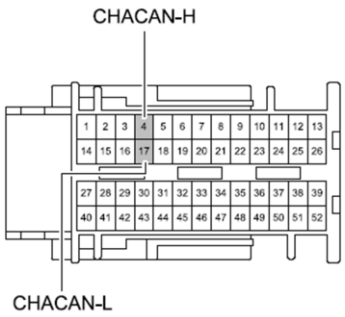
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

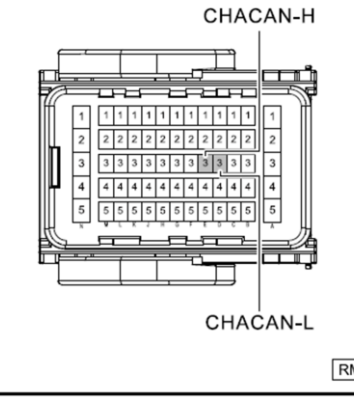
Step 2	Check the CHACAN data communication wire between the VCU and the body controller.

IP47 Body controller harness connector



A Turn the start switch to "OFF" position.
B Disconnect the VCU harness connector FB49.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

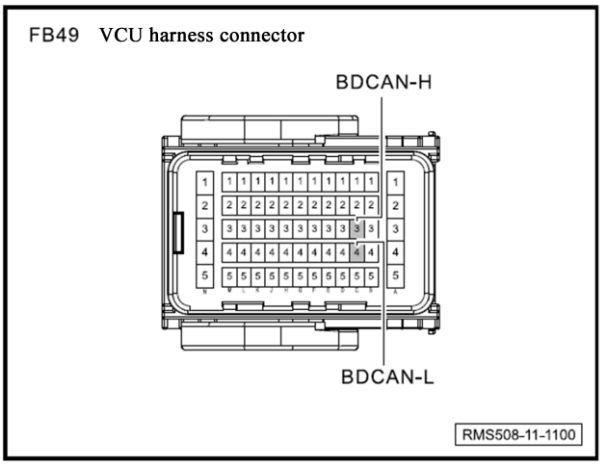
FB49 VCU harness connector

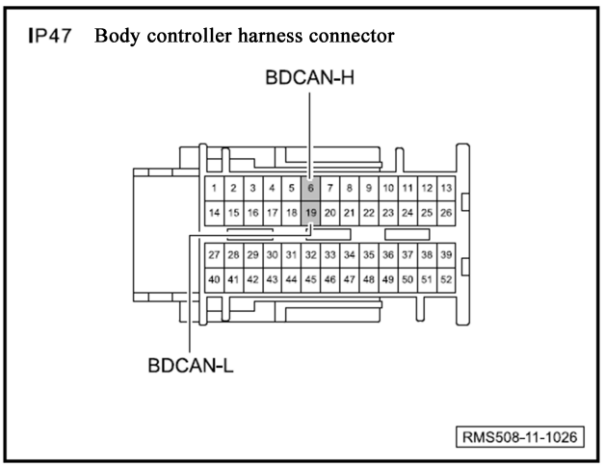


No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the BDCAN data communication wire between the VCU and the body controller.



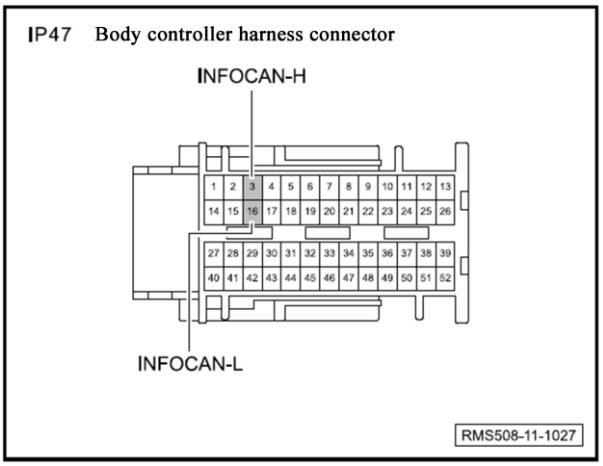


A Turn the start switch to "OFF" position.
B Disconnect the VCU harness connector FB49.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

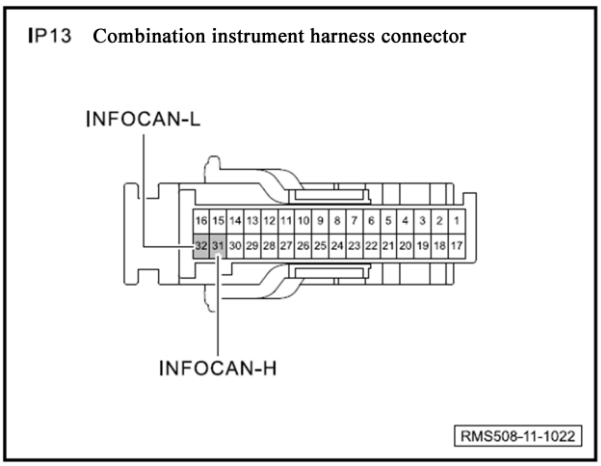
Step 4	Check the CAN data communication wire between the body controller and the instrument cluster.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the instrument cluster harness connector IP13.
D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or

replace the harness.



Yes

Step 5	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.8.5.17 DTC: U029387, U031187

DTC	DTC definition
U029287	Lost communication with MCU
U031187	Lost communication with GCU

1. Diagnosis steps

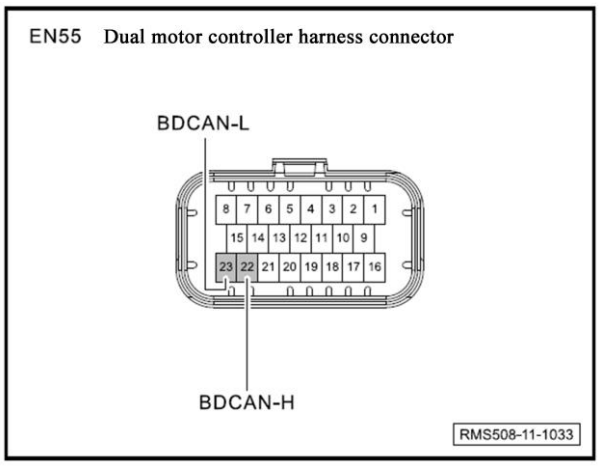
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

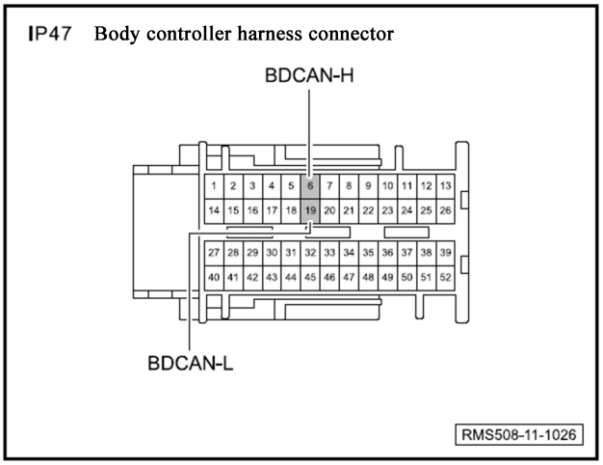
Yes

Step 2	Check the CAN data communication wire between the dual-motor controller and the body controller.



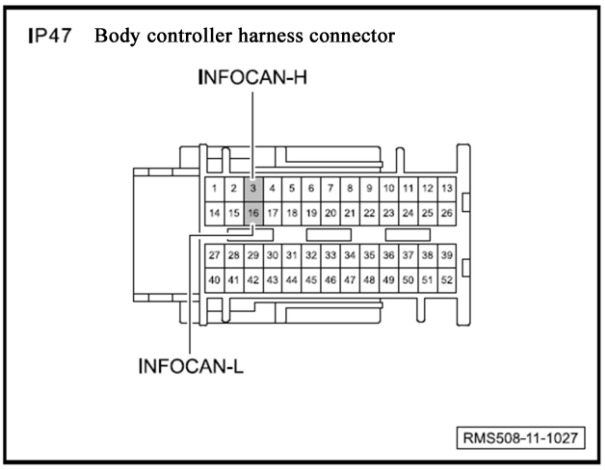
A Turn the start switch to "OFF" position.
B Disconnect dual-motor harness connector EN55.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 22 of the dual-motor controller harness connector EN55 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 23 of the dual-motor controller harness connector EN55 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

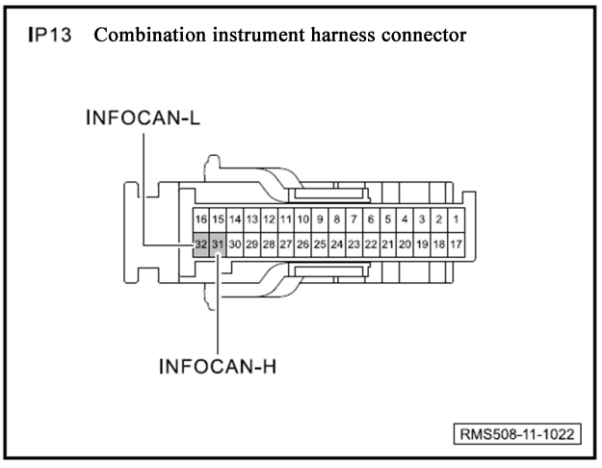
No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.18 DTC: U029387, U031187

DTC	DTC definition
U011187	Lost communication with BMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

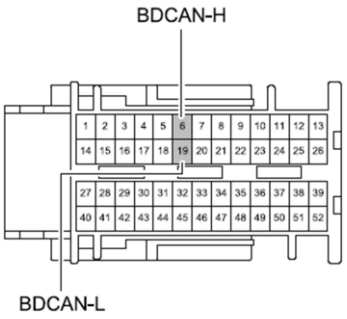
Yes

Step 2	Check the CAN data communication wire between the battery pack assembly and the body controller.

FB59 Battery pack assembly harness connector

RMS508-11-1034

IP47 Body controller harness connector



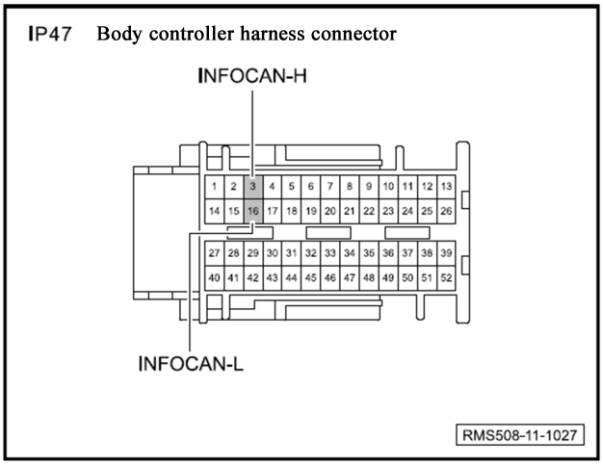
RMS508-11-1026

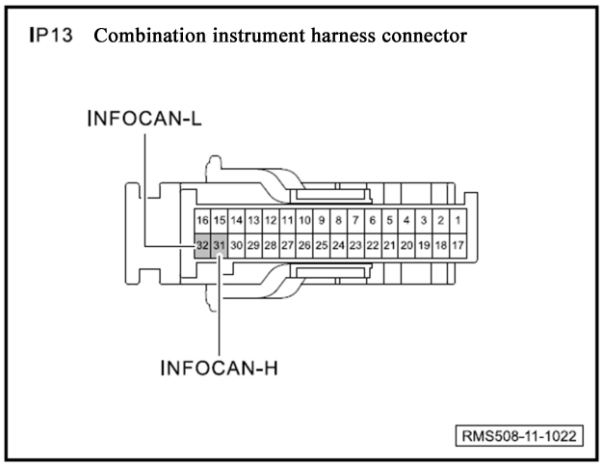
A Turn the start switch to "OFF" position.
B Disconnect the battery pack assembly harness connector FB59.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the battery pack assembly.

A Check whether the power supply and ground wires of the battery pack assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.19 DTC: U01C087

DTC	DTC definition
U01C087	Lost communication with LSPM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

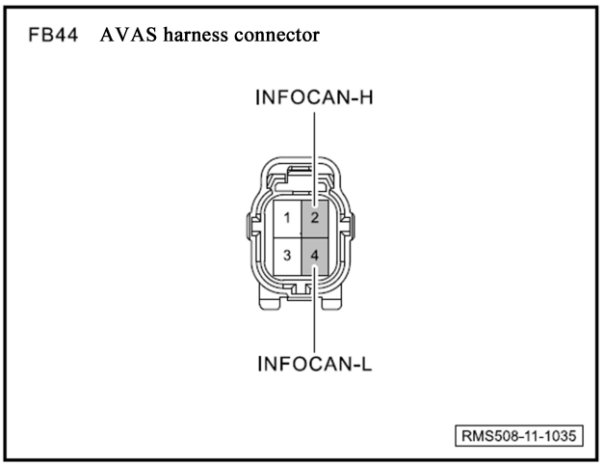
D Read the DTC again.

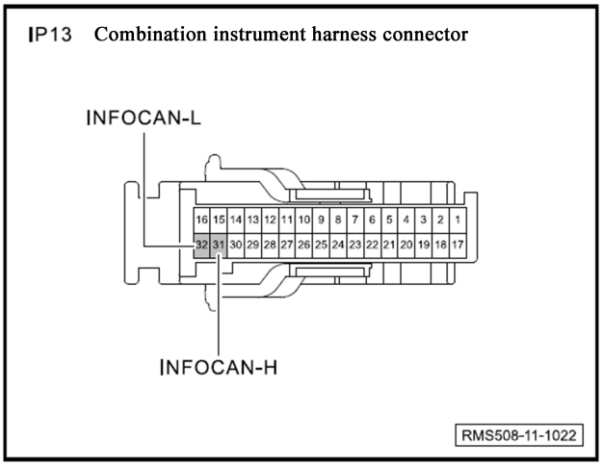
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the LSPM loudspeaker and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect the LSPM loudspeaker harness connector FB44.

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 2 of the LSPM loudspeaker harness connector FB44 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 4 of the LSPM loudspeaker harness connector FB44 and terminal 32 of the instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the LSPM loudspeaker.

A Check whether the power supply ground wire of the LSPM loudspeaker is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the LSPM loudspeaker.

A Replace the LSPM loudspeaker.

B Is the fault eliminated after replacing the LSPM loudspeaker?

Yes → The system works normally.

No

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.
B Is the fault eliminated after replacing the instrument cluster?

Yes	The system works normally.

Next

Step 6	The diagnosis is over.

8.8.5.20 DTC: U019987

DTC	DTC definition
U019987	Lost communication with PCM

1. Diagnosis steps

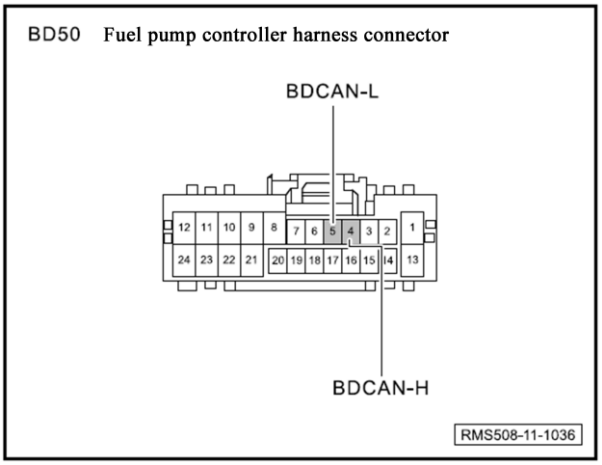
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

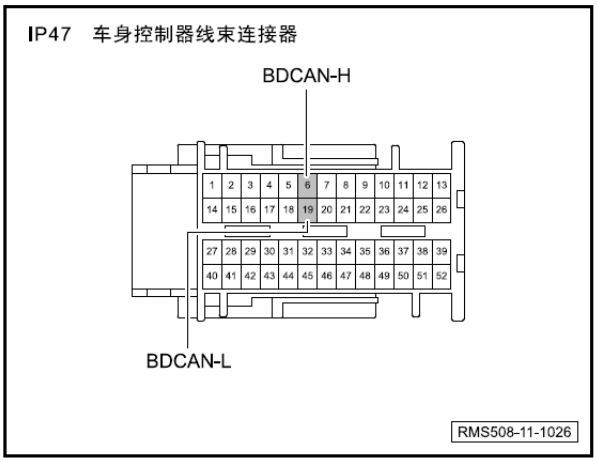
Yes

Step 2	Check the CAN data communication wire between the fuel pump controller and the body controller.



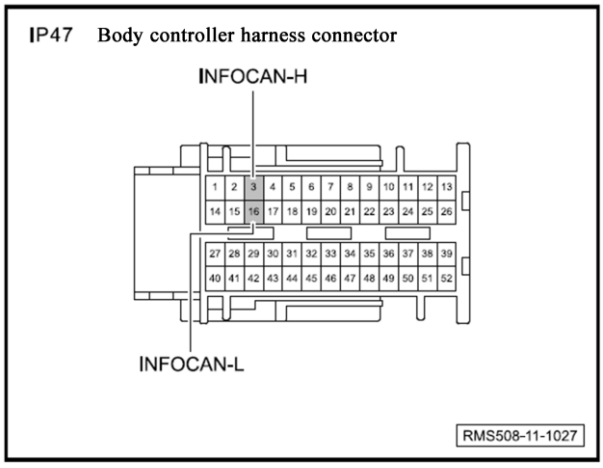
A Turn the start switch to "OFF" position.
B Disconnect the fuel pump controller harness connector BD50.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 4 of the fuel pump controller harness connector BD50 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 5 of the fuel pump controller harness connector BD50 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

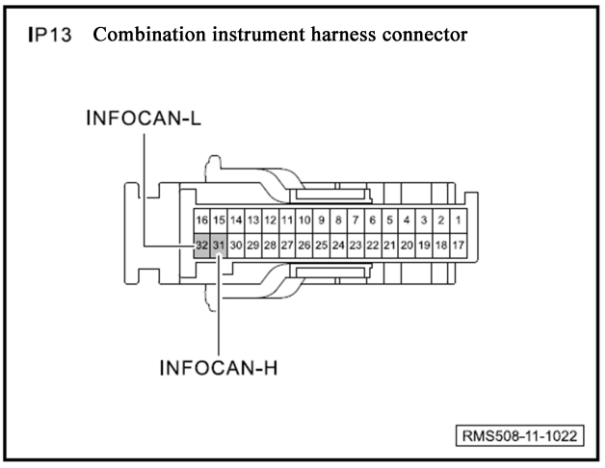
No	Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the oil pump controller.

A Check whether the power supply ground wire of the oil pump controller is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the oil pump controller.

A Replace the oil pump controller.

B Is the fault eliminated after replacing the fuel pump controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.21 DTC: U019987

DTC	DTC definition
U012287	Lost communication with ESP

1. Diagnosis steps

Step 1	Check the DTCs.

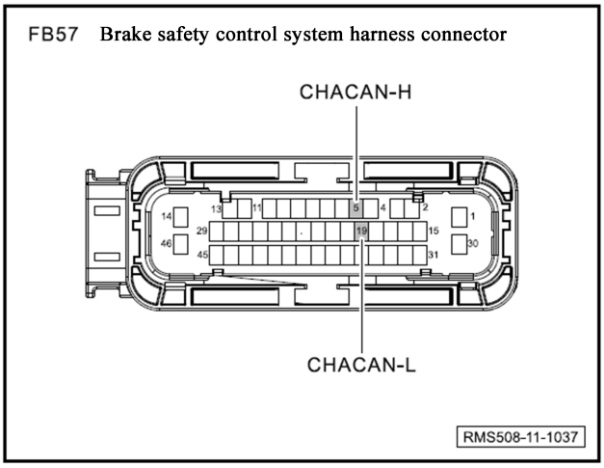
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

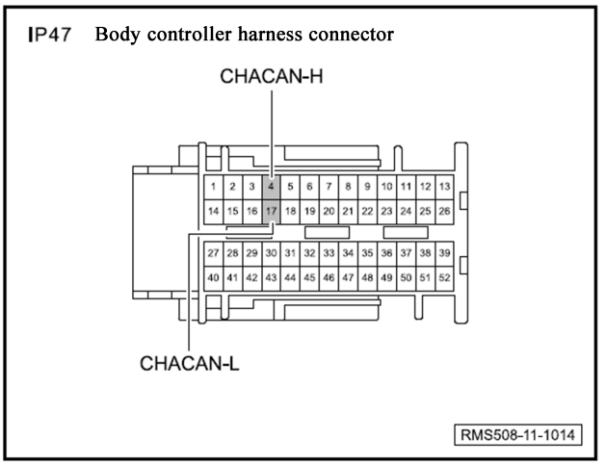
Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.

FB57 Brake safety control system harness connector



IP47 Body controller harness connector

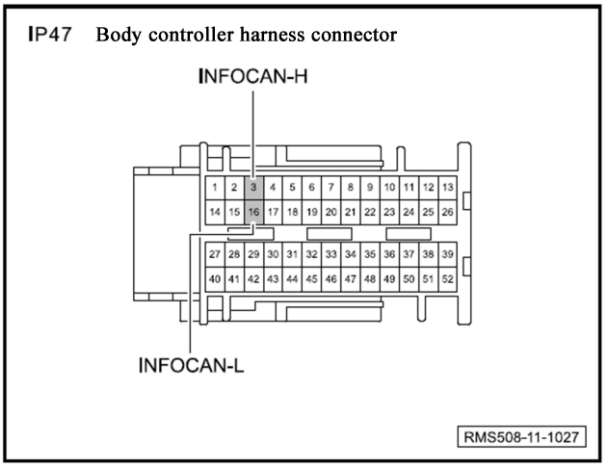


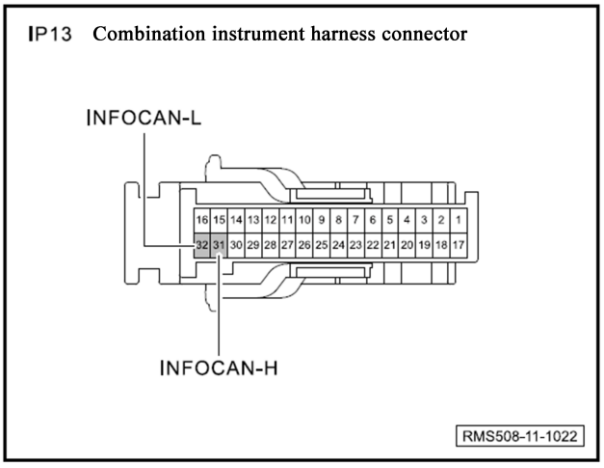
A Turn the start switch to "OFF" position.
B Disconnect the brake safety control system harness connector FB57.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.8.5.22 DTC: U023087

DTC	DTC definition
U023087	Lost communication with PLG

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

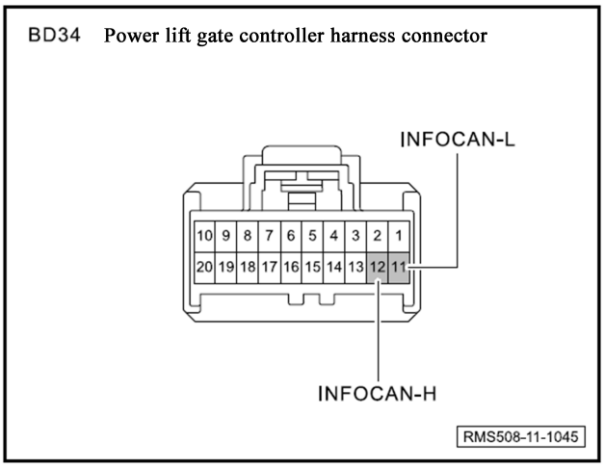
D Read the DTC again.

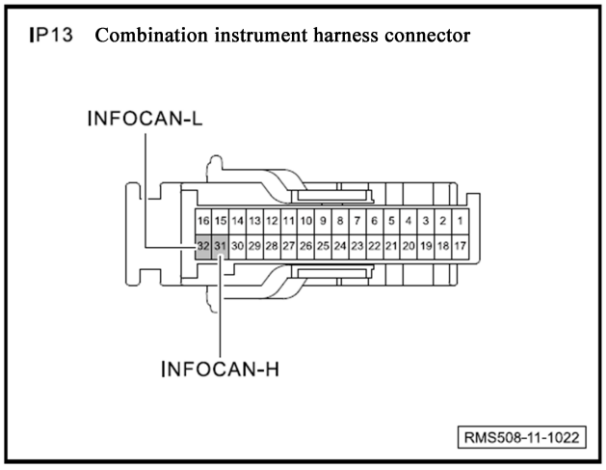
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the power lift gate controller and the instrument cluster.





A Turn the start switch to "OFF" position.

B Disconnect the power lift gate controller harness connector BD34.

C Disconnect the instrument cluster harness connector IP13.

D Measure the resistance between terminal 12 of the power lift gate controller harness connector BD34 and terminal 31 of the instrument cluster harness connector IP13.

E Measure the resistance between terminal 11 of the power lift gate controller harness connector BD34 and terminal 32 of the instrument cluster harness connector IP13.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the power lift gate controller.

A Check whether the power supply and ground wires of the power lift gate controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

No

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.
B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.8.5.23 DTC: U018687

DTC	DTC definition
U018687	Lost communication with IVI

1. Diagnosis steps

Step 1	Check the DTCs.

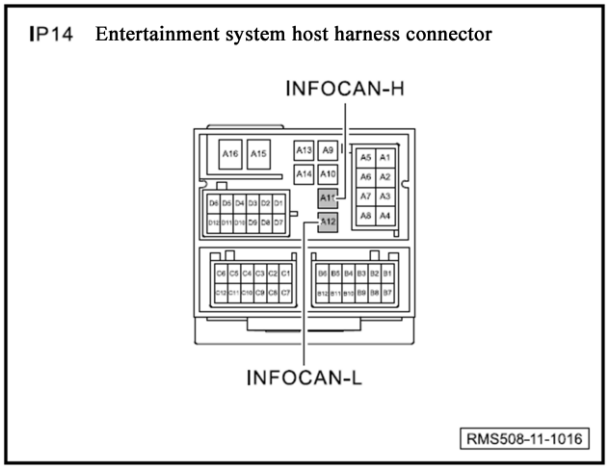
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

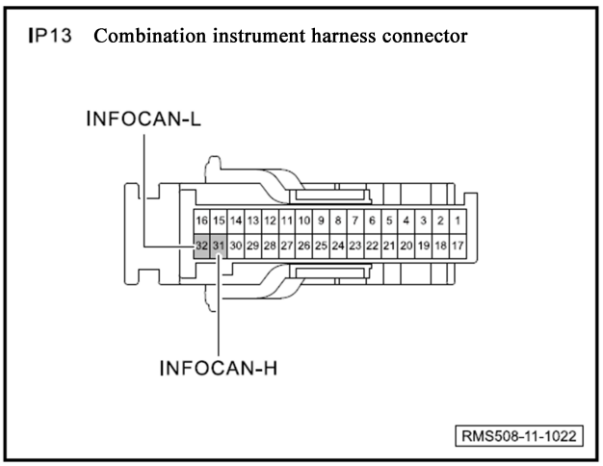
Step 2	Check the CAN data communication wire between the entertainment system host and the instrument cluster.

IP14 Entertainment system host harness connector



A Turn the start switch to "OFF" position.
B Disconnect the entertainment system host harness connector IP14.
C Disconnect the instrument cluster harness connector IP13.
D Measure the resistance between terminal A11 of the entertainment system host harness connector IP14 and terminal 31 of the instrument cluster harness connector IP13.
E Measure the resistance between terminal A12 of the entertainment system host harness connector IP14 and terminal 32 of the instrument cluster harness connector IP13.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 5	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.8.6 Removal and installation

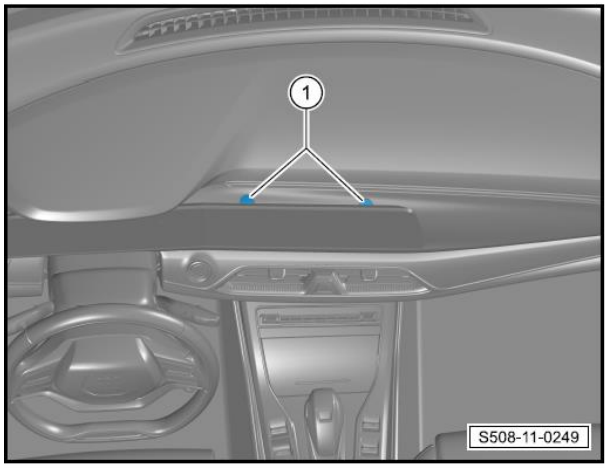
8.8.6.1 Removal and installation of instrument cluster assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

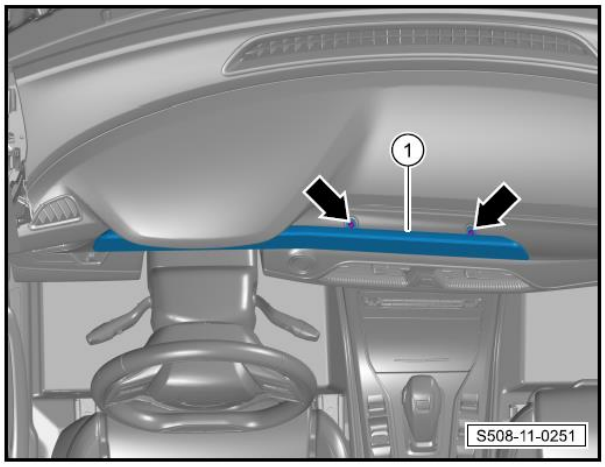
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the combination switch upper cover assembly. Refer to 9.8.3.7 Removal and installation of combination switch upper cover assembly



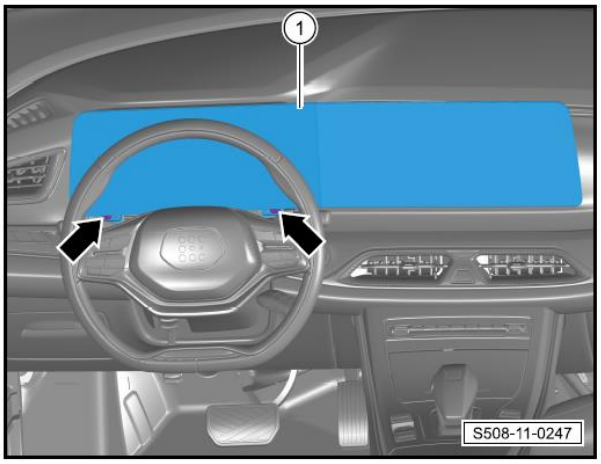
4 Remove the instrument cluster assembly

a. Remove the instrument panel middle blank cover ①.



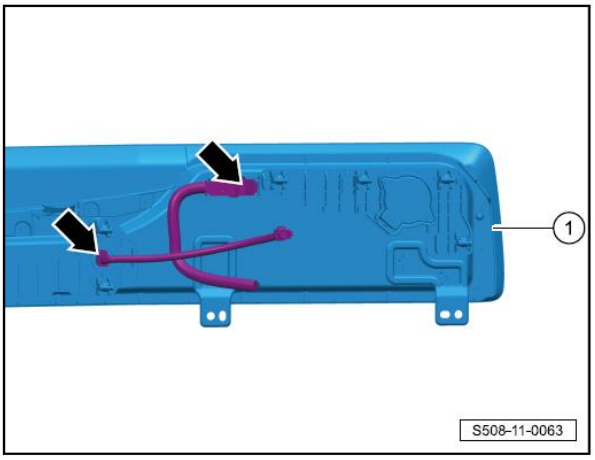
b. Unscrew the fixing screws (see the arrows) of the instrument cluster assembly ①.

- Tightening torque of screw: **2±1 N·m**



c. Unscrew the fixing bolts (see the arrows) and remove the instrument cluster assembly ①.

- Tightening torque of bolt: **10±1 N·m**



d. Disconnect the connector (see arrow), and take out the instrument cluster assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After replacing the instrument cluster assembly, use a diagnostic scanner for after-sales matching of the instrument cluster assembly. Refer to 1.4.2.6 After-sales matching after module replacement

8.9 Panoramic sunroof system

8.9.1 Specification

8.9.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Sunroof body assembly	Hexagon flange nut	10±2
	Hexagon head bolt c/w plain washer cluster M6×18	10±2

8.9.2 Description and operation

8.9.2.1 System description

System Overview

- The sunroof adopts a two-button switch ("open" and "close" buttons).
- The sunroof can be opened and closed by the key in remote mode.
- Voice control function is provided.

Sunroof operation mode

1. Button operation:

The buttons on the front dome light include: "sunroof open" and "sunroof close" buttons.

Besides, there are separate electric sunshade buttons: "sunshade open" and "sunshade close" buttons.

The buttons can be operated manually and automatically: Press for one-button operation, press and hold for manual operation. Press time ≤ 500ms, press and hold time > 500ms.

- Sunroof opening: Press the "Sunroof Open" button to open the sunroof, and the electric sunshade will automatically open during the sunroof opening.
- To close the sunroof, press the "sunroof close" button, and the sunroof glass will be closed; to close the sunshade, press the "sunshade close" button again, and the sunshade will be closed. Alternatively, directly press the "sunshade close" button, and the sunroof glass will be closed along with the closing of the sunshade.
- Sunroof tilting: Press the "Sunroof Close" button, and the sunroof glass will tilt and the sunshade will automatically open to half-open or more.
- Sunshade opening: Press the "Sunshade Open" button to open the electric sunshade (the sunroof glass does not move).
- Sunshade closing: Press the "Sunshade Close" button to close the electric sunshade (the sunroof glass will close automatically).

2. Remote operation:

- MP5 host is set with synchronous opening and closing of sunroof and key.
- The sunroof is remotely closed by long pressing the "Lock" button of the remote control key in the "OFF" position. In the process of closing, the button should be pressed all the time. Once the button is released, sunroof closing will stop.
- The sunroof will be remotely opened by long pressing the "Unlock" button of the remote control key at the "OFF" position. In the process of opening, the button should be pressed all the time. Once the button is released, the sunroof will stop opening.
- Only opening and closing can be realized through remote operation, and tilting is not supported in remote operation.

3. Voice operation:

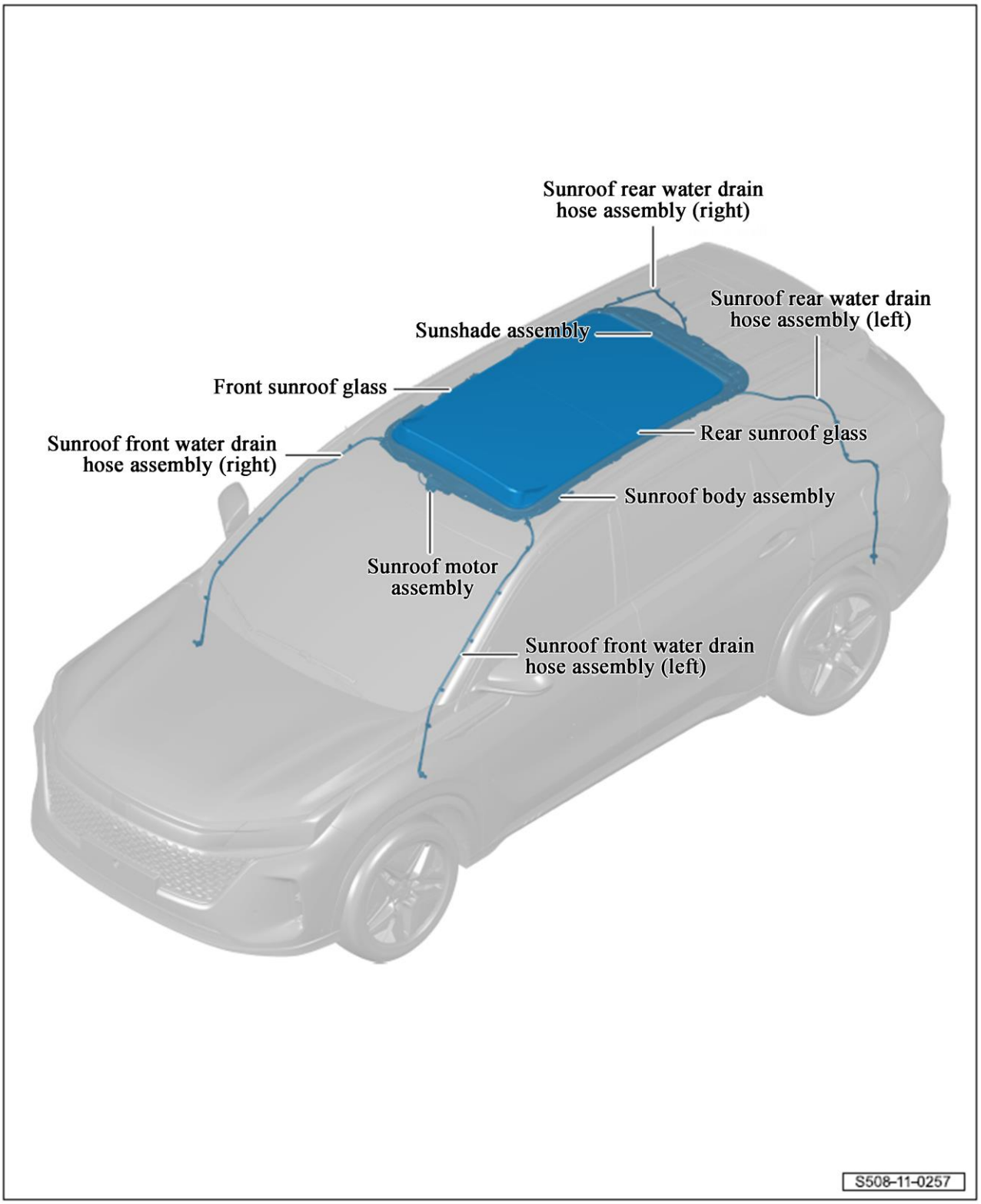
Sunroof opening, closing and tilting, as well as sunshade opening and closing can be realized through voice operation.

- After voice activation, enter "open sunroof", "close sunroof" and "sunroof tilt" voices to control sunroof opening, closing and tilting.
- After voice activation, enter "open sunshade" and "close sunshade" voices to control sunshade opening and closing.

8.9.3 Component position

8.9.3.1 Component position

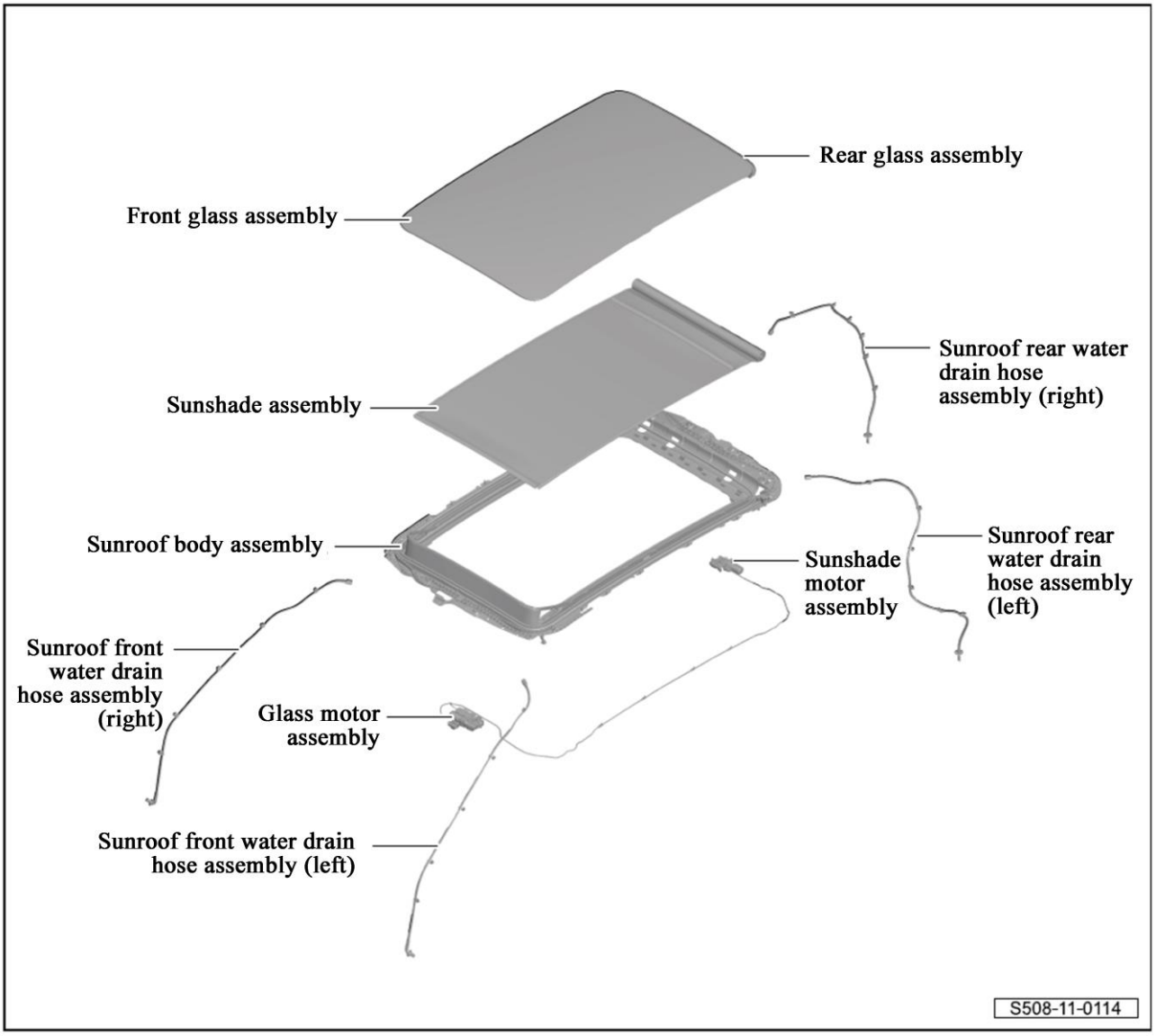
Component position



8.9.4 Exploded view

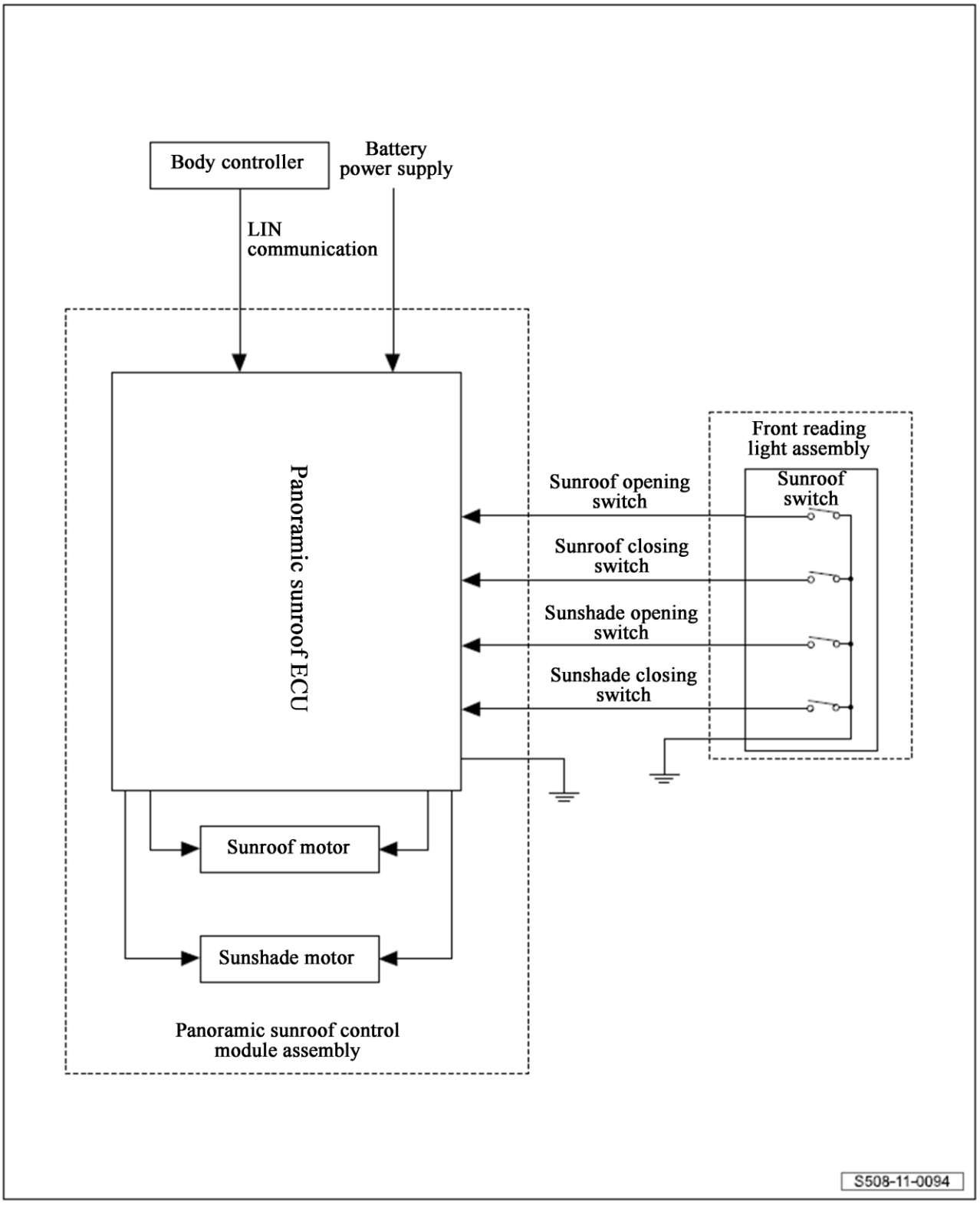
8.9.4.1 Exploded view

Exploded view of panoramic sunroof



8.9.5 Electrical schematic diagram

8.9.5.1 Electrical schematic diagram



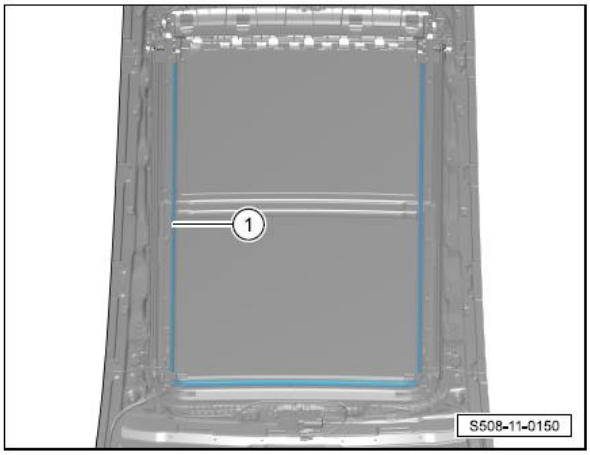
8.9.6 Removal and installation

8.9.6.1 Removal and installation of front sunroof glass assembly

Disassembly procedures

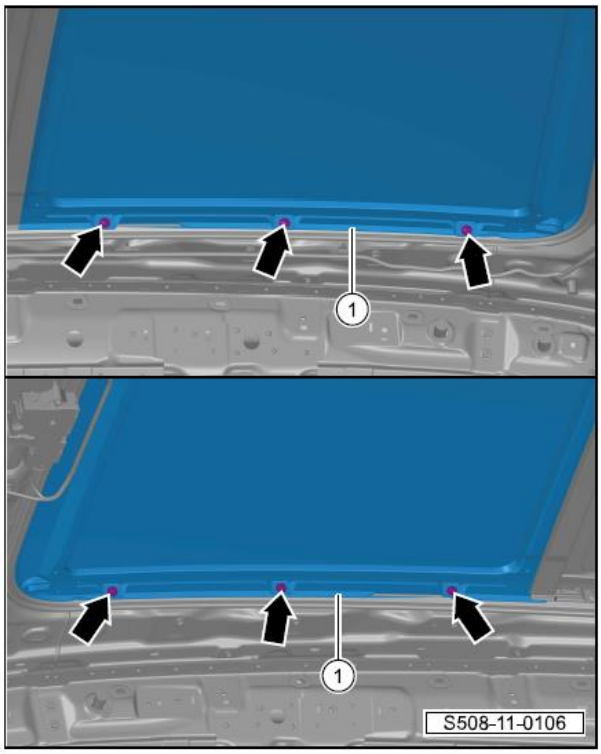
1 Open the sunroof sunshade, and put the sunroof glass in closed position.

2 Turn off all the electrical appliances and turn off the Start switch.



3 Remove the front sunroof glass assembly

a. Disengage the sunroof glass sealing strip ①.



b. Unscrew the fixing bolts (see the arrows) on the left and right sides of the front sunroof glass assembly.

c. Carefully take out the front sunroof glass assembly ① upward.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

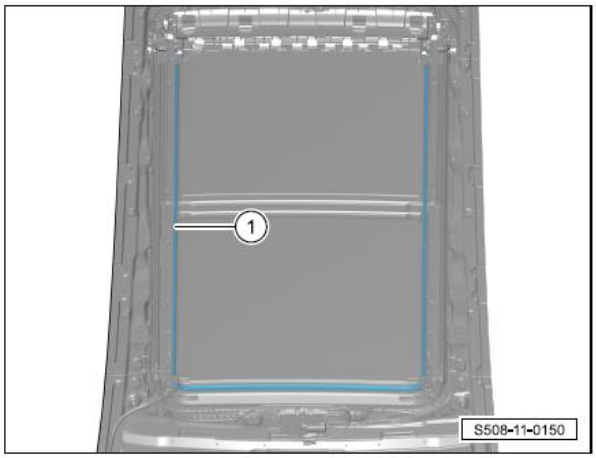
- After the installation, perform a test on all functions of the sunroof glass.

8.9.6.2 Removal and installation of rear sunroof glass assembly

Disassembly procedures

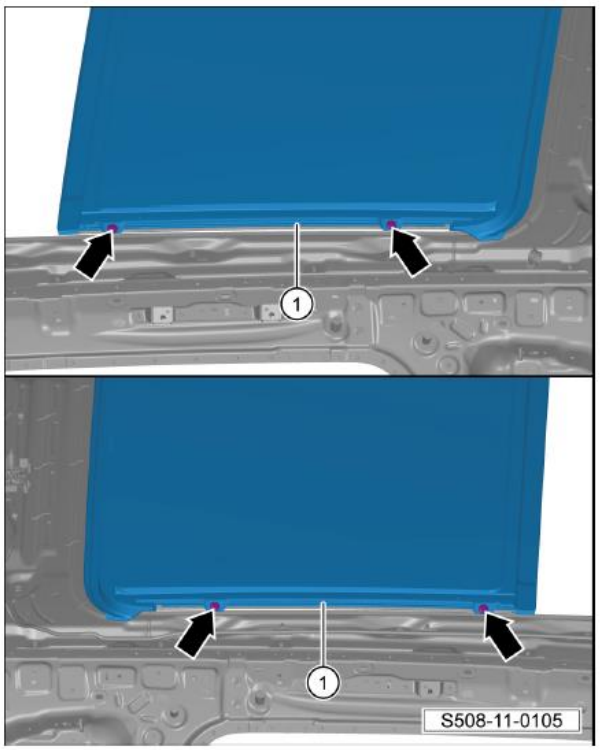
1 Open the sunroof sunshade, and put the sunroof glass in closed position.

2 Turn off all the electrical appliances and turn off the Start switch.



3 Remove the rear sunroof glass assembly

a. Disengage the sunroof glass sealing strip ①.



b. Unscrew the fixing bolts (see the arrows) on both sides of the rear sunroof glass assembly ①.

c. Carefully take out the rear sunroof glass assembly ① upward.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, adjust the rear sunroof glass assembly. Refer to 8.9.6.3 Adjustment of sunroof glass

8.9.6.3 Adjustment of sunroof glass

Adjustment of sunroof glass

Notes

If the sunroof glass is adjusted correctly, the glass sealing strip can fit closely with the roof, and the water flowing into the drainage channel will be greatly reduced, thus reducing the possibility of water leakage and noise.

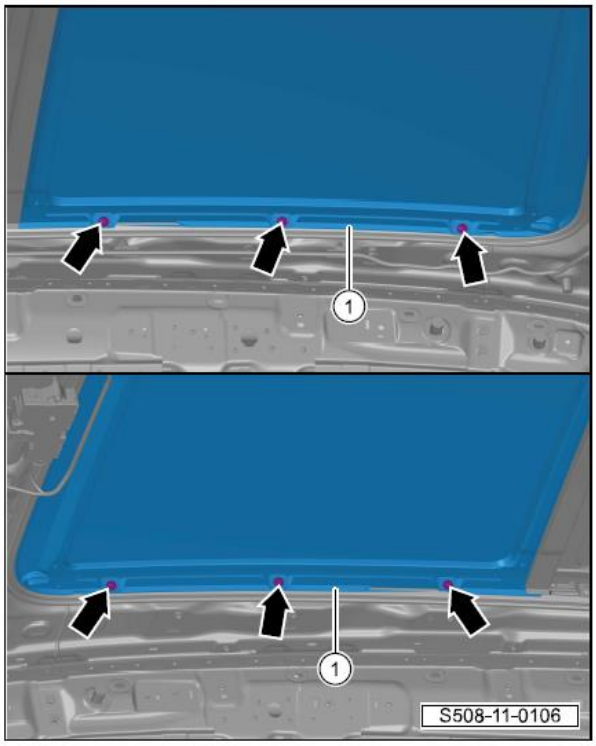
1 Test the fitness as per following steps:

a. Insert a 2 mm thick plate between the roof and the glass sealing strips (front and rear).

b. Close the sunroof glass.

c. Pull the plate out; if you feel resistance during pulling, then it is well matched.

d. Complete fitting adjustment between the sunroof glass and the roof by changing the vertical height of the sunroof glass.



2 e. Slide the sunroof visor to the fully open position.

f. Keep the sunroof glass in the fully closed position.

g. Loosen the fixing bolts (see the arrows) on both sides of the sunroof glass ① and maintain a certain degree of pre-tightening so that the sunroof glass ① can be kept in the adjusted position.

h. Check if the sunroof glass is properly sealed.

i. Tighten the fixing bolts (see the arrows) on both sides of the sunroof glass ①.

Tip:

After the adjustment, perform water spray test on the tightness of the sunroof.

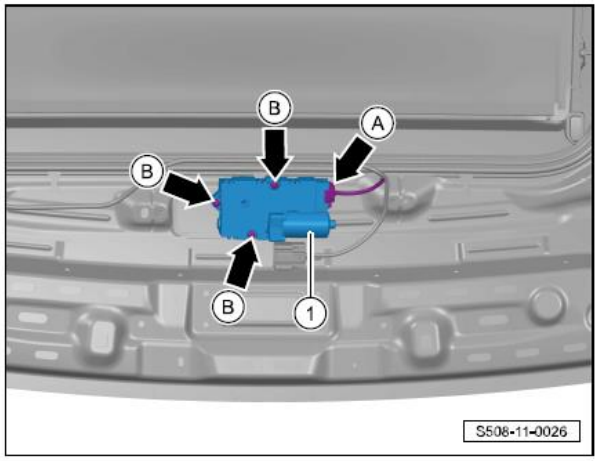
8.9.6.4 Removal and installation of glass motor assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)



4 Remove the glass motor assembly

a. Disconnect the glass motor assembly connector (see arrow A).

b. Unscrew the fixing bolts (see arrow B) and remove the glass motor assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the sunroof system.

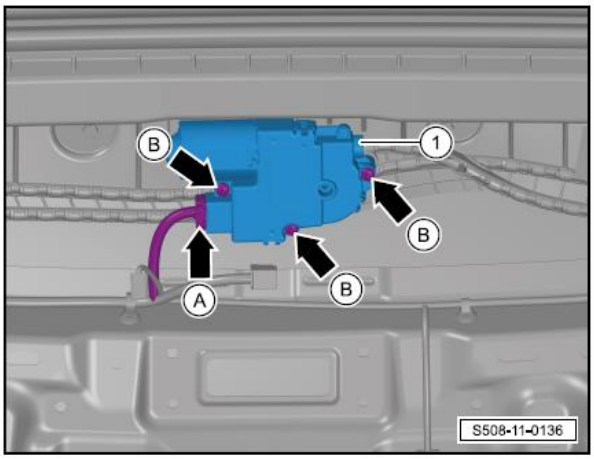
8.9.6.5 Removal and installation of sunshade motor assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)



4 Remove the sunshade motor assembly.

a. Disconnect the sunshade motor assembly connector (see arrow A).

b. Unscrew the fixing bolts (see arrow B), and remove the sunshade motor assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the sunroof system.

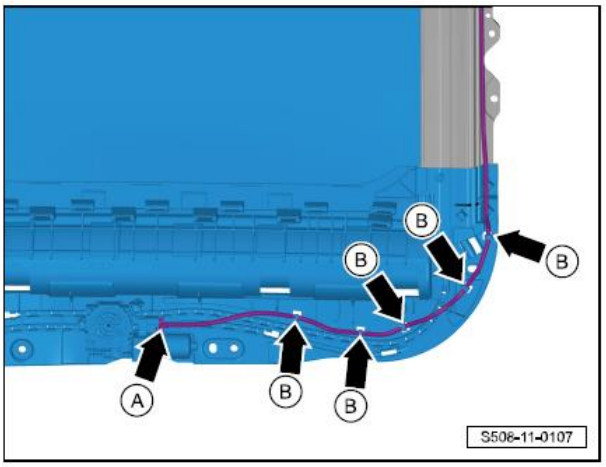
8.9.6.6 Removal and installation of sunshade assembly

Disassembly procedures

Tip:

When opening/closing the sunroof sunshade system, it is prohibited to touch the sunroof sunshade system by hands or articles, which may cause wrinkle, release or even failure of the sunroof sunshade system.

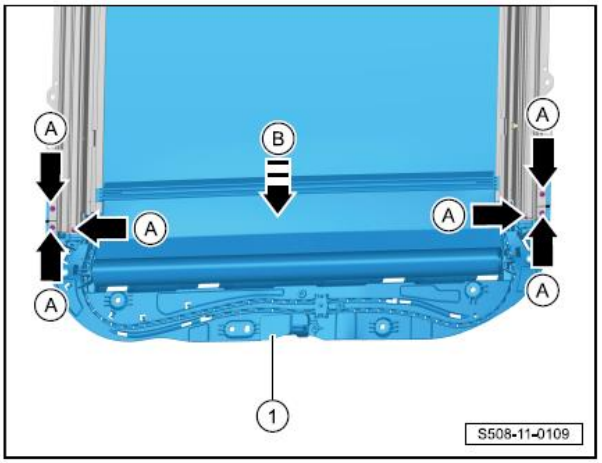
1 Remove the sunroof body assembly. Refer to 8.9.6.7 Removal and installation of sunroof body assembly



2 Remove the sunshade assembly

a. Disconnect the harness connector (see arrow A) of the sunroof sunshade anti-pinch motor assembly.

b. Disengage the fixing clip (see arrow B) of the harness.



c. Unscrew the fixing screws (see arrow A) of the sunshade assembly.

d. Disengage the sunshade assembly from the sunroof body assembly in the direction of arrow B, and take out the sunshade assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check whether the sunshade assembly can be opened and closed normally.

8.9.6.7 Removal and installation of sunroof body assembly

Disassembly procedures

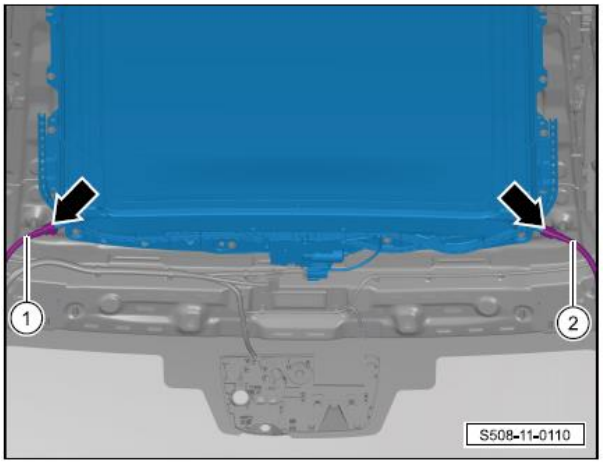
1 Remove the panoramic sunroof front glass assembly. Refer to 8.9.6.1 Removal and installation of front glass assembly

2 Remove the panoramic sunroof rear glass assembly. Refer to 8.9.6.2 Removal and installation of rear glass assembly

3 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)

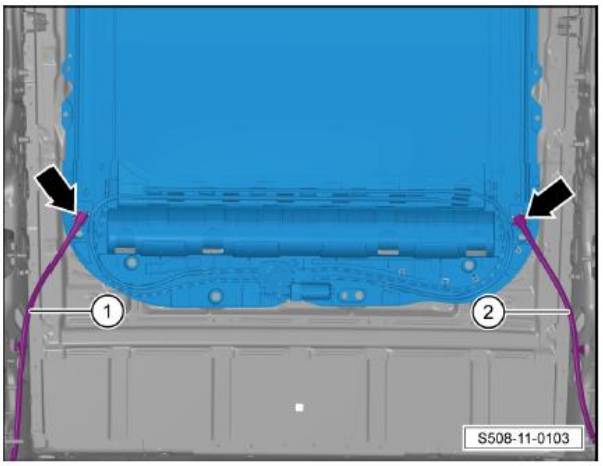
4 Remove the sunroof glass motor assembly. Refer to 8.9.6.4 Removal and installation of glass motor assembly

5 Remove the sunroof sunshade motor assembly. Refer to 8.9.6.5 Removal and installation of sunshade motor assembly

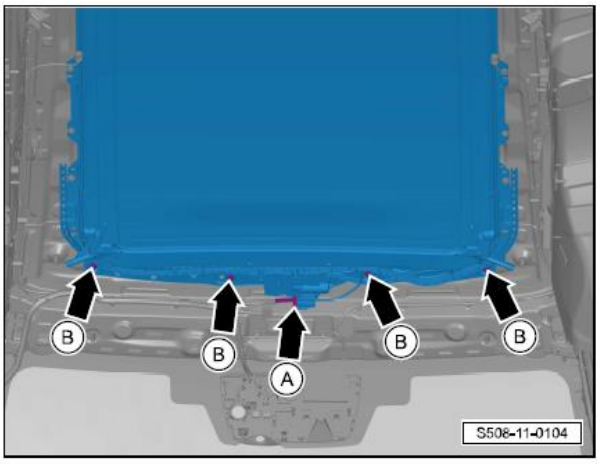


6 Remove the sunroof body assembly

a. Loosen the fixing clamp (see arrow), and disconnect the sunroof left/right front water drain hose assembly ① and ② from the sunroof body assembly.



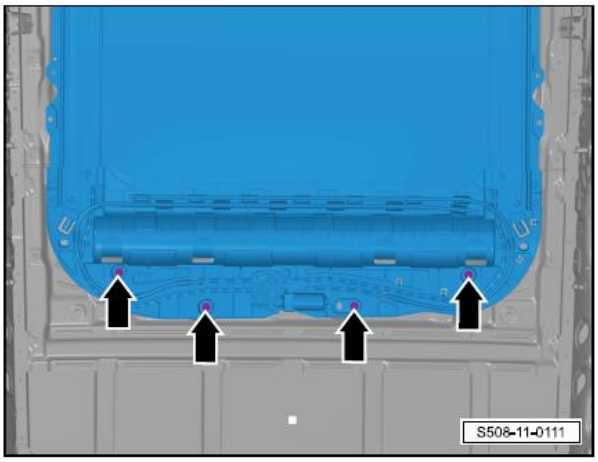
b. Loosen the fixing clamp (see arrow), and disengage the sunroof left/right rear water drain hose assembly ① and ② from the sunroof body assembly.



c. Disengage the sunroof harness connector (see arrow A).

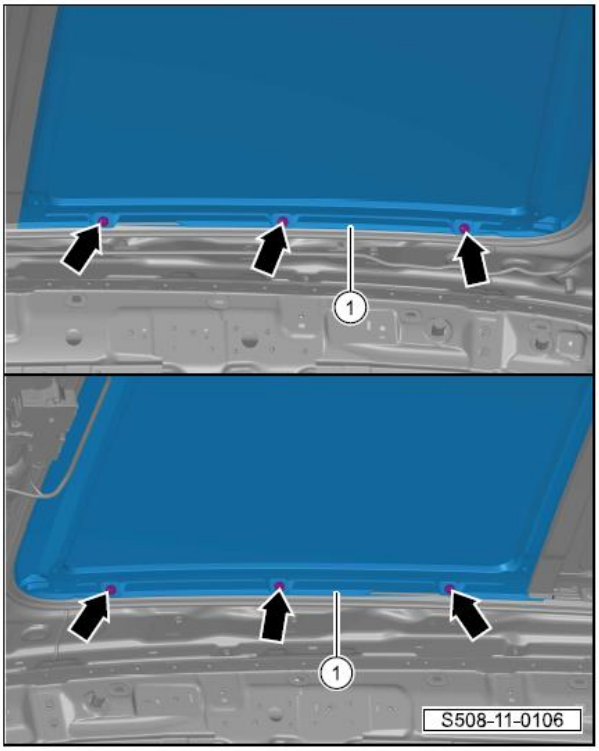
d. Unscrew the front fixing bolts (see arrow B) of the sunroof body assembly.

- Tightening torque of bolt: **10±2 N·m**



e. Unscrew the rear fixing bolts (see the arrows) of the sunroof body assembly.

- Tightening torque of bolt: **10±2 N·m**



f. Unscrew the left/right fixing bolt (see arrow), and remove the sunroof body assembly ①.

- Tightening torque of bolt: **10±2 N·m**

Tip:

Remove and install the sunroof body assembly with the cooperation of another technician.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, check that all functions of the sunroof are normal.

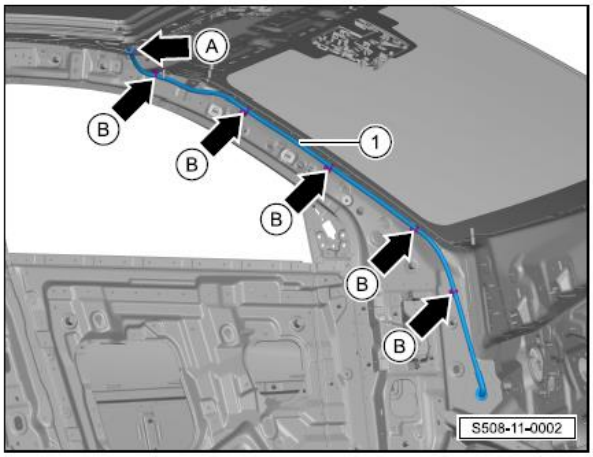
8.9.6.8 Removal and installation of sunroof front left water drain hose assembly

Disassembly procedures

1 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)

2 Remove the left A-pillar interior trim panel assembly. Refer to 9.14.2.8 Removal and installation of A-pillar interior trim panel assembly

3 Remove the instrument panel left lower cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel left lower cover assembly

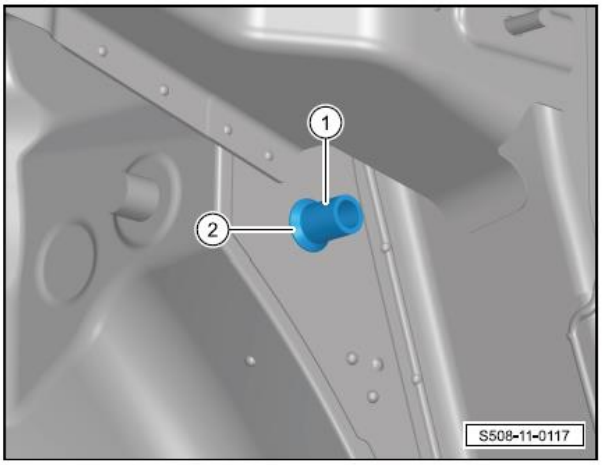


4 Remove the front left drain hose assembly of sunroof

a. Loosen the fixing clamp (see arrow A), and disengage the sunroof left front water drain hose assembly ① from the sunroof body assembly.

b. Disengage the fixing clip (see arrow B), and remove the sunroof left front water drain hose assembly ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the drain hose ① is fully exposed.
- Confirm whether the drain hose sealing cover ② is installed in place.

Notes

Before the rainy season comes, check whether the drain hose is blocked.

Clogged or incorrectly positioned water drain hoses may lead to serious water logging on the cab floor.

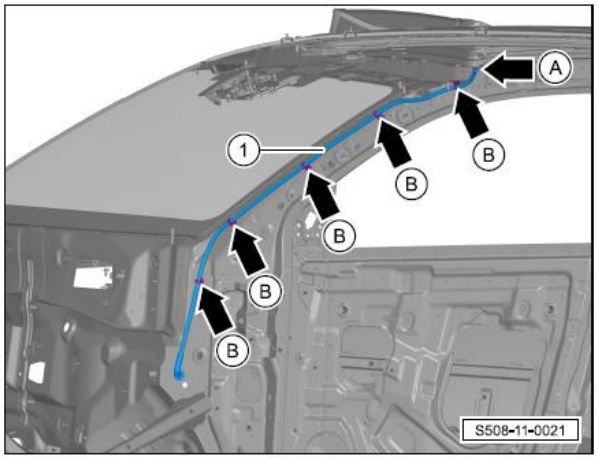
8.9.6.9 Removal and installation of sunroof front right water drain hose assembly

Disassembly procedures

1 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)

2 Remove the right A-pillar interior trim panel assembly. Refer to 9.14.2.8 Removal and installation of A-pillar interior trim panel assembly

3 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly

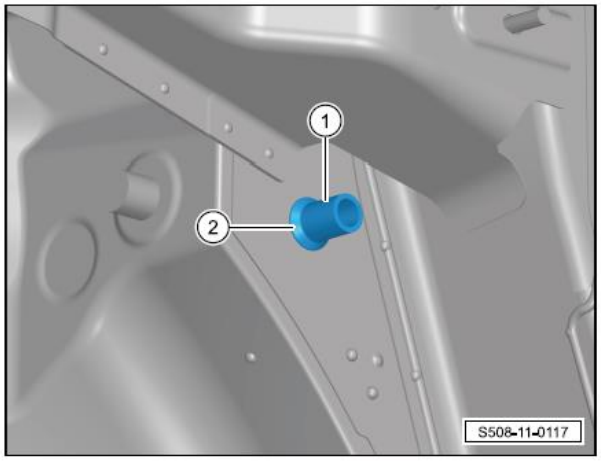


3 Remove the front right drain hose assembly of sunroof

a. Loosen the fixing clamp (see arrow A), and disengage the sunroof right front water drain hose assembly ① from the sunroof body assembly.

b. Disengage the fixing clip (see arrow B), and remove the sunroof right front water drain hose assembly ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the drain hose ① is fully exposed.
- Confirm whether the drain hose sealing cover ② is installed in place.

Notes

Before the rainy season comes, check whether the drain hose is blocked.

Clogged or incorrectly positioned water drain hoses may lead to serious water logging on the cab floor.

8.9.6.10 Removal and installation of rear sunroof drain hose assembly

Disassembly procedures

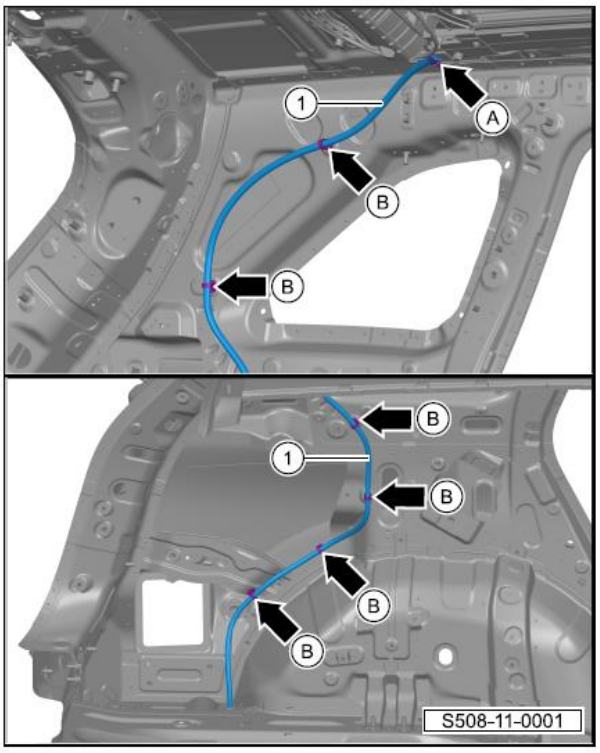
Tip:

The removal and installation procedures are only for the left sunroof rear water drain hose assembly, which can be basically referred to for the right one.

1 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)

2 Remove the rear side wall lower interior trim panel assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

3 Remove the rear side wall upper interior trim panel assembly. Refer to [9.14.2.12 Removal and installation of Rear side wall upper interior trim panel assembly]

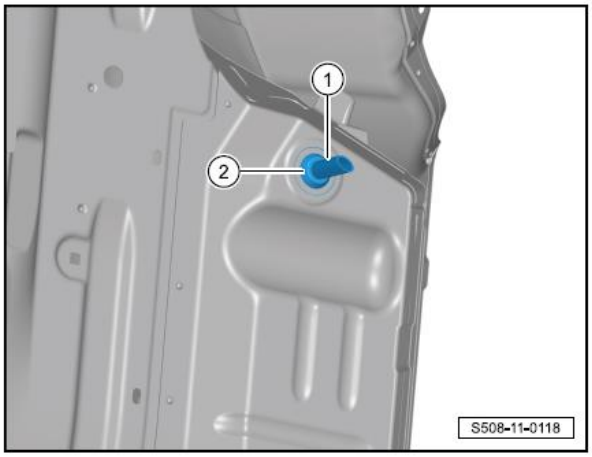


4 Remove the rear sunroof drain hose assembly

a. Loosen the fixing clamp (see arrow A), and disengage the sunroof rear water drain hose assembly ① from the sunroof body assembly.

b. Disengage the fixing clip (see arrow B), and remove the sunroof rear water drain hose assembly ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Confirm if the drain hose sealing cover ② is installed in place.
- Check whether the drain hose ① is fully exposed.

Notes

Before the rainy season comes, check whether the drain hose is blocked.

Clogged or incorrectly positioned water drain hoses may lead to serious water logging inside the vehicle.

8.9.6.11 Removal and installation of sunroof switch

Tip:

The sunroof switch is integrated into the front reading light assembly. If it is damaged, replace the front reading light assembly.

1 Remove the sunroof switch

a. Remove the front reading light assembly. Refer to 8.4.5.1 Removal and installation of front reading light assembly

8.10 Small sunroof system

8.10.1 Specification

8.10.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Sunroof body assembly	Hexagon head bolt c/w plain washer cluster M6×18	10±2
	Hexagon flange nut	10±2

8.10.2 Description and operation

8.10.2.1 System description

System Overview

- The sunroof adopts a two-button switch ("open" and "close" buttons).
- The sunroof can be opened and closed by the key in remote mode.
- Voice control function is provided.

Sunroof operation mode

1. Button operation:

The buttons on the front dome light include: "sunroof open" and "sunroof close" buttons.

The button operation includes two modes: manual and automatic operation: press time ＜300ms is manual mode; press time ≥300ms is automatic mode.

- Sunroof opening: Press the "Sunroof Open" button to open the sunroof, and the sun visor will be opened through a mechanical structure during the sunroof opening.
- Sunroof closing: Press the "Sunroof Close" button to close the sunroof. After closing the sunroof, manually close the sun visor.
- Sunroof tilting: Press the "Sunroof Close" button, and the sunroof glass will tilt. The sun visor needs to be opened manually.

2. Remote operation:

- MP5 host is set with synchronous opening and closing of sunroof and key.
- The sunroof is remotely closed by long pressing the "Lock" button of the remote control key in the "OFF" position. In the process of closing, the button should be pressed all the time. Once the button is released, sunroof closing will stop.
- The sunroof will be remotely opened by long pressing the "Unlock" button of the remote control key at the "OFF" position. In the process of opening, the button should be pressed all the time. Once the button is released, the sunroof will stop opening.
- Only opening and closing can be realized through remote operation, and tilting is not supported in remote operation.

3. Voice operation:

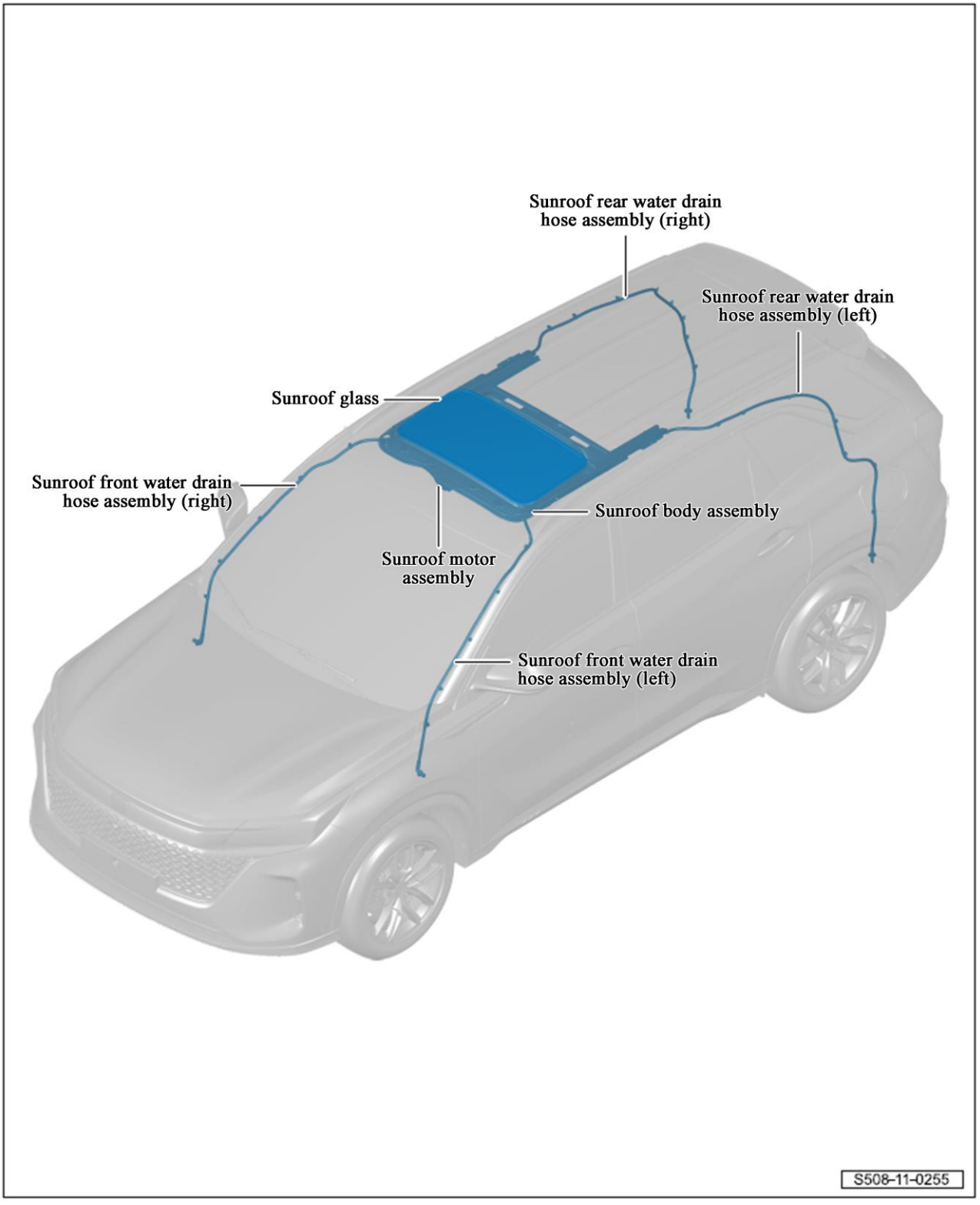
The sunroof can also be opened, closed and tilted by voice operation.

- After voice activation, enter "open sunroof", "close sunroof" and "sunroof tilt" voices to control sunroof opening, closing and tilting.

8.10.3 Component position

8.10.3.1 Component position

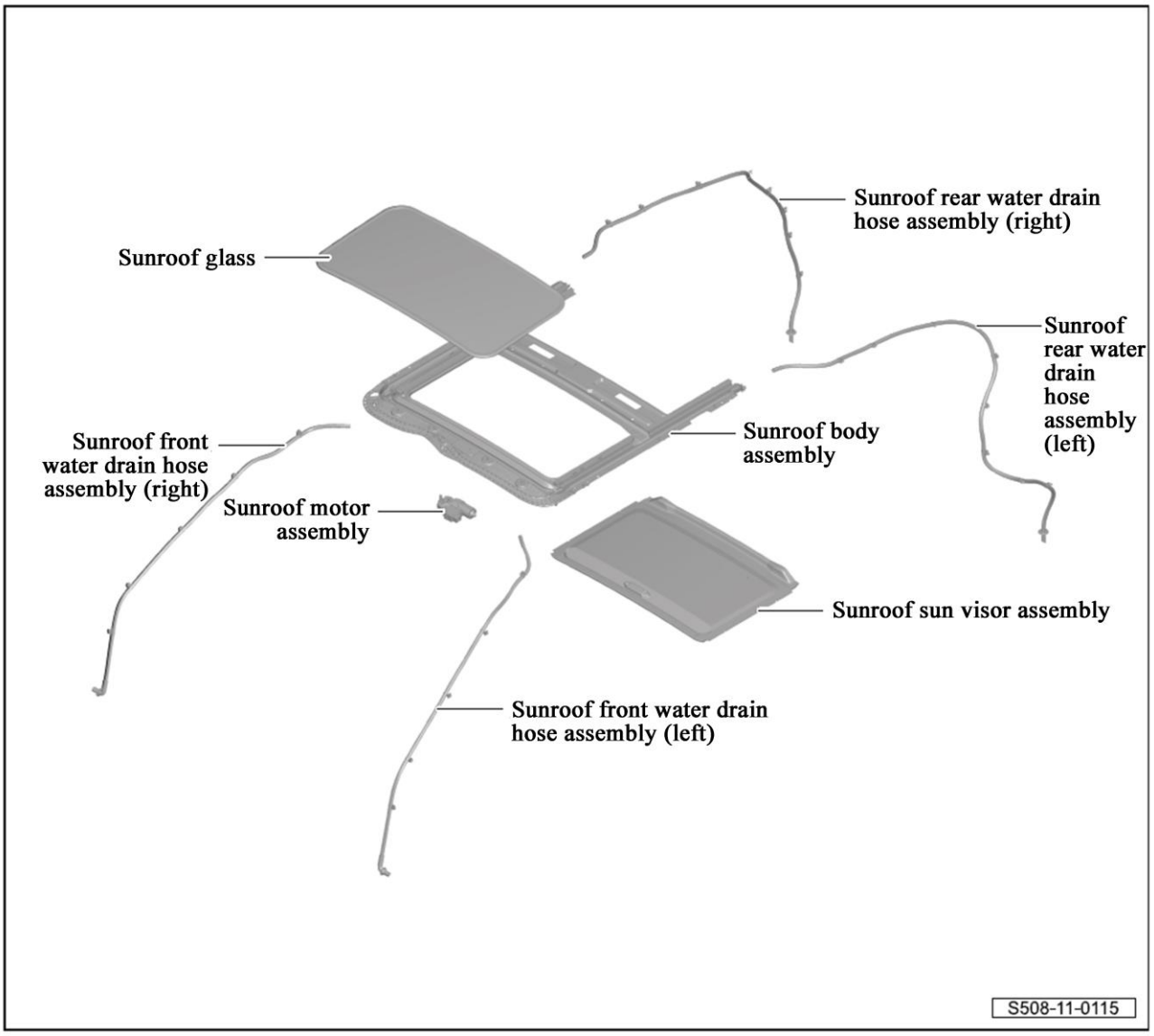
Power sunroof



8.10.4 Exploded view

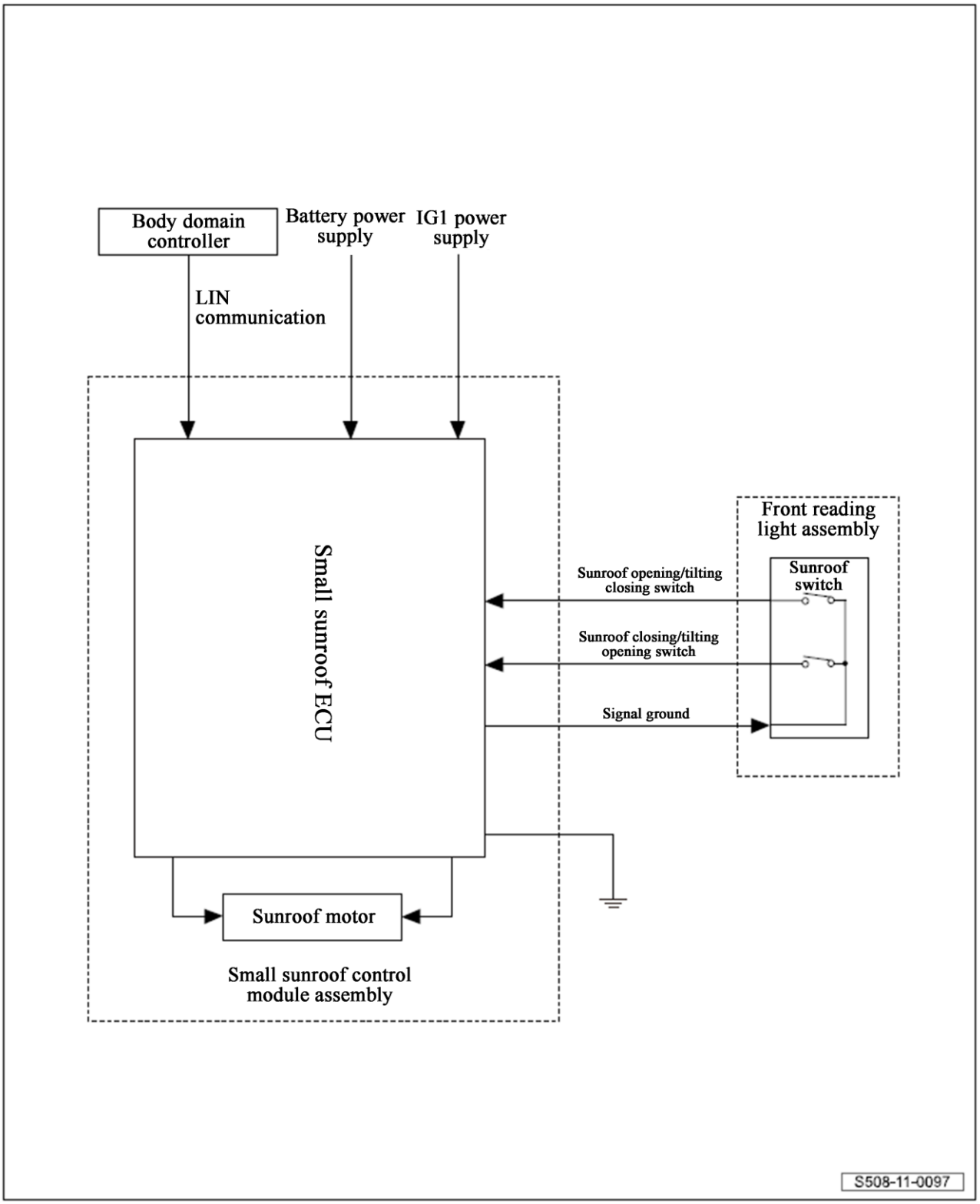
8.10.4.1 Exploded view

Exploded view of small sunroof



8.10.5 Electrical schematic diagram

8.10.5.1 Electrical schematic diagram



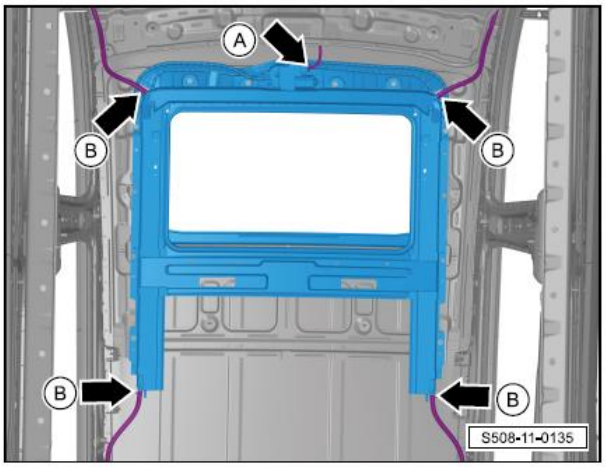
8.10.6 Removal and installation

8.10.6.1 Removal and installation of sunroof body assembly

Disassembly procedures

1 Remove the sunroof glass assembly. Refer to 8.10.6.3 Removal and installation of sunroof glass assembly

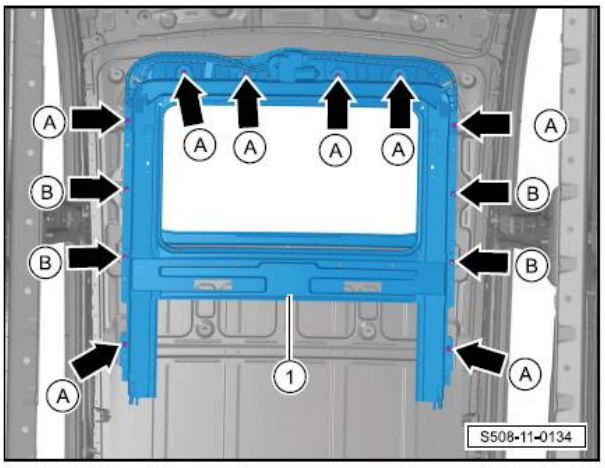
2 Remove the sunroof sun visor assembly. Refer to 8.10.6.5 Removal and installation of sunroof sun visor assembly



3 Remove the sunroof body assembly

a. Disconnect the connector (see arrow A) of the sunroof motor assembly.

b. Loosen the fixing clamp of sunroof front and rear water drain hose assembly (see arrow B), and disengage the sunroof body assembly from the sunroof front and rear water drain hose assembly.



c. Unscrew the fixing bolts (see arrow A) and nuts (see arrow B) of the sunroof body assembly ①.

d. Remove the sunroof body assembly ①.

- Tightening torque of bolt (see arrow A): 10±2 Nm
- Tightening torque of nut (see arrow B): 10±2 Nm

Installation procedures

The installation procedure is to be performed basically in the reverse order:

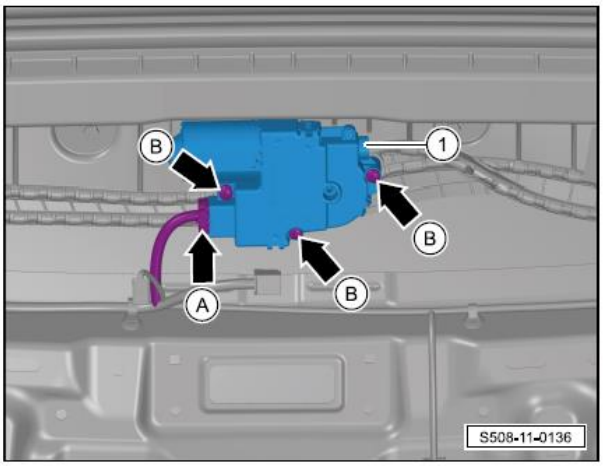
8.10.6.2 Removal and installation of sunroof motor assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front reading light assembly. Refer to 8.4.5.1 Removal and installation of front reading light assembly



4 Remove the sunroof motor assembly

a. Disconnect the connector (see arrow A) of the sunroof motor assembly ①.

b. Unscrew the fixing bolts (see arrow B) of the sunroof motor assembly ①.

c. Take out the sunroof motor assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the sunroof system.

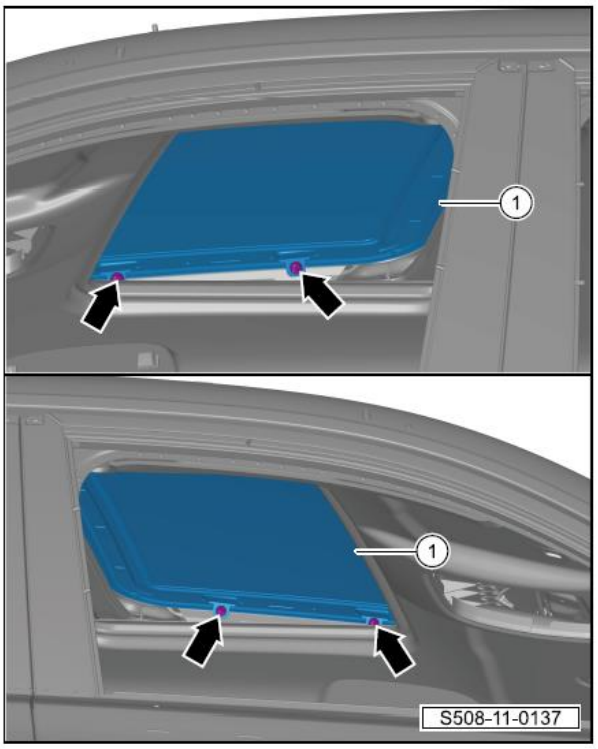
8.10.6.3 Removal and installation of sunroof glass assembly

Disassembly procedures

1 Place the sunroof glass in the closed position.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Slide the sunroof visor backward to the fully open position.



4 Remove the sunroof glass assembly

a. Unscrew the left and right fixing bolts (see the arrows) of the sunroof glass assembly ①.

b. Take out the sunroof glass assembly ① upward carefully.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, adjust the sunroof glass. Refer to 8.10.6.4 Adjustment of sunroof glass

8.10.6.4 Adjustment of sunroof glass

Adjustment of sunroof glass

Notes

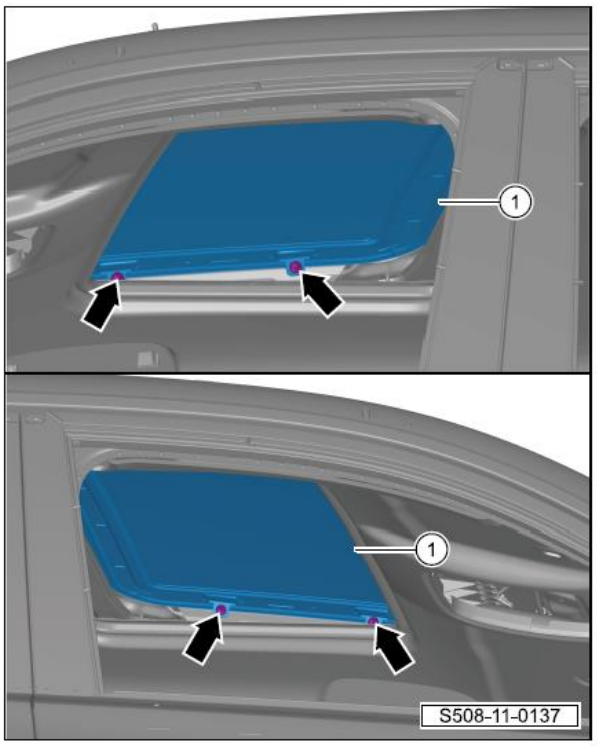
If the sunroof glass is correctly adjusted, its sealing strips will stick tightly to the roof and the water entering the water channel will be significantly reduced, thus reducing the possibility of water leakage and windshield noise.

1 Test the fitness as per following steps:

a. Insert a 2 mm thick plate between the roof and the glass sealing strips (front and rear).

b. Close the sunroof glass. c. Pull the plate out; if you feel a little bit resistant during pulling, it indicates a proper fit.

d. The fit adjustment of the whole glass and roof is completed by changing the vertical height and alignment of the glass.



2 a. Slide the sunroof visor to the fully open position.

b. Keep the sunroof glass ① in the full-close position.

c. Loosen the fixing screws (see the arrows) on both sides of the sunroof glass ①, and maintain a certain degree of pre-tightening so that the sunroof glass can be kept in the adjusted position.

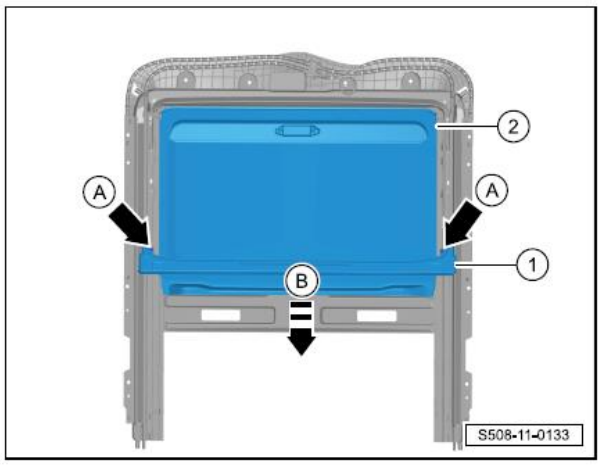
d. Check whether the sunroof glass ① is properly sealed.

e. Tighten the fixing bolts (see the arrows) on both sides of the sunroof glass ①.

8.10.6.5 Removal and installation of sunroof visor assembly

Disassembly procedures

1 Remove roof lining assembly. Refer to 9.14.2.3 Removal and installation of roof lining assembly (model with panoramic sunroof)



2 Remove the sunroof visor assembly

a. Unscrew the fixing bolts (see arrow A) and remove the sunroof sun visor assembly stop block ①.

b. Remove the sunroof sun visor assembly ② in the direction of arrow B.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, adjust the sunroof glass. Refer to 8.10.6.4 Adjustment of sunroof glass

8.11 Central control door lock

8.11.1 Specification

8.11.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Front door lock body assembly	Glued hex lobular screw and plastic washer assembly	10±1
Rear door lock body assembly	Glued hex lobular screw and plastic washer assembly	10±1
Lift gate lock body assembly	Glued hex lobular screw and plastic washer assembly	10±1
Door lock pin assembly	Glued hexagon lobular socket countersunk head screw	20±2
Lift gate lock pin assembly	Glued hexagon lobular socket countersunk head screw	20±2

8.11.2 System description

8.11.2.1 System description

System Overview

The central control door lock system is mainly composed of body domain controller, four-door lock motor, central control lock switch, etc. The driver can control door opening and closing.

Operating instructions

Remote control unlocking/locking: After receiving a legal remote control unlocking/locking request, execute the unlocking/locking action.

Locking/Unlocking by central control: The locking/unlocking is controlled via central control switch.

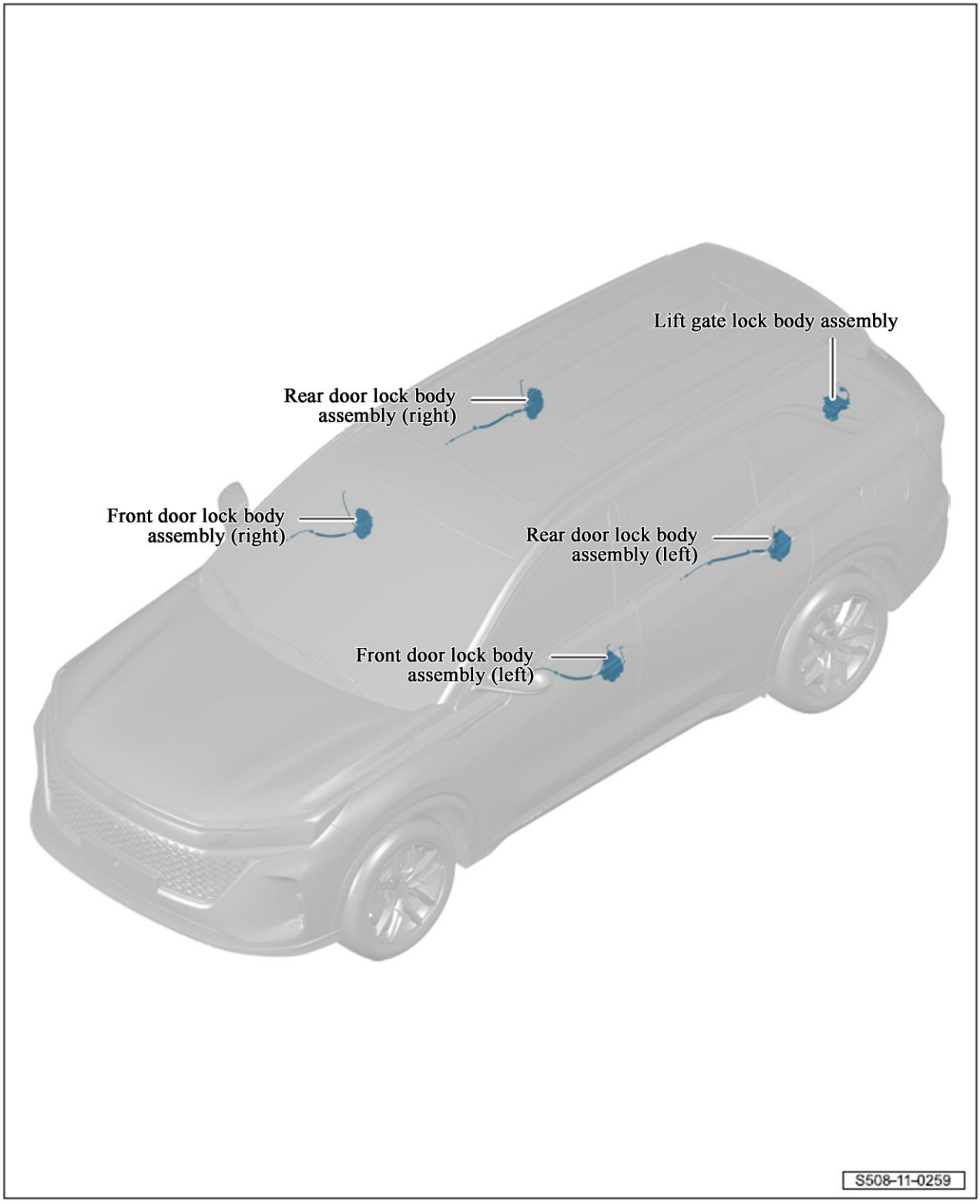
Key unlocking/locking: When the four doors are closed, the change of the driver's door lock state will cause the other three doors to follow.

Locking/unlocking by exterior door handle: The four-door lock can be unlocked/locked via the door handle switch.

8.11.3 Component position

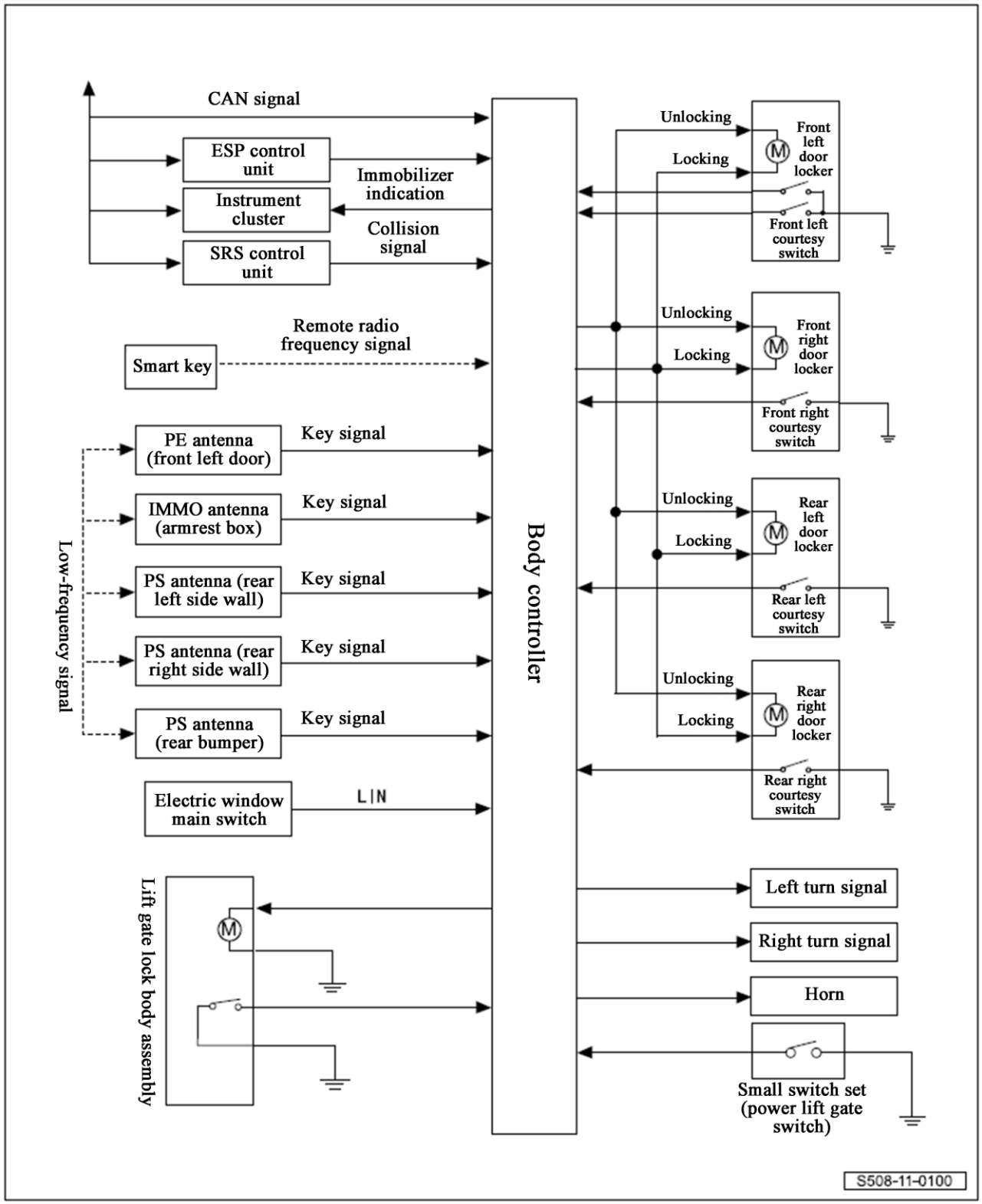
8.11.3.1 Component position

Component position



8.11.4 Electrical schematic diagram

8.11.4.1 Electrical schematic diagram



8.11.5 Removal and installation

8.11.5.1 Removal and installation of front door lock body assembly

Disassembly procedures

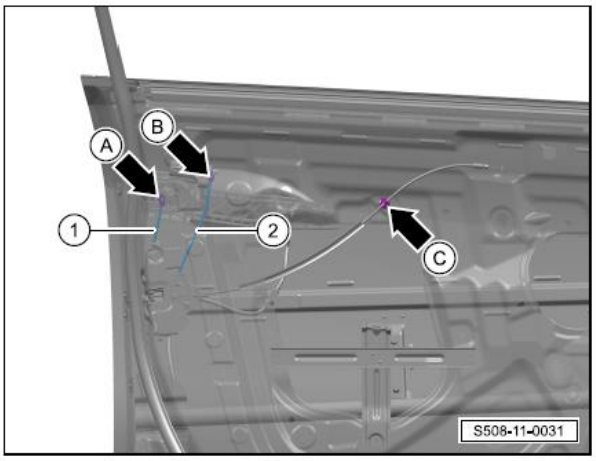
Tip:

The removal and installation steps are only for the front left door lock body assembly, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove front door rear chute component. Refer to 8.5.6.9 Removal and installation of front door rear chute component

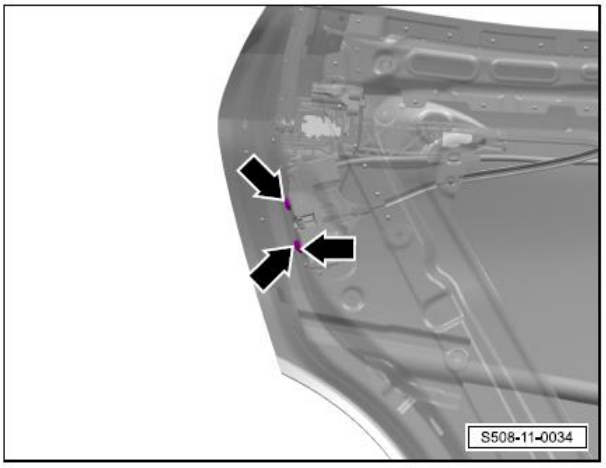


4 Remove the front door lock body assembly

a. Disengage the fixing clip (see arrow A), and disengage the lock cylinder connecting rod ① from the left front door lock cylinder assembly.

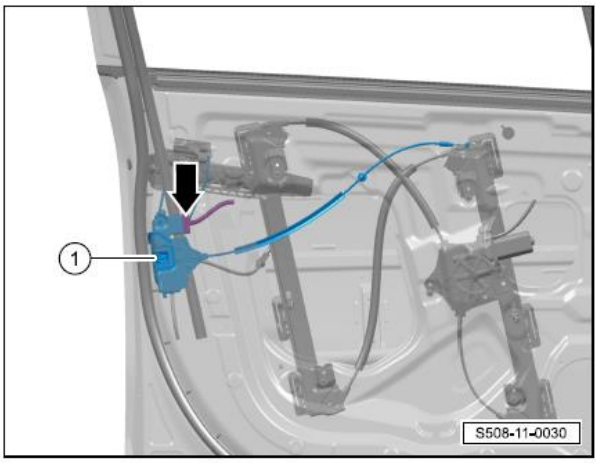
b. Disengage the fixing clip (see arrow B), and disengage the front door exterior connecting rod ② from the front exterior door handle bracket.

c. Disengage the fixing clip (see arrow C) of the cable.



d. Unscrew the fixing bolts (see the arrows) of the front door lock body assembly.

- Tightening torque of bolt: **10±1 N·m**



e. Disconnect the connector of front door lock body assembly (see arrow), and take out the front door lock body assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Perform a function test on the front door lock, if the test result meets requirements, install the front door trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

8.11.5.2 Removal and installation of rear door lock body assembly

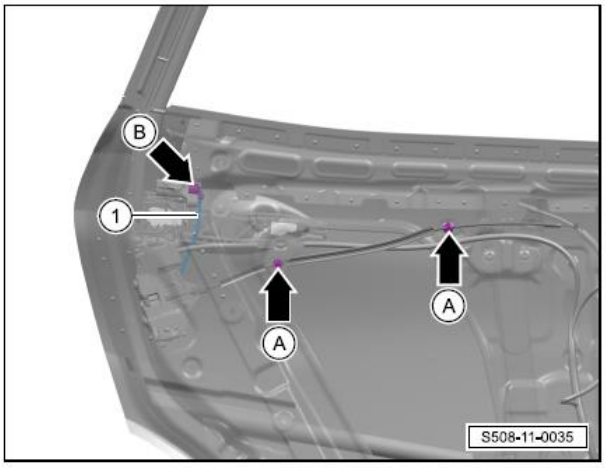
Disassembly procedures

Tip:

The removal and installation steps are only for the rear left door lock body assembly, which can be basically referred to for the rear right one.

1 Raise the rear door glass to the highest position.

2 Remove the rear door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly

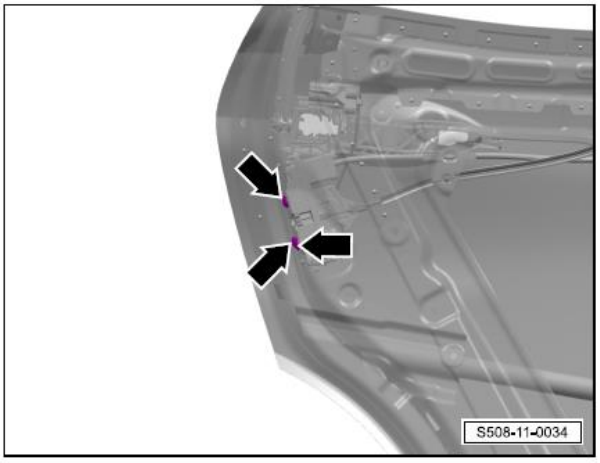


3 Remove the rear door lock body assembly

a. Open one corner of rear door waterproof film.

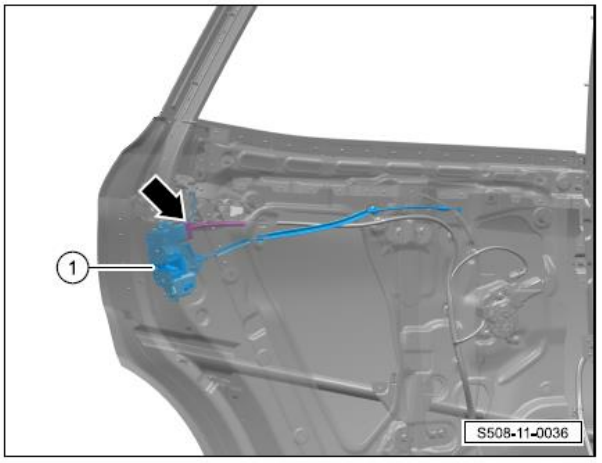
b. Disengage the fixing clip of the rear door lock body assembly (see arrow A).

c. Disengage the fixing clip (see arrow B), and disengage the rear door exterior connecting rod ① from the rear exterior door handle bracket.



d. Unscrew the fixing bolts (see the arrows) of the rear door lock body assembly.

- Tightening torque of bolt: **10±1 N·m**



e. Disconnect the connector of rear door lock body assembly (see arrow), and take out the rear door lock body assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Perform a function test on the rear door lock, if the test result meets requirements, install the rear door interior trim panel assembly. Refer to

9.7.3.15 Removal and installation of rear door interior trim panel assembly

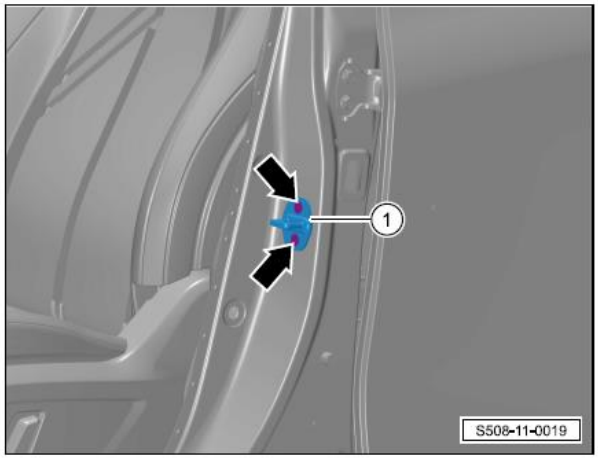
8.11.5.3 Removal and installation of front door lockpin assembly

Disassembly procedures

Tip:

The removal and installation steps are only for the front left door lock pin assembly, which can be basically referred to for other ones.

1 Open the front door.



2 Remove the front door lockpin assembly

a. Unscrew the fixing bolts (see the arrows) and take out the front door lockpin assembly ①.

- Tightening torque of bolt: 20±2 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

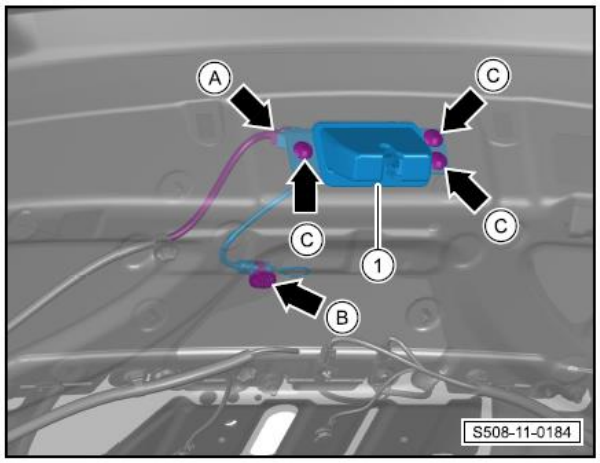
8.11.5.4 Removal and installation of lift gate lock body assembly (manual lift gate)

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly



4 Remove the lift gate lock body assembly

a. Disconnect the connector (see arrow A) of lift gate lock body assembly ①.

b. Disengage the unlocking cable clip of the lift gate lock body assembly ① (see arrow B).

c. Unscrew the fixing screw (see arrow C), and remove the lift gate lock body assembly ①.

- Tightening torque of screw (see arrow **C**): **10±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Perform a function test on the lift gate lock, if the test result meets requirements, install the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly

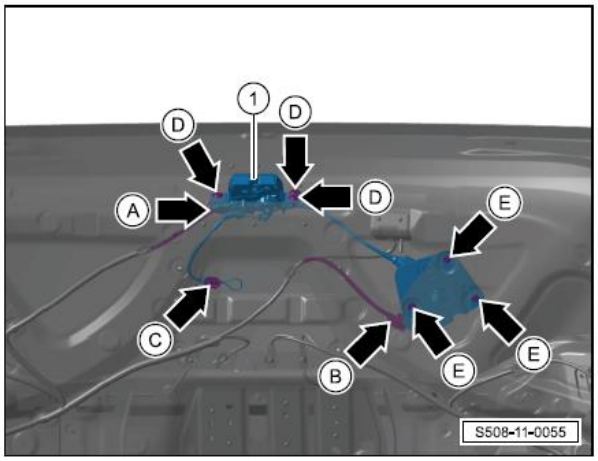
8.11.5.5 Removal and installation of lift gate lock body assembly (power lift gate)

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly



4 Remove the lift gate lock body assembly

a. Disconnect the connectors (see arrows A and B) of the lift gate lock body assembly ①.

b. Disengage the unlocking cable clip of the lift gate lock body assembly ① (see arrow C).

c. Unscrew the fixing screw (see arrows D and E), and remove the lift gate lock body assembly ①.

- Tightening torque of screw (see arrow **D**): **3±1 N·m**

Installation procedures

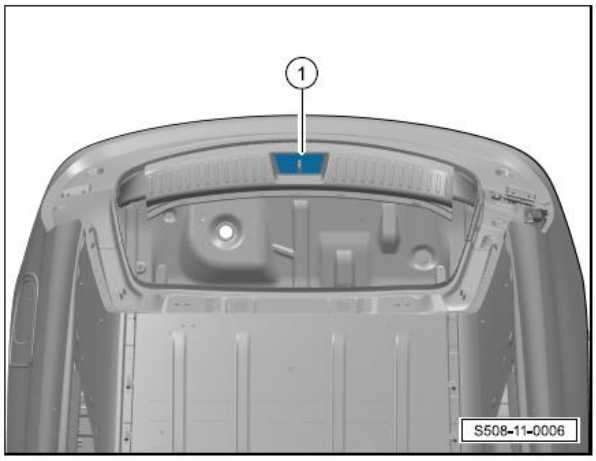
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Perform a function test on the lift gate lock, if the test result meets requirements, install the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly

8.11.5.6 Removal and installation of lift gate lockpin assembly

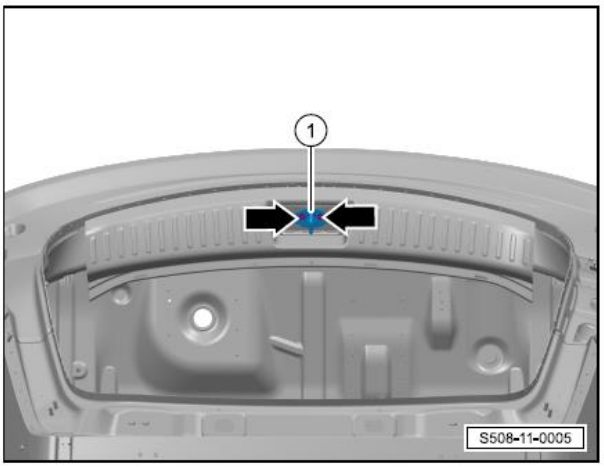
Disassembly procedures

1 Open the lift gate.



2 Remove the lift gate lockpin assembly

a. Remove the lift gate lockpin assembly trim ①.



b. Unscrew the fixing bolts (see the arrows) and remove the lift gate lockpin assembly ①.

- Tightening torque of bolt: 20±2 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.12 Power seat

8.12.1 System description

8.12.1.1 System description

System Overview

The power seat system is mainly composed of horizontal adjustment motor, seat back adjustment motor, rear up adjustment motor and seat adjustment switch, and can realize the position adjustment of driver's seat.

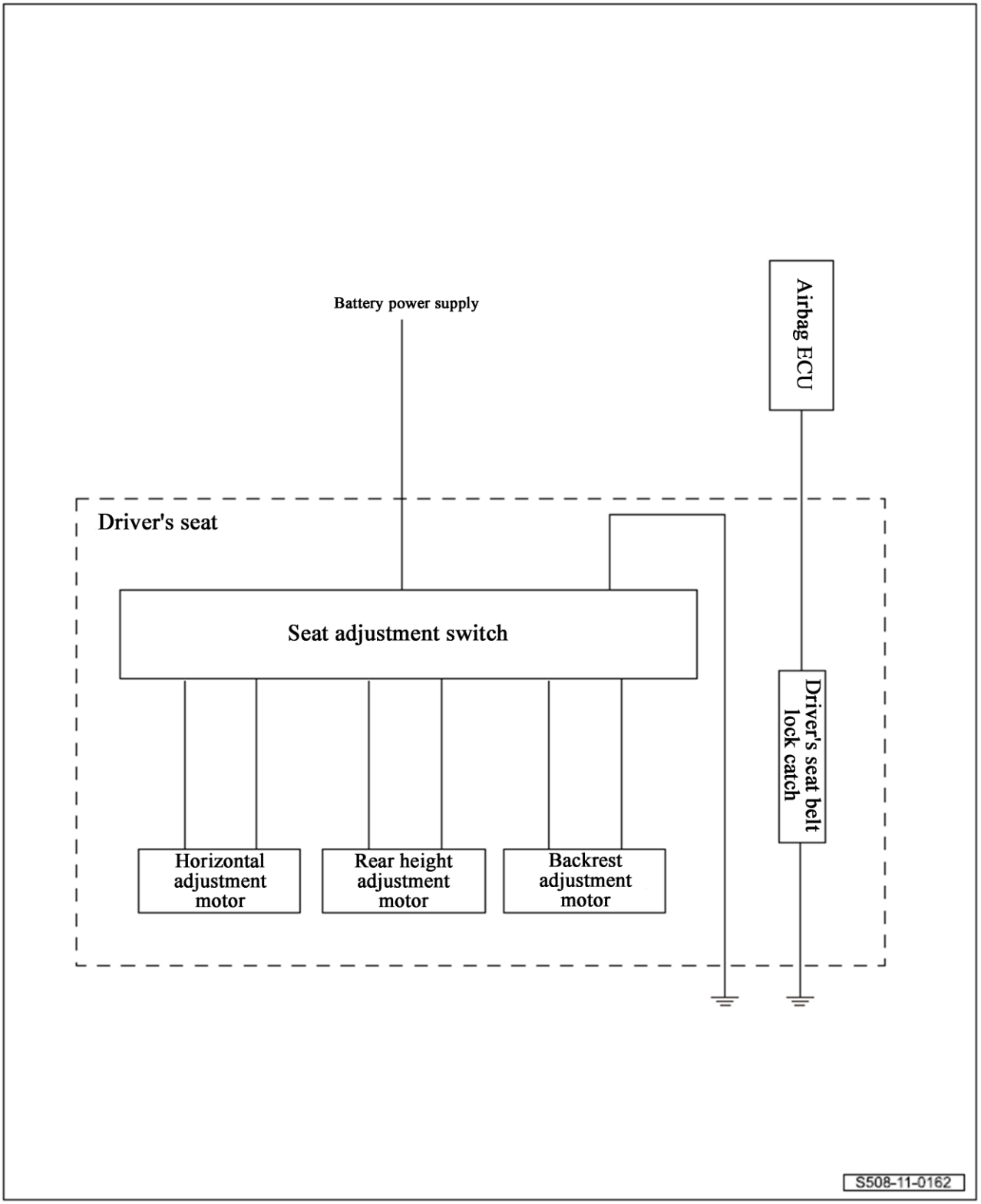
1 Position adjustment of driver's seat:

- When the power state is in "ON", operate the driver's electric seat adjustment switch to control the horizontal adjustment motor, the backrest adjustment motor and the rear up adjustment motor and realize the six-way adjustment of the driver's seat.

8.12.2 Electrical schematic diagram

8.12.2.1 Electrical schematic diagram

(Driver's seat) electric six-way + seat belt reminder



8.12.3 Removal and installation

8.12.3.1 Removal and installation of driver's electric seat controller

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

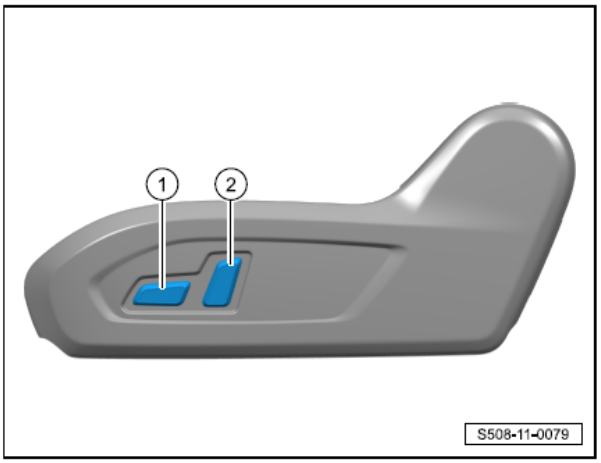
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front seat and backrest assembly (left). Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

4 Remove the driver's seat trim cover (left). Refer to 9.10.3.4 Removal and installation of driver's seat trim cover (left) (6-way electric adjustment)

5 Remove the driver's electric seat controller

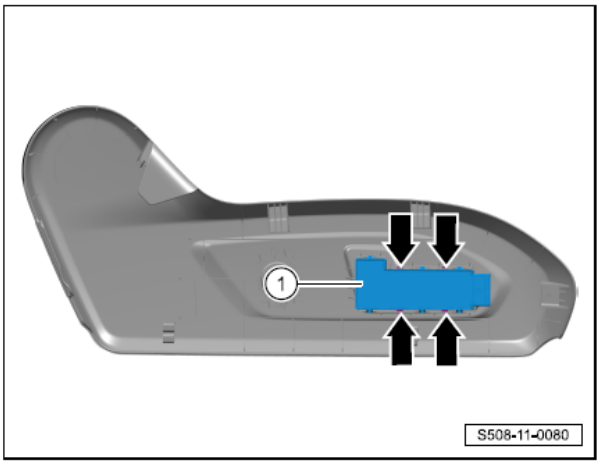
a. Remove the driver's electric seat controller adjustment buttons ① and ②.



Tip:

Do not remove and install violently to prevent damage to the internal clip of the driver's electric seat controller adjustment buttons.

b. Disengage the fixing clip (see arrow), and take out the driver's electric seat controller ①.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

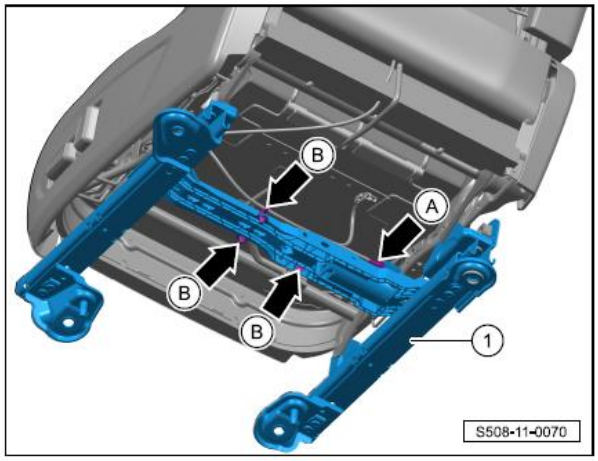
- After the installation, perform a function test on the driver's electric seat adjustment switch.

8.12.3.2 Removal and installation of front seat horizontal motor

Disassembly procedures

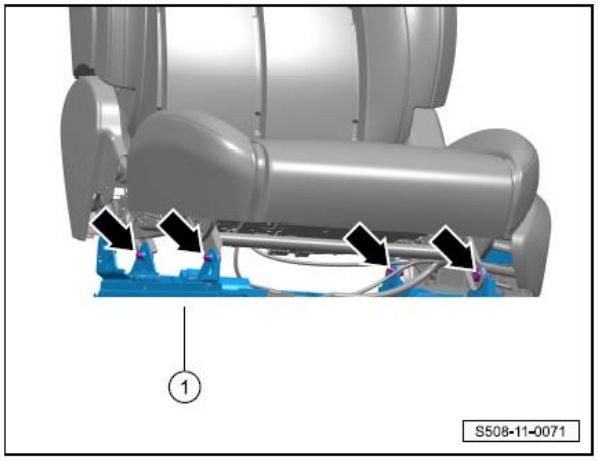
1 Remove the front seat and backrest assembly (left). Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

2 Remove the front seat belt lock latch assembly. Refer to 7.2.6.3 Removal and installation of front seat belt lock latch assembly

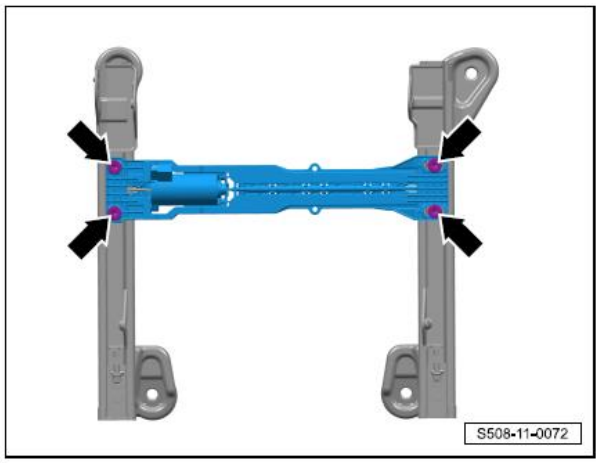


3 Remove the front seat horizontal motor

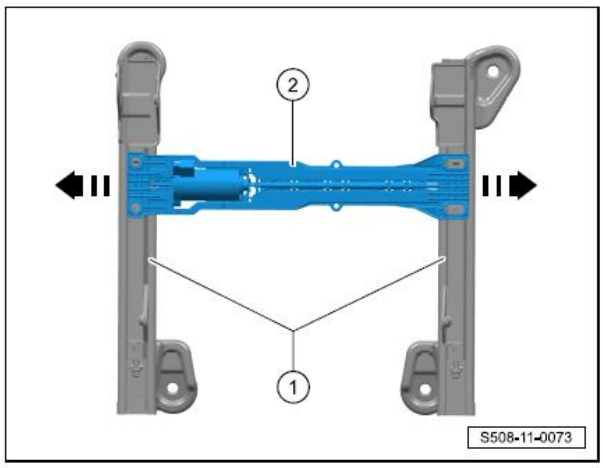
a. Disconnect the horizontal motor ① connector (see arrow A), and disengage the harness fixing clip (see arrow B).



b. Unscrew the fixing bolts (see the arrows), and remove the front seat horizontal motor assembly ①.



c. Unscrew the fixing bolt of the front seat horizontal motor bracket (see arrow).



d. Disengage the front seat horizontal motor bracket assembly ① from the front seat horizontal motor ② (see arrow).

e. Take out the front seat horizontal motor ②.

Installation procedures

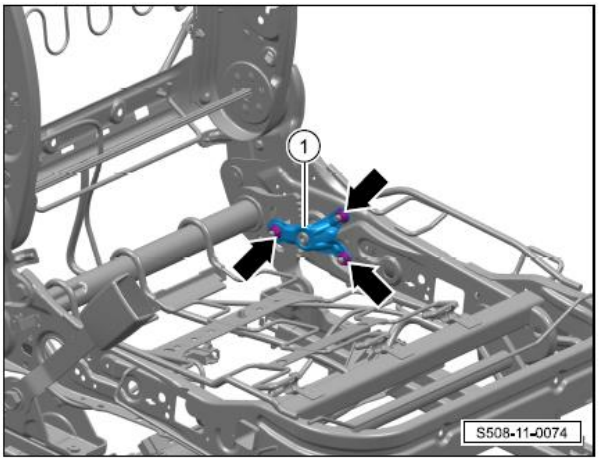
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- During installation, note that the connecting rod of the horizontal motor should be straight and even, not bent.
- After installation, check the seat slide rail adjustment function.

8.12.3.3 Removal and installation of front seat lifting motor

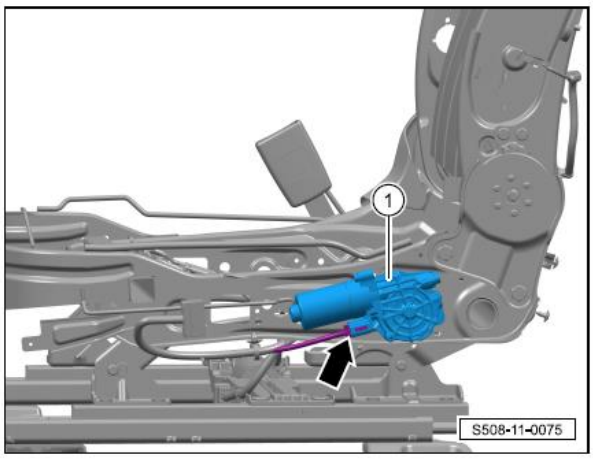
Disassembly procedures

1 Remove the front seat foam and foam covering assembly (left). Refer to 9.10.3.9 Removal and installation of seat foam and foam covering assembly



2 Remove the front seat lifting motor

a. Unscrew the fixing bolt (see arrow), and take out the front seat lifting motor bracket ①.



b. Disconnect the connector (see arrow), and remove the front seat lifting motor ①.

Installation procedures

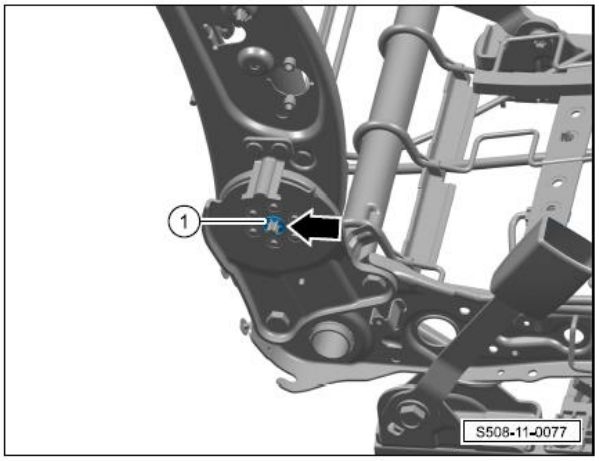
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, test the seat lifting and lowering adjustment function.

8.12.3.4 Removal and installation of front seat back motor

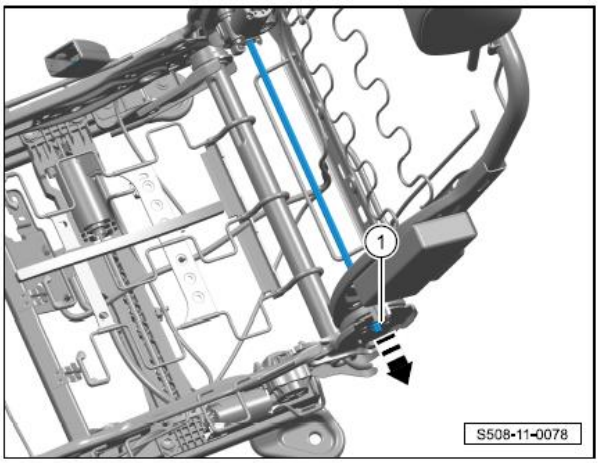
Disassembly procedures

1 Remove the driver's seat back foam and foam covering assembly. Refer to 9.10.3.7 Removal and installation of seat back foam covering assembly

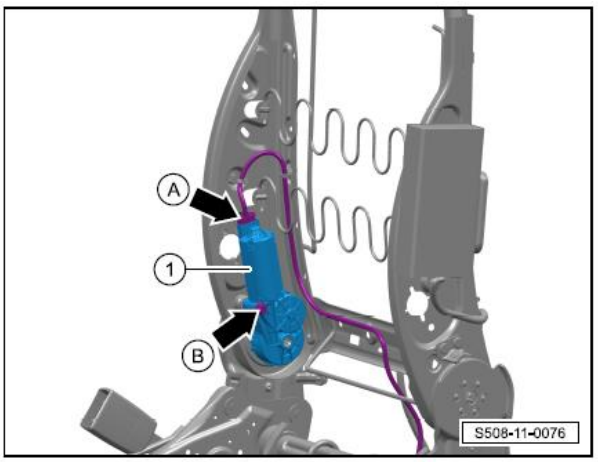


2 Remove the front seat backrest motor

a. Disengage the front seat back motor connecting rod, and disengage the lock card ①.



b. Remove the front seat backrest motor connecting rod ① in the direction of the arrow.



c. Disconnect the connector of the front seat back motor (see arrow A), unscrew the fixing bolt of the front seat back motor ① (see arrow B), and take out the front seat back motor ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, test the seat backrest adjustment function.

8.13 Defrosting system

8.13.1 System description

8.13.1.1 System description

System components

The defrosting system mainly consists of the following components:

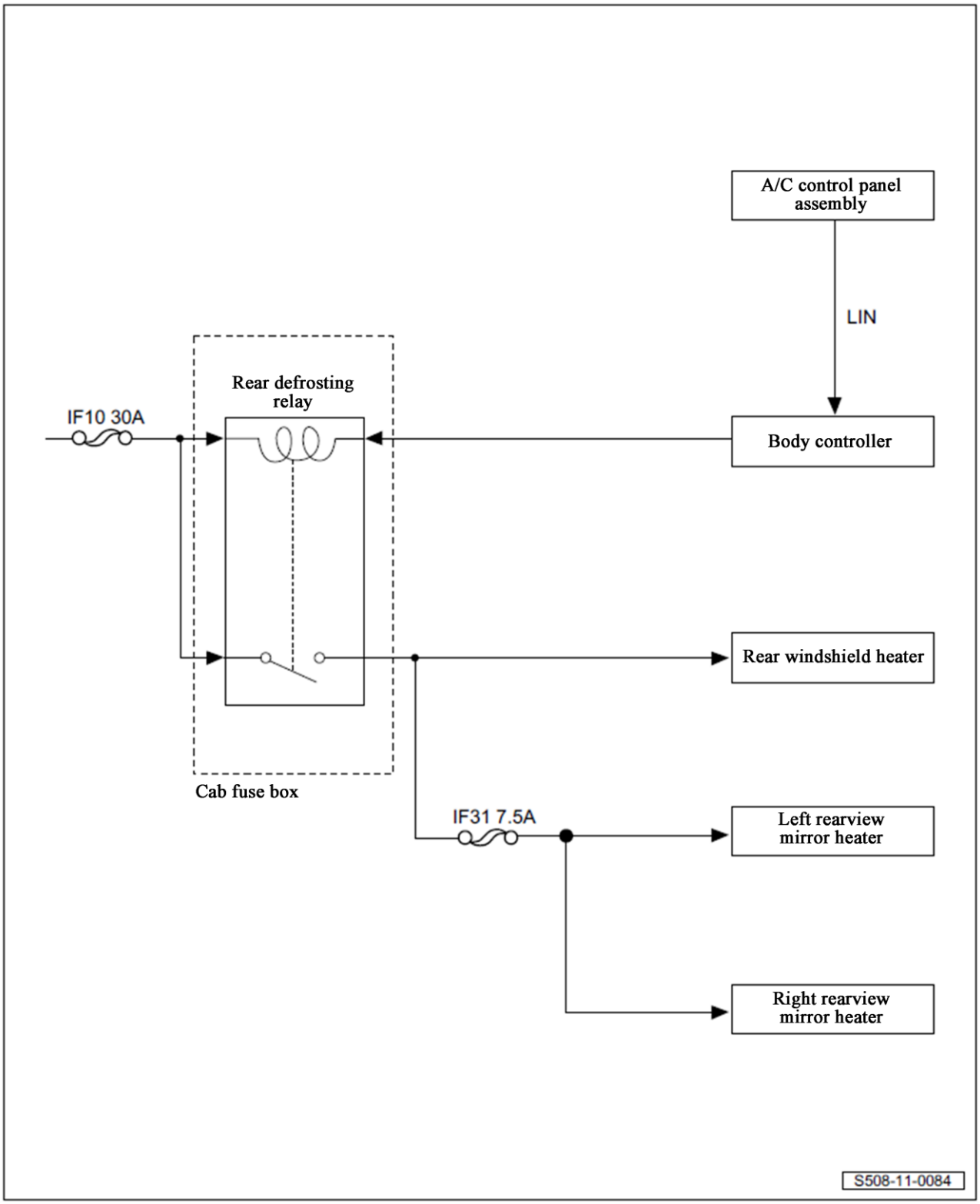
- Defrost switch (A/C control panel);
- Body domain controller;
- Left/Right exterior rearview mirror heater (exterior rearview mirror lens);
- Rear fixed window heater (rear windshield).

Working principle

Rear defrosting and exterior rearview mirror heating are controlled by the relay, and the relay coil is connected by the body domain controller. When the rear defrost switch is connected, the A/C control panel receives the rear defrost request signal, and sends the signal to the body domain controller through LIN communication wire. The body domain controller receives the rear defrost request signal, connects the relay coil, and the rear defrosting and exterior rearview mirror heating are enabled.

8.13.2 Electrical schematic diagram

8.13.2.1 Electrical schematic diagram



8.13.3 Removal and installation

8.13.3.1 Removal and installation of exterior rearview mirror heater

Disassembly procedures

Tip:

The removal and installation procedures are only for the left exterior rearview mirror heater, which can be basically referred to for the right one.

The exterior rearview mirror heater is integrated in the lens of the exterior rearview mirror; if damaged, replace the lens of the exterior rearview mirror.

1 Remove the exterior rearview mirror heater

a. Remove the exterior rearview mirror heater. Refer to 8.6.4.4 Removal and installation of exterior rearview mirror lens

8.13.3.2 Removal and installation of rear windshield defogging grill

Disassembly procedures

Tip:

The rear windshield defogging grill is integrated into the rear windshield. If the grill is damaged, replace the rear windshield.

1 Remove the rear windshield defogging grill

a. Remove the rear windshield defogging grill. Refer to 9.15.2.11 Removal and installation of lift gate glass trim assembly

8.13.3.3 Repair of rear windshield defogger braided wire

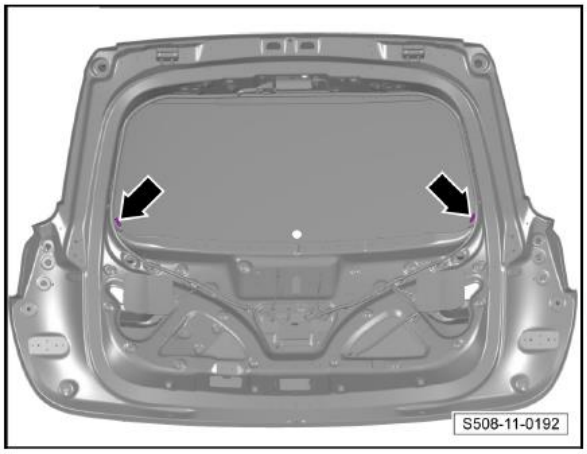
Repair procedure

Notes

The rear windshield defogger bus lead or terminal can be re-brazed with electrodes containing 3% silver and rosin.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly



3 Repair of rear windshield defogger braided wire

a. Be sure to polish the repair parts with fine steel wool before brazing the bus lead.

b. Apply a small amount of rosin to the repair parts (see the arrows) of the wire and bus lead with a brush.

c. Dip the soldering iron with the welding flux with its amount exactly enough for repair.

d. The heat exactly enough for melting the welding flux shall be used; do not heat the wire excessively on the bus lead welded again.

8.14 Horn

8.14.1 Specification

8.14.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between the high-pitch electric horn and the water tank mounting bracket	Cross recessed hexagon head flange bolt M6×18	10±1
Connection between the low-pitch electric horn and the water tank mounting bracket	Cross recessed hexagon head flange bolt M6×18	10±1

8.14.2 System description

8.14.2.1 System description

System Overview

The horn is a signal device for cars. During the driving process of the vehicle, the driver sends out necessary audio signals as required and specified to warn pedestrians and attract the attention of other vehicles to ensure traffic safety. At the same time, it is also used to urge and transmit signals.

- The horn is mainly composed of horn relay, low-pitch electric horn, high-pitch electric horn, horn switch and clock spring coil.
- Press the horn switch, the body domain controller receives the signal and closes the horn relay, and the low-pitch and high-pitch electric horns are electrified to sound.
- When the vehicle is in defense state, the immobilizer alarm signal is triggered, and the body domain controller controls the horn to work.

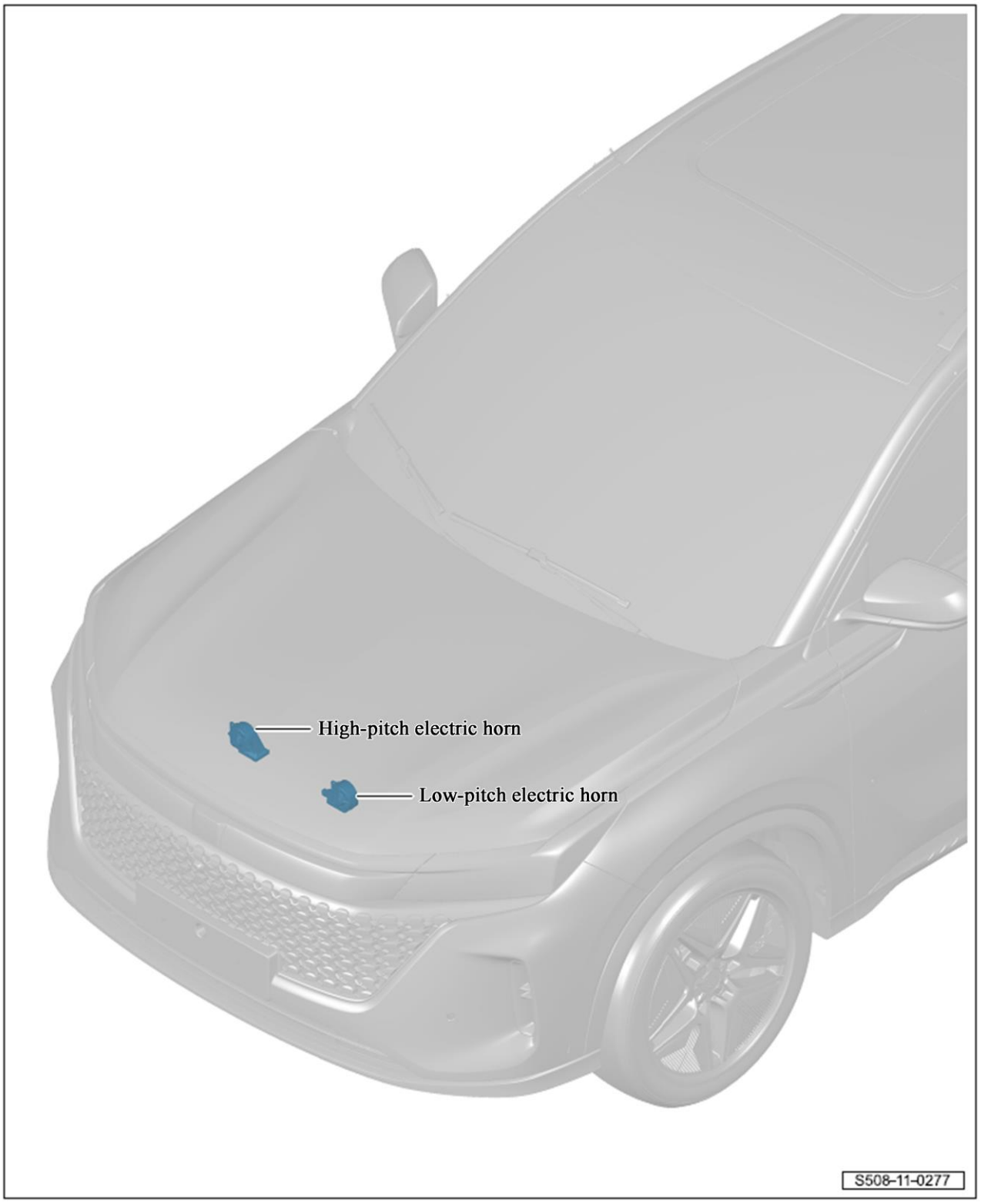
Working principle

The horn is controlled by controlling the power supply terminal, that is, the body domain controller controls the pick-up of the horn relay, and then the relay supplies power to the horn. The horn is normally grounded. When the body domain controller receives a drive request of the service horn from any other system, it will drive and control the horn to realize relevant functions based on the control policy.

8.14.3 Component position

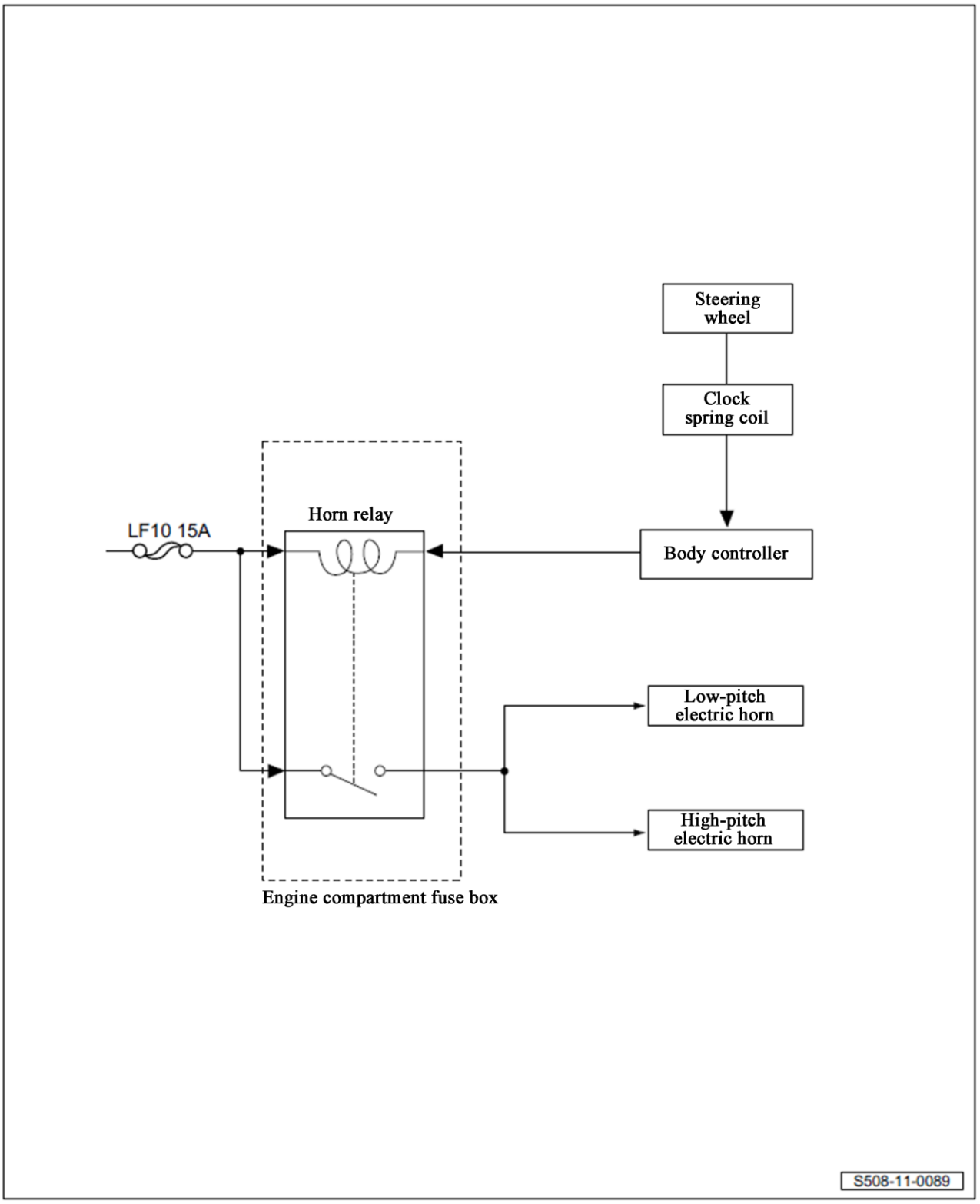
8.14.3.1 Component position

Component position



8.14.4 Electrical schematic diagram

8.14.4.1 Electrical schematic diagram



8.14.5 Removal and installation

8.14.5.1 Removal and installation of high-pitch electric horn

Disassembly procedures

1 Open the front hood.

2 Turn off all the electrical appliances and turn off the Start switch.

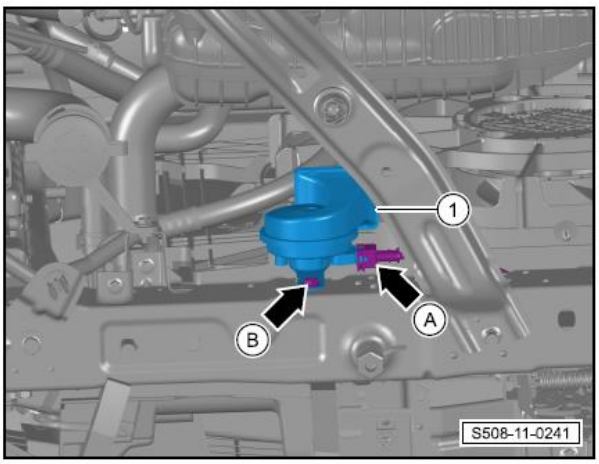
3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

5 Remove the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

6 Remove the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

7 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



8 Remove the high-pitch electric horn

a. Disconnect the connector (see arrow A) of the high-pitch electric horn.

b. Unscrew the fixing bolt (see arrow B), and remove the high-pitch electric horn ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the high-pitch electric horn.

8.14.5.2 Removal and installation of low-pitch electric horn

Disassembly procedures

1 Open the front hood.

2 Turn off all the electrical appliances and turn off the Start switch.

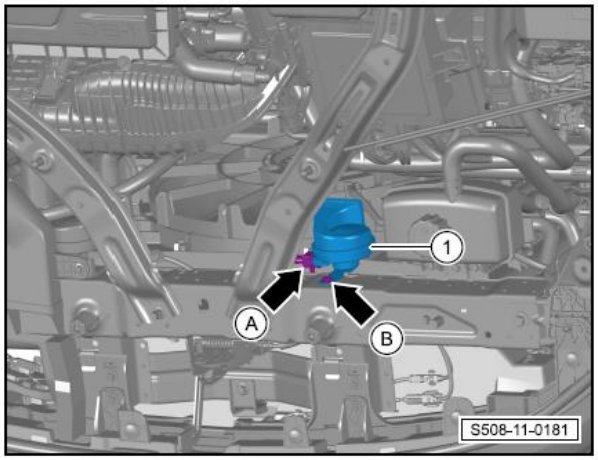
3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

4 Remove the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

5 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



6 Remove the low-pitch electric horn

a. Disconnect the connector (see arrow A) of the low-pitch electric horn.

b. Unscrew the fixing bolt (see arrow B) and remove the low-pitch electric horn ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the low-pitch electric horn.

8.15 Backup power source

8.15.1 System description

8.15.1.1 System description

1. System composition

The system is composed of onboard power supply and second-row USB charging port.

2. Function and operation

On-board power supply: 12V DC power supply is provided to adapt to certain off-board electronic equipment (mobile phone charging, on-board MP3, navigator, etc.).

Second-row USB charging port: for mobile phone, tablet PC and other rechargeable devices.

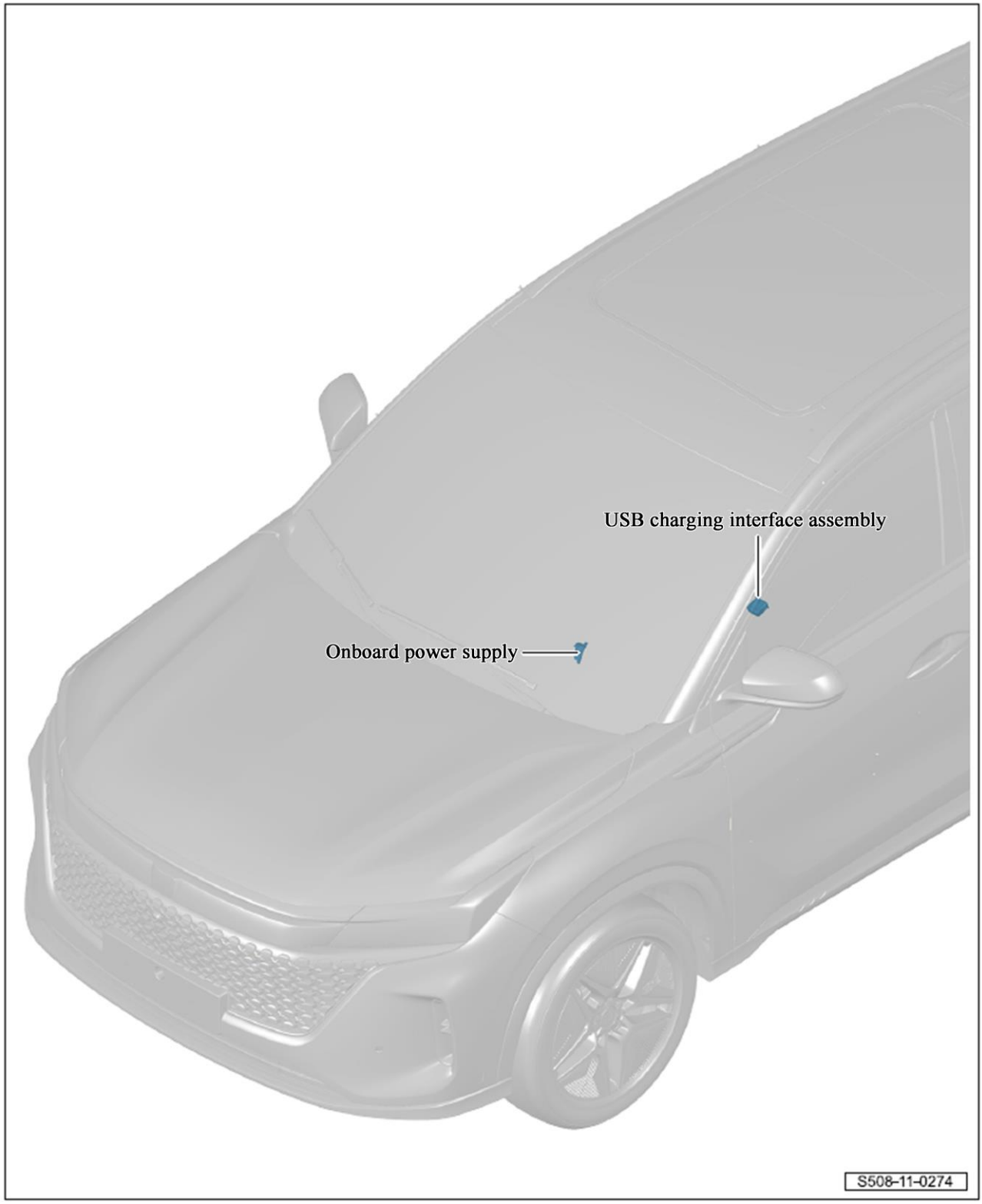
Tip:

- To avoid damage to the electrical system, do not connect any power generating equipment to the power socket.
- Use only electrical equipment in line with the national electromagnetic compatibility norms.
- When turning on/off the ignition switch or start switch, disconnect the charging equipment connected to the power socket to avoid damage to electrical equipment due to voltage fluctuation.
- Do not use electrical equipment with excessive power.
- Improper use of power outlets may cause a fire. Do not let a child operate a power outlet.

8.15.2 Component position

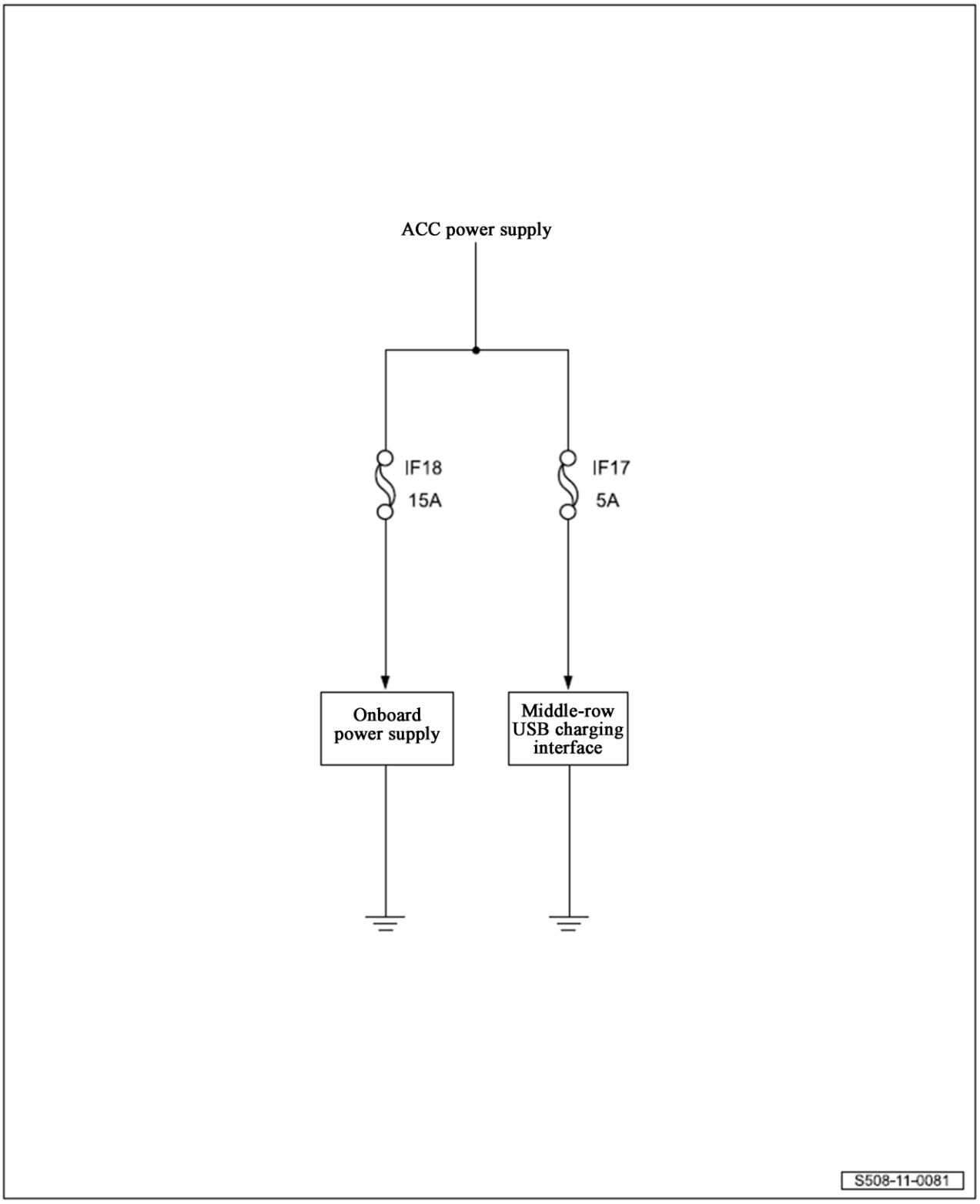
8.15.2.1 Component position

Component position



8.15.3 Electrical schematic diagram

8.15.3.1 Electrical schematic diagram

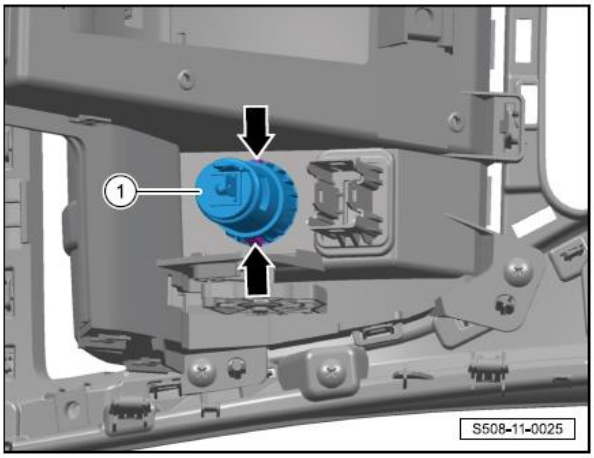


8.15.4 Removal and installation

8.15.4.1 Removal and installation of onboard power supply

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



2 Remove the on-board power supply

a. Disengage the fixing clip (see arrow), and take out the onboard power supply ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the cigarette lighter.

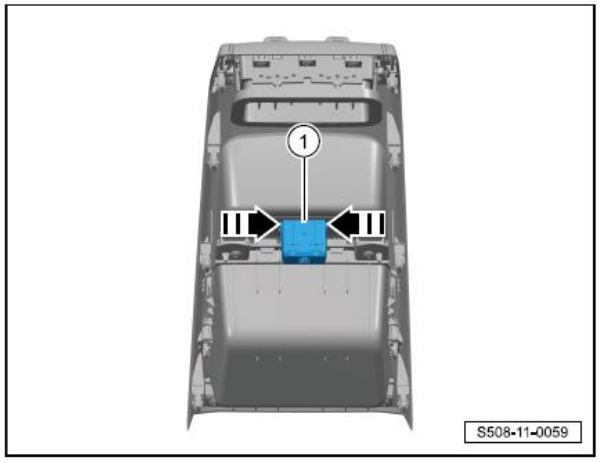
8.15.4.2 Removal and installation of USB charging port assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box rear cover assembly. Refer to 9.9.3.4 Removal and installation of control box rear cover assembly



4 Remove the USB charging interface assembly

a. Press the clip in direction of - the arrow -, and remove the USB charging port assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.16 Mobile phone wireless charging system

8.16.1 System description

8.16.1.1 System description

Description of wireless charging function

By the mobile phone wireless charging function, the mobile phone is charged through electromagnetic induction, without using external wire connection, to realize wireless charging.

Notes

- The mobile phone wireless charging function is only suitable for the mobile phones that have passed the "Qi" certification. Charging with a mobile phone that has not passed the "Qi" certification or other wireless charging receivers will damage the charging equipment or cause accidents.

Charging operation and status

The wireless charging function for mobile phone is enabled by default.

Generally, the mobile phones that have passed the "Qi" certification can be charged wirelessly when the following conditions are met:

- The power supply is in the “ACC” or “ON” position.
- The wireless charging function on the mobile phone end is enabled.
- The mobile phone is in the effective area of wireless charging and there is no metal foreign object in such area.

During normal charging, the charging icon is displayed on the screen.

When a fault occurs during charging (FOD/overtemperature/overvoltage/overcurrent protection), the charging is suspended, the user needs to disconnect the mobile phone, and the vehicle service can be resumed after the fault is eliminated.

When the vehicle is powered off, if it is detected that the mobile phone is being charged on the charging panel, the mobile phone forget prompt will be triggered, and the instrument will display "mobile phone not taken away", and the buzzer will give an alarm.

Notes

- Only one mobile phone can be charged every time.
- On a bump pavement, wireless charging of the mobile phone may be suspended and recovered intermittently. If the mobile phone is deviated from the charging area and stops charging, it shall be moved back to the chargeable area.
- Wireless charging of a mobile phone requires joint participation of the mobile phone itself, so any fault in the vehicle or mobile phone terminal may lead to fault in charging.
- Charging of the mobile phone may be suspended in case of temperature above threshold, and will be recovered once the temperature is lowered.
- When the mobile phone wireless charging function is enabled, the key shall be kept away from the mobile phone wireless charging area, otherwise the key detection will be affected.

Warning

- Do not place any object between the mobile phone and the charging board during charging. Non-metallic objects will lead to a degradation in charging performance; items such as magnetic cards or chip cards may be damaged; and metal foreign matters such as keys and coins may be heated to cause driving safety risks.
- To place metal foreign matters in the front storage box, please disable the wireless charging function through the menu on the central control panel to avoid potential safety hazards caused by metal foreign matters sliding into the charging area during driving.

- When leaving the vehicle, do not place the smartphone in the vehicle for charging to avoid potential safety hazards.
- During driving, do not check the charging status of the mobile phone for a long time to avoid traffic accidents.
- Do not sprinkle water in the storage box to avoid damage to electronic devices caused by water entering the wireless charging module.
- Do not place heavy objects in the charging area to avoid damage to the mobile phone wireless charging system.
- Do not remove the metal foreign object by hand immediately to avoid burns if it is found between the mobile phone and the rubber pad when the mobile phone is being charged wirelessly. Immediately disable the wireless charging function and wait until the system cools down before removing foreign matters.

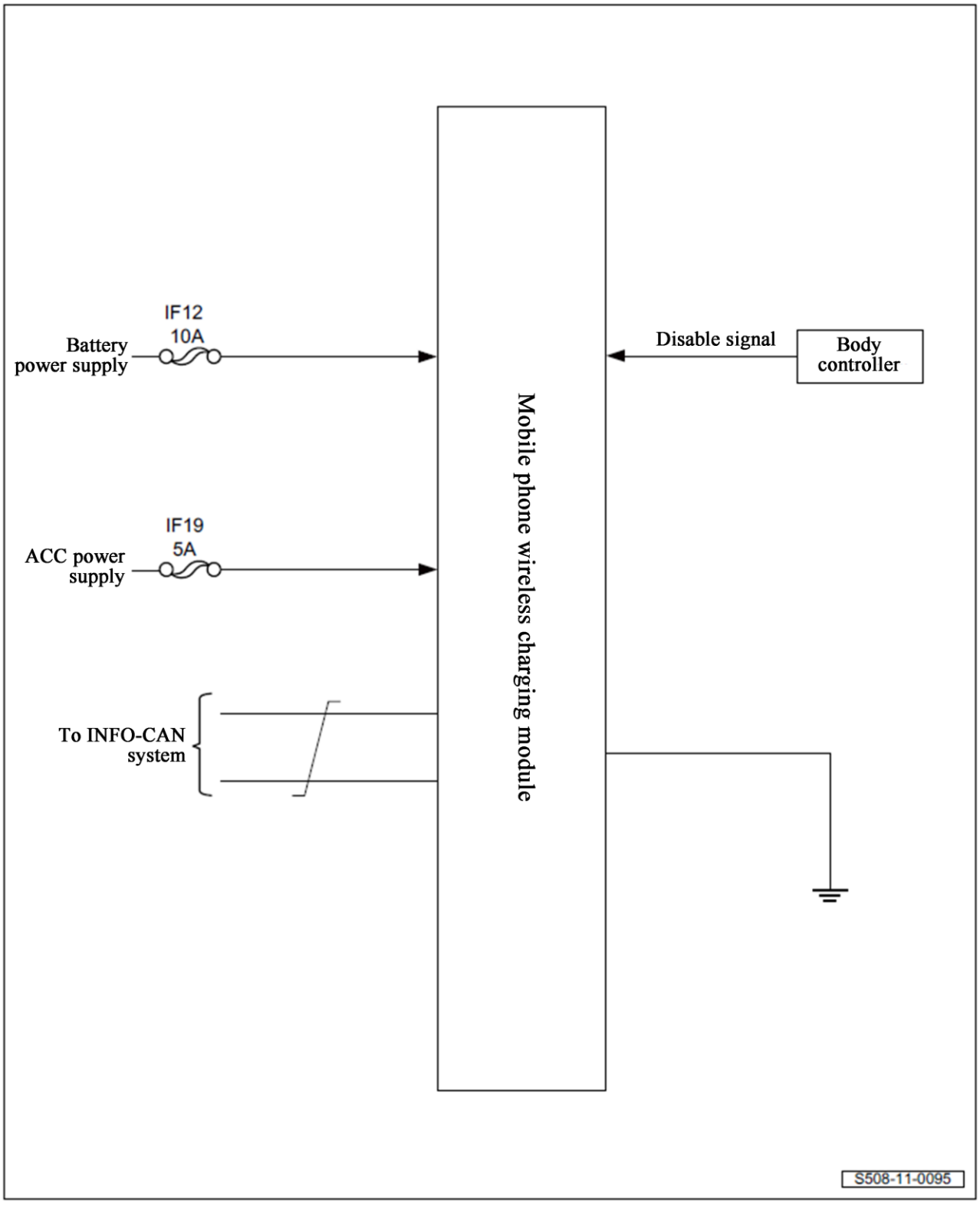
8.16.2 Component position

8.16.2.1 Component position

Component position

8.16.3 Electrical schematic diagram

8.16.3.1 Electrical schematic diagram

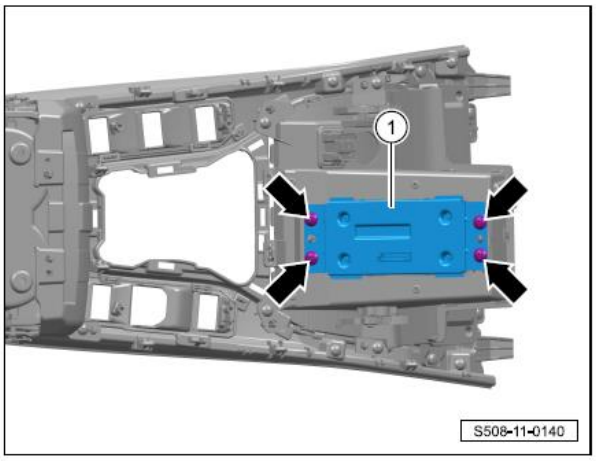


8.16.4 Removal and installation

8.16.4.1 Removal and installation of mobile phone wireless charging module

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



2 Remove the mobile phone wireless charging module

a. Unscrew the fixing screw (see arrow) and remove the mobile phone wireless charging module ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the mobile phone wireless charging module.

8.17 Remote monitoring system (T-BOX)

8.17.1 Specification

8.17.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between the TBOX and the vehicle body	Hexagon head flange bolt M6	10±1

8.17.2 System description

8.17.2.1 System description

Function description

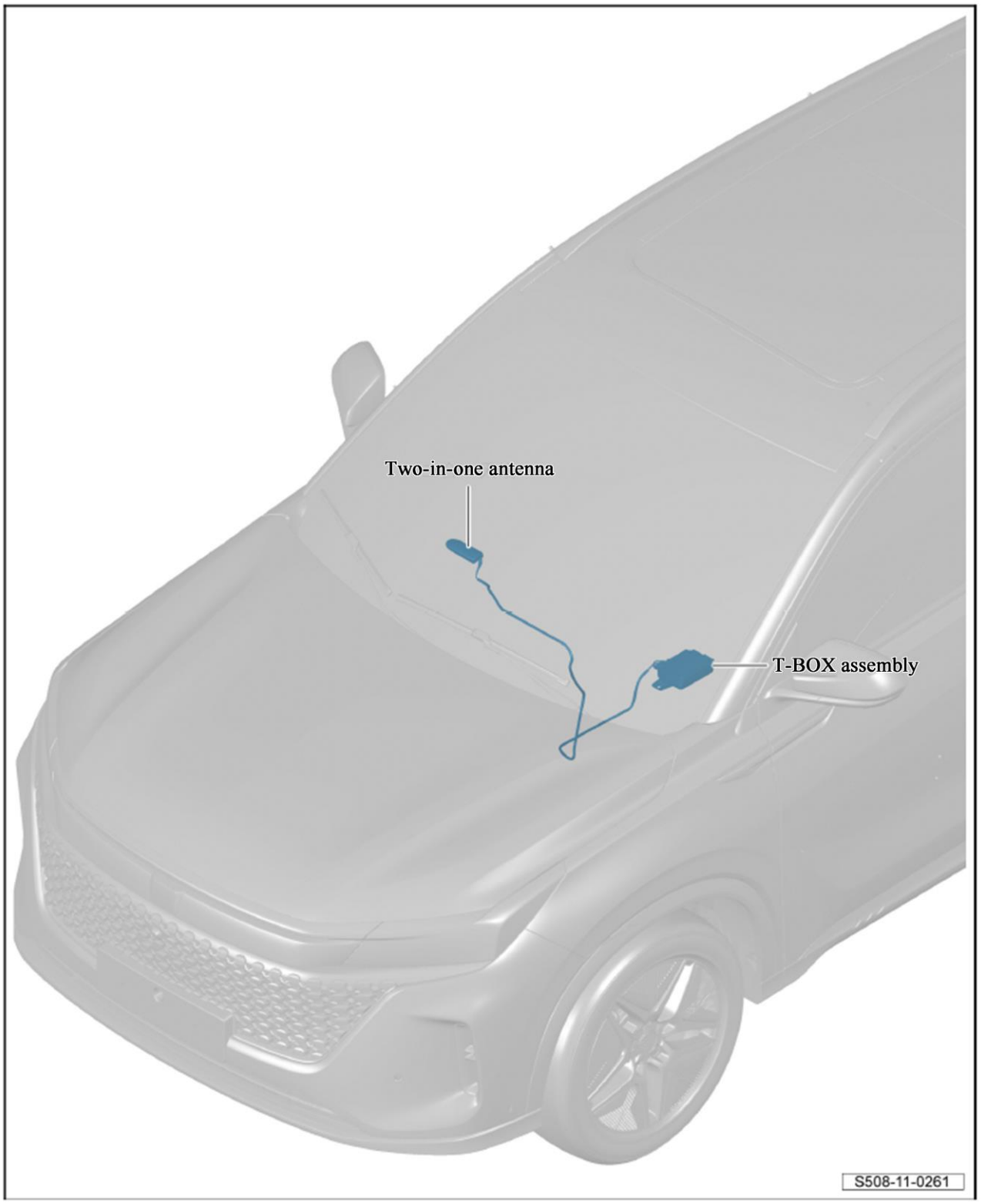
The onboard wireless terminal T-BOX is an intelligent vehicle control system, which is both the hub linking vehicle owner, vehicle, mobile phone, and TSP in the onboard interconnected ecological network and the window for the intelligent connected vehicle to communicate with the outside. When the network signal is good, it receives instructions from user through a 4G cellular network, undergoes certain security verification and processing, converts them into control instructions, and achieves remote control, remote monitoring, remote diagnosis for vehicles, and remote vehicle positioning functions through CAN messages.

User can remotely operate vehicles through the mobile APP (MyFengon), and under the conditions of remote function control, the user only needs to click on the relevant page. The specific functions are as follows:

- Remote locking/unlocking
- Remote window ascending/descending
- Remote sunroof control
- Remote reservation charging: reserve the waiting time and start time for charging through the mobile APP
- Remote vehicle positioning
- Remote seat heating on and off
- Remote A/C control: including turning on and off the A/C system, temperature regulation, and turning on and off defrost mode (after turning off defrost mode, A/C enters the mode before remote A/C control)
- Remote diagnosis: refresh and query vehicle related fault information through mobile APP

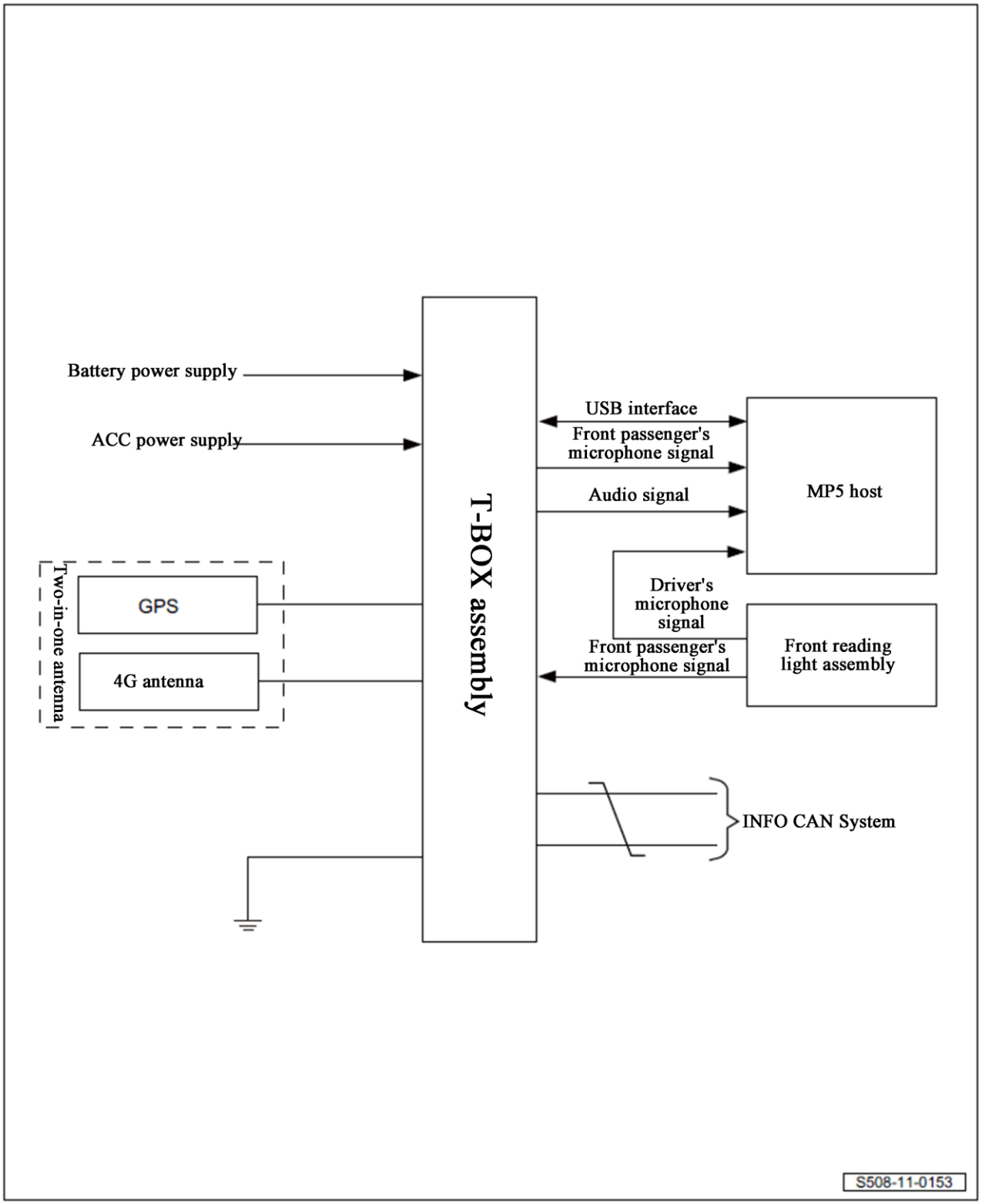
8.17.3 Component position

8.17.3.1 Component position



8.17.4 Electrical schematic diagram

8.17.4.1 Electrical schematic diagram



8.17.5 Diagnosis information and steps

8.17.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the T-BOX with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

8.17.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.
- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

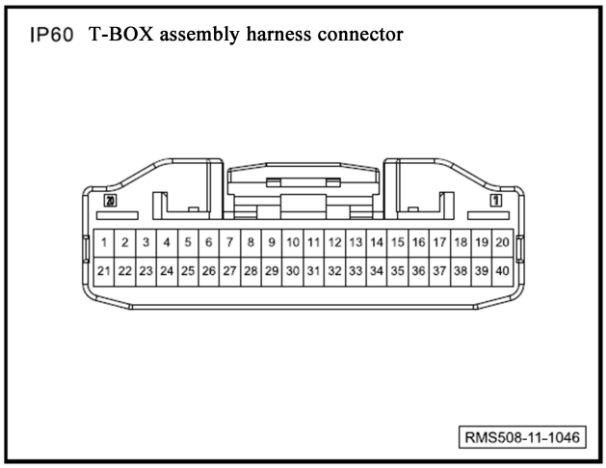
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

8.17.5.3 ECU terminals

T-BOX assembly harness connector (IP60)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.5/white-red	ACC power supply	Put the start switch to ACC position	Battery voltage
5	0.35/green, pink, red	MIC2 OUT-	—	—
6	0.35/brown	MIC2 IN+	—	—
8	0.35/pink-grey	LINE OUT+	—	—
19	0.35/Orange	Entertainment (Info)CAN-H	—	—
20	0.5/red-brown	Battery power supply	The start switch is	Battery voltage

			put to any position	
25	0.35/pink-black	MIC2 OUT+	—	—
26	0.35/brown-pink	MIC2 IN-	—	—
28	0.35/pink-white	LINE OUT-	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
39	0.35/Orange and white	Entertainment (Info)CAN-L	—	—
40	0.5/black	Ground	—	0V

8.17.5.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F187	Part No	-	-	-	-
F18A	Supplier code	-	-	-	-
F197	ECU name	-	-	-	-
F189	Software version No	-	-	-	-
F089	Hardware version No	-	-	-	-
F193	Supplier hardware version No	-	-	-	-
F195	Supplier software version No	-	-	-	-
F180	Version No	-	-	-	-
F190	VIN	-	-	-	-
F010	Logoff configuration	-	-	-	-
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
2280	SIM card No.	SIM card No.	-	-	-
2282	ICCID	ICCID of SIM card	-	-	-
2286	PDID (provided by the customer, written on TBOX production line as identification)	PDID	-	-	-
2290	Preset key (written on the vehicle production line as immobilizer authentication)	Preset key	-	-	-
2291	Activation mode (activated after off-line electrical inspection)	Activated mode	0	3	-

2292	TSP login status	TSP login status	0	1	-
216	Software version number (new external version number)	-	-	-	-

8.17.5.5 DTC list

DTC	DTC definition	Impact on the system	Possible cause	Recommendations for Maintenance
B111717	Too low battery voltage	Record the DTC	Battery voltage is too low	Inspect power supply voltage
B111716	Too high battery voltage	Record the DTC	Battery voltage is too high	Inspect power supply voltage
B149009	(4G) Network module abnormality	1. Record DTC 2. TBOX cannot be connected to the network	Network module abnormality	Replace the T-BOX
B144055	Failure to write VIN	1. Record DTC 2. TBOX cannot log in to the platform	VIN data bit is empty	1. Check whether EMS is F190 2. Check the communication with EMS and T-box
B149109	Unable to recognize SIM card	1. Record DTC 2. TBOX cannot be connected to the network	Abnormal SIM card	Replace the T-BOX
B149511	Network module main antenna short-circuited	1. Record DTC 2. The signal quality of TBOX is poor, and network connection may not be possible.	Abnormal antenna	Check the main antenna
B149613	Network module main antenna open-circuited	1. Record DTC 2. The signal quality of TBOX is poor, and network connection may not be possible.	Abnormal antenna	Check the main antenna
B140D11	Network module auxiliary antenna short-circuited	1. Record DTC 2. The signal quality of TBOX is poor, and network connection may not be possible.	Abnormal antenna	Check the auxiliary antenna
B140D13	Network module auxiliary antenna open-circuited	1. Record DTC 2. The signal quality of TBOX is poor, and network connection may not be possible.	Abnormal antenna	Check the auxiliary antenna
B140331	Fault of communication with MMIUSB	1. Record DTC 2. HU cannot connect to TBOX and use the Internet access function	Abnormal HU or abnormal cable connected to HU	Check HU and cables connected to HU

B140111	Fault of GNSS antenna short circuited to ground	1. Record DTC 2. TBOX cannot synchronize the time	Abnormal antenna	Check the GNSS antenna
B140113	Fault of GNSS antenna open-circuited	1. Record DTC 2. TBOX cannot synchronize the time	Abnormal antenna	Check the GNSS antenna
B14984B	Internal battery temperature too high	1. Record DTC 2. The battery cannot be charged when the TBOX power is low	Abnormal battery	Replace the battery
B149913	Internal battery not connected	1. Record DTC 2. TBOX cannot work when it is removed	Battery not connected	Check the battery connection
U007688	Information CAN Controller Bus Off	1. Record DTC 2. The data reported by TBOX will be abnormal	1. Information CAN controller fault 2. Network interference	1. Check the bus harness 2. Check the controller

B111717	Too low battery voltage	Record the DTC	Battery voltage is too low	Inspect power supply voltage
U014687	Lost communication with GW	1. Record DTC 2. The data reported by TBOX will be abnormal	1. GW controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U011187	Lost communication with BMS	1. Record DTC 2. The data reported by TBOX will be abnormal	1. BMS controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U029387	Lost communication with VCU	1. Record DTC 2. The data reported by TBOX will be abnormal	1. VCU controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U011087	Lost communication with MCUF0	1. Record DTC 2. The data reported by TBOX will be abnormal	1. MCUF0 controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U029887	Lost communication with DCDC	1. Record DTC 2. The data reported by TBOX will be abnormal	1. DCDC controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U010087	Lost communication with EMS	1. Record DTC 2. The data reported by TBOX will be abnormal	1. EMS controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U031187	Lost communication with GCU	1. Record DTC 2. The data reported by TBOX will be abnormal	1. GCU controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U010387	Lost communication with GSM	1. Record DTC 2. The data reported by TBOX will be abnormal	1. GSM controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U012687	Lost communication with PCM	1. Record DTC 2. The data reported by TBOX will be abnormal	1. PCM controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U013187	Lost communication with EPS	1. Record DTC 2. The data reported by TBOX will be abnormal	1. EPS controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U015187	Lost communication with ABM	1. Record DTC 2. The data reported by TBOX will be abnormal	1. ABM controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U012887	Lost communication with EPB	1. Record DTC 2. The data reported by TBOX will be	1. EPB controller fault 2. Network	1. Check the bus harness 2. Check the controller

		abnormal	interference	
U014087	Lost communication with BCM	1. Record DTC 2. The data reported by TBOX will be abnormal	1. BCM controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U012287	Lost communication with ESP	1. Record DTC 2. The data reported by TBOX will be abnormal	1. ESP controller fault 2. Network interference	1. Check the bus harness 2. Check the controller

B111717	Too low battery voltage	Record the DTC	Battery voltage is too low	Inspect power supply voltage
U023287	Lost communication with SRR	1. Record DTC 2. The data reported by TBOX will be abnormal	1. SRR controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U016487	Lost communication with AC	1. Record DTC 2. The data reported by TBOX will be abnormal	1. AC controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U023087	Lost communication with PLG	1. Record DTC 2. The data reported by TBOX will be abnormal	1. PLG controller fault 2. Network interference	1. Check the bus harness 2. Check the controller
U015587	Lost communication with IC	1. Record DTC 2. The data reported by TBOX will be abnormal	1. IC controller fault 2. Network interference	1. Check the bus harness 2. Check the controller

8.17.5.6 DTC: B111716, B111717

DTC	DTC definition
B111716	Too high battery voltage
B111717	Too low battery voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.
Standard voltage value: **11~14V**

B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the fuses IF11 and IF20 of T-BOX assembly.

A Check whether the fuses IF11 and IF20 are blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuits of fuses IF11 and IF20.

A Check whether the circuits of fuses IF11 and IF20 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

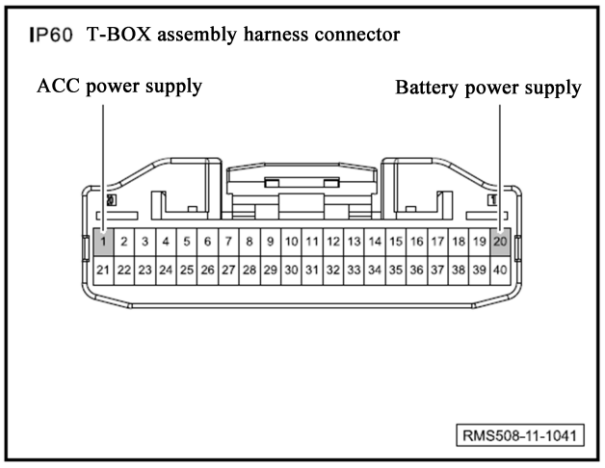
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF1110A**, **IF205A**

D Confirm whether the T-BOX assembly works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the T-BOX assembly.



A Turn the start switch to "OFF" position.

B Disconnect the T-BOX assembly harness connector IP60.

C Put the Start switch to “ON” position.

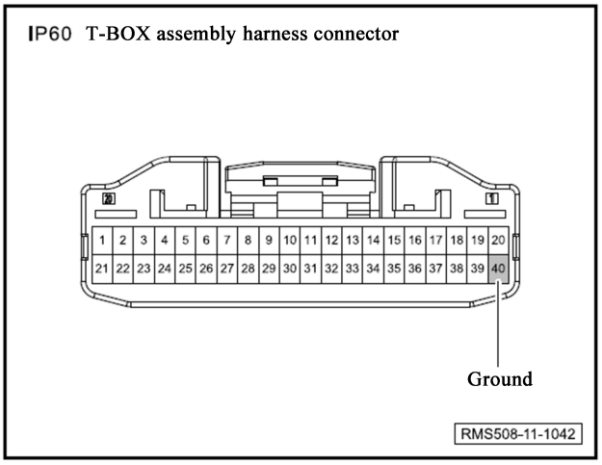
D Measure the voltage between terminal 20/1 of T-BOX assembly harness connector IP60 and body ground.
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the T-BOX assembly.



A Turn the start switch to "OFF" position.
B Disconnect the T-BOX assembly harness connector IP60.
C Measure the resistance between terminal 40 of the T-BOX assembly harness connector IP60 and the body ground.
Standard resistance value: **<1Ω**
D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.7 DTC: U007688

DTC	DTC definition
U007688	Information CAN Controller Bus Off

1. Diagnosis steps

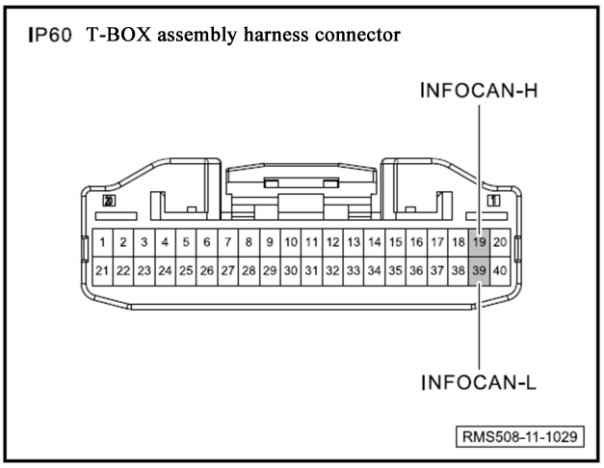
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.
B Disconnect the T-BOX assembly harness connector IP60.
C Measure the resistance of the circuit between terminals 19 and 39 of the T-BOX assembly harness connector IP60.
Standard resistance value: about **120Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the T-BOX assembly.

A Check whether the power supply ground wire of the T-BOX assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.17.5.8 DTC:B149009,B144055.....

DTC	Description
B149009	(4G) Network module abnormality
B144055	Failure to write VIN
B149109	Unable to recognize SIM card
B14984B	Internal battery temperature too high
B149913	Internal battery not connected

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power ground circuit of the T-BOX assembly.

A Check whether the power ground circuit of T-BOX assembly is normal.

No → Repair or replace the harness.

Yes

Step 3	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.17.5.9 DTC:B149511,B149613.....

DTC	Description
B149511	Network module main antenna short-circuited
B149613	Network module main antenna open-circuited
B140D11	Network module auxiliary antenna short-circuited
B140D13	Network module auxiliary antenna open-circuited
B140111	Fault of GNSS antenna short circuited to ground
B140113	Fault of GNSS antenna open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the two-in-one antenna and the T-BOX assembly.

A Check whether the circuit between the two-in-one antenna and T-BOX assembly is normal.

No → Repair or replace the harness.

Yes

Step 3	Replace the two-in-one antenna.

A Replace the two-in-one antenna.
B Is the fault eliminated after replacing the two-in-one antenna?

Yes → The system works normally.

No

Step 4	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.17.5.10 DTC:B140331

DTC	Description
B140331	Fault of communication with MMI USB

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the USB circuit between T-BOX assembly and entertainment system host.

A Check whether the USB circuit between T-BOX assembly and entertainment system host is normal.

No → Repair or replace the harness.

Yes

Step 3	Replace the entertainment system host.

A Replace the entertainment system host.
B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 4	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.17.5.11 DTC: U014687,U014087.....

DTC	DTC definition
U014687	Lost communication with GW
U014087	Loss of communication with BCM
U016487	Lost communication with AC

1. Diagnosis steps

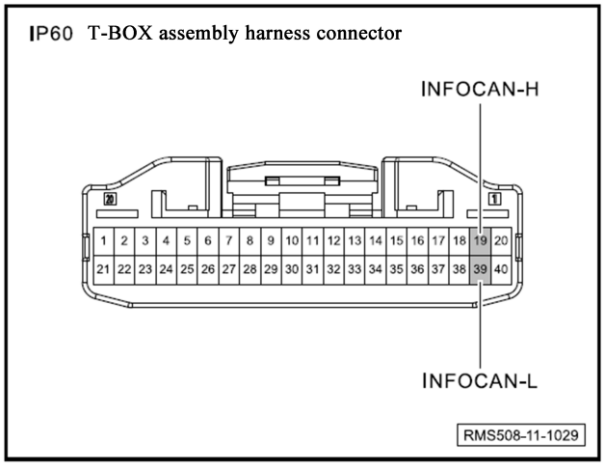
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

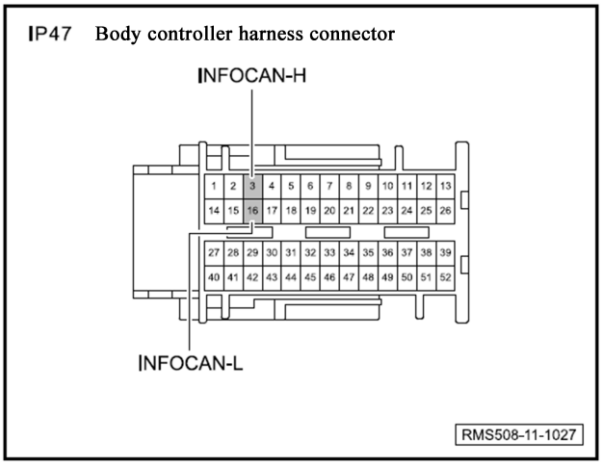
Yes

Step 2	Check the CAN data communication wire between the T-BOX assembly and the body controller.



A Turn the start switch to "OFF" position.
B Disconnect the T-BOX assembly harness connector IP60.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 19 of the T-BOX assembly harness connector IP60 and terminal 3 of the body controller harness connector IP47.
E Measure the resistance between terminal 39 of the T-BOX assembly harness connector IP14 and terminal 16 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.17.5.12 DTC: U011187

DTC	DTC definition
U011187	Lost communication with BMS

1. Diagnosis steps

Step 1	Check the DTCs.

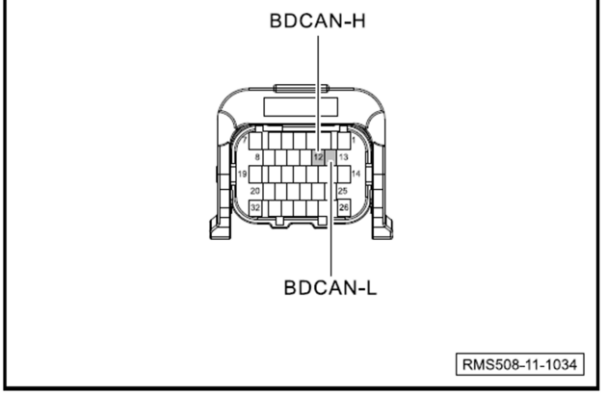
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

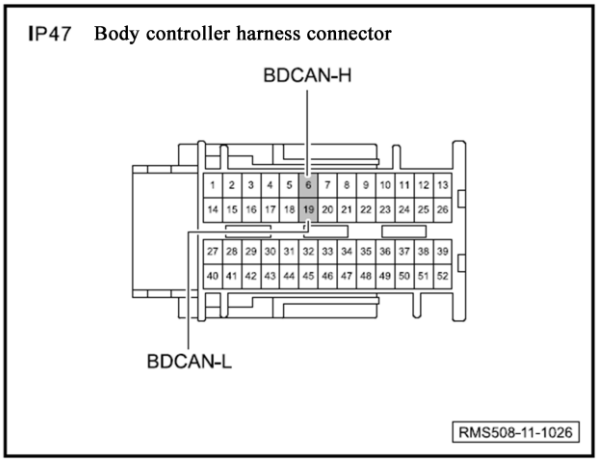
Yes

Step 2	Check the CAN data communication wire between the battery pack assembly and the body controller.

FB59 Battery pack assembly harness connector



IP47 Body controller harness connector

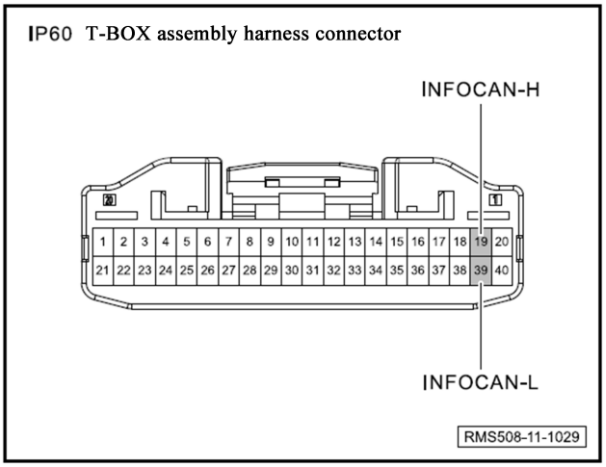


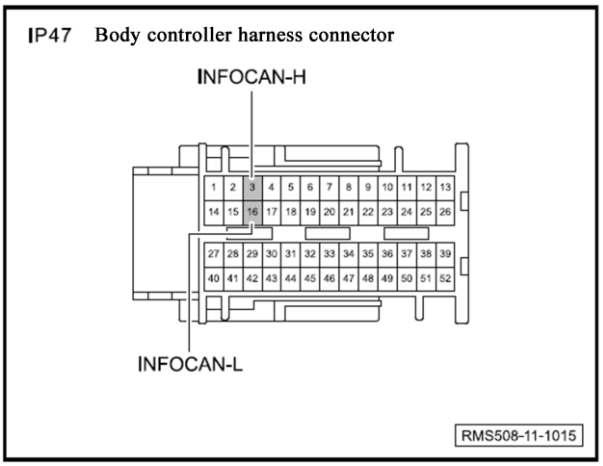
A Turn the start switch to "OFF" position.
B Disconnect the battery pack assembly harness connector FB59.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the battery pack assembly harness connector FB59 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 13 of the battery pack assembly harness connector FB59 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47 C Disconnect the T-BOX assembly harness connector IP60. D Measure the resistance between terminal 3 of the body controller harness connector IP47 and the terminal 19 of T-BOX assembly harness connector IP60

.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the battery pack assembly.

A Check whether the power supply and ground wires of the battery pack assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.13 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

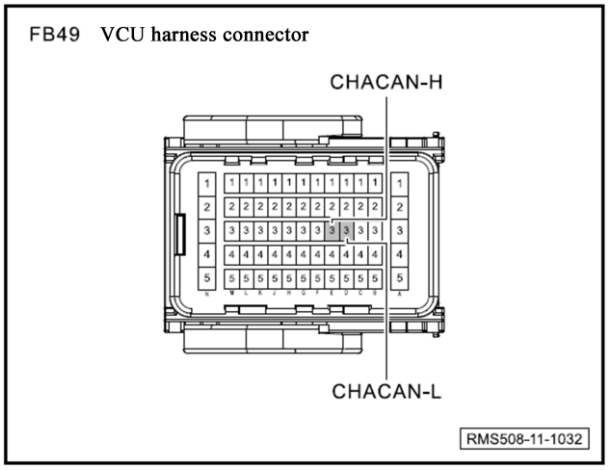
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

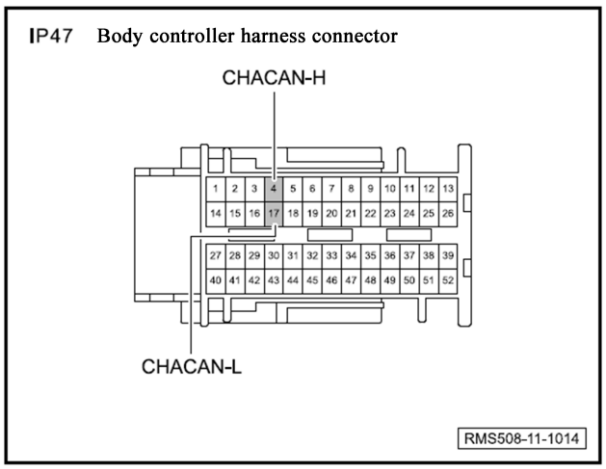
No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CHACAN data communication wire between the VCU and the body controller.



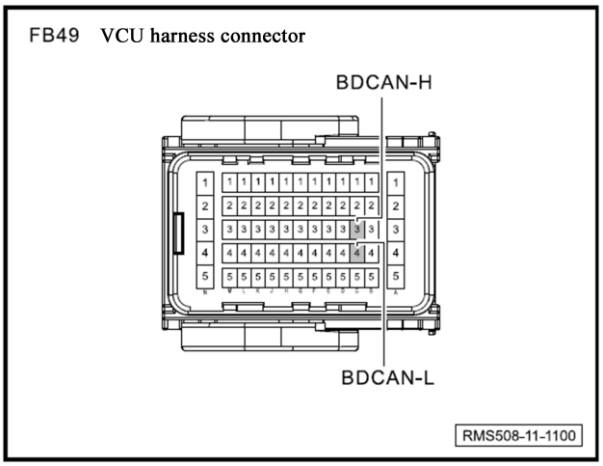
A Turn the start switch to "OFF" position.
B Disconnect the VCU harness connector FB49.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal E3 of the VCU harness connector FB49 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal D3 of the VCU harness connector FB49 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

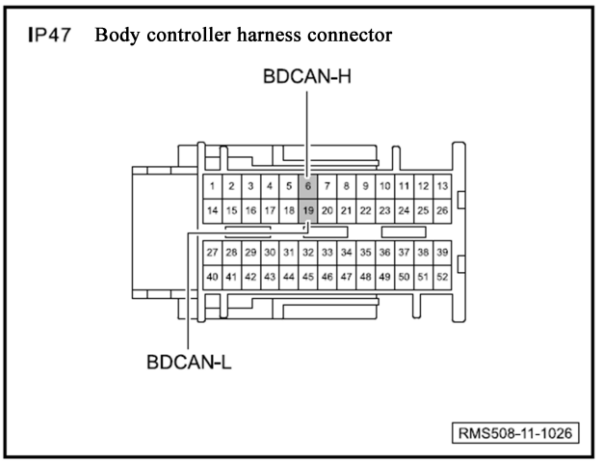


No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the BDCAN data communication wire between the VCU and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the VCU harness connector FB49.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal C3 of the VCU harness connector FB49 and terminal 6 of the body controller harness connector IP47.

E Measure the resistance between terminal C4 of the VCU harness connector FB49 and terminal 19 of the body controller harness connector IP47.

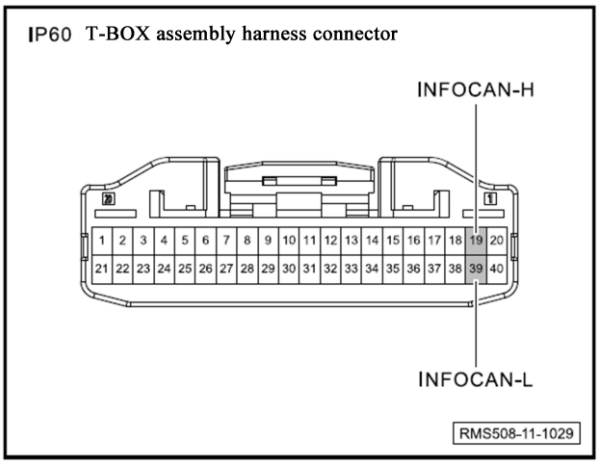
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the body controller and the T-BOX assembly.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47 C Disconnect the T-BOX assembly harness connector IP60. D Measure the resistance between terminal 3 of the body controller harness connector IP47 and the terminal 19 of T-BOX assembly harness connector IP60

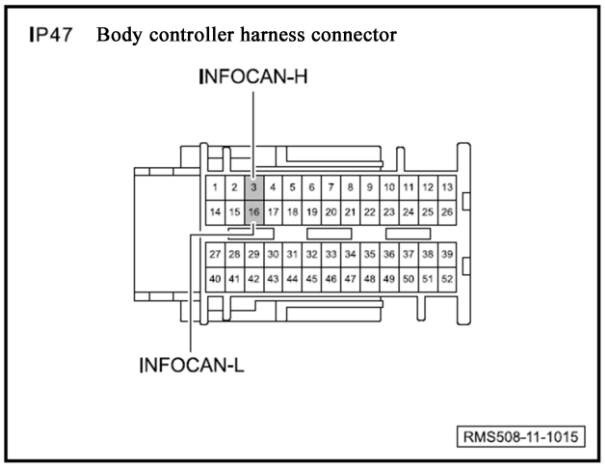
.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 5	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.17.5.14 DTC: U011087, U031187

DTC	DTC definition
U011087	Lost communication with MCUF0
U031187	Lost communication with GCU

1. Diagnosis steps

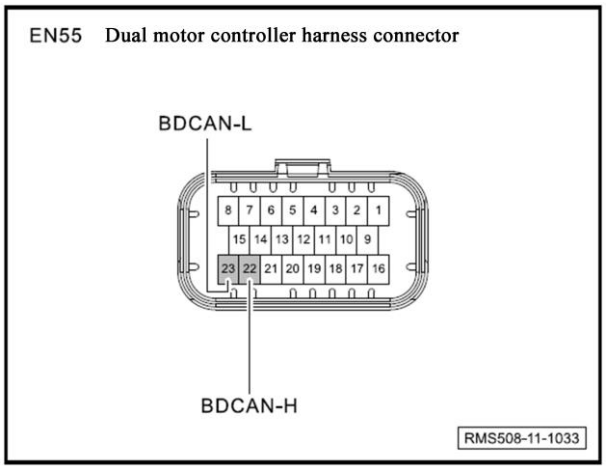
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

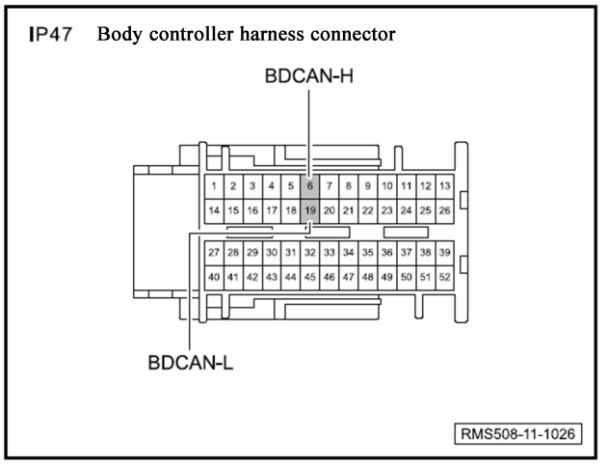
Yes

Step 2	Check the CAN data communication wire between the dual-motor controller and the body controller.



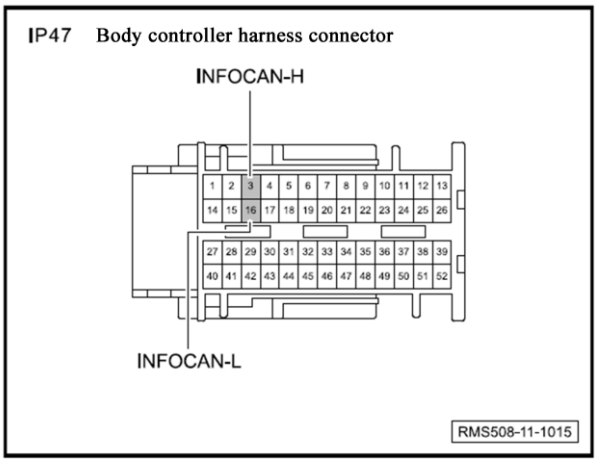
A Turn the start switch to "OFF" position.
B Disconnect dual-motor harness connector EN55.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 22 of the dual-motor controller harness connector EN55 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 23 of the dual-motor controller harness connector EN55 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

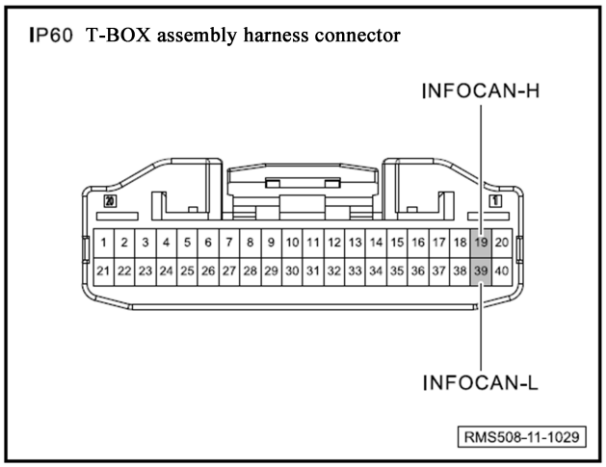
No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.15 DTC: U029987

DTC	DTC definition
U029987	Lost communication with DCDC

1. Diagnosis steps

Step 1	Check the DTCs.

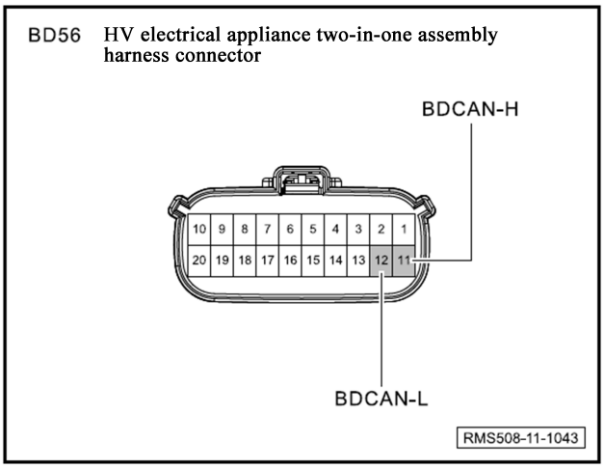
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

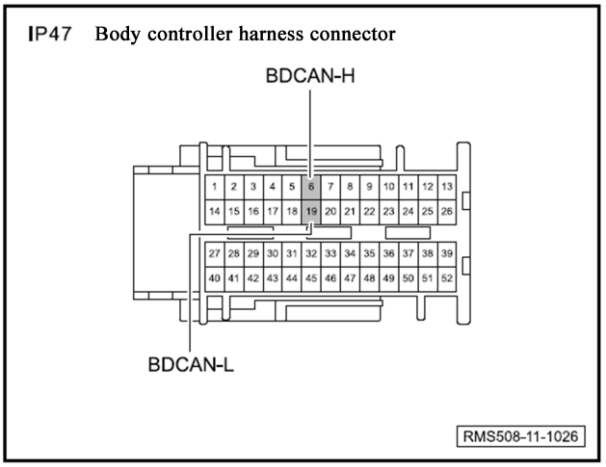
Yes

Step 2	Check the CAN data communication wire between the HV electrical appliance two-in-one assembly and the body controller.

BD56 HV electrical appliance two-in-one assembly harness connector



IP47 Body controller harness connector



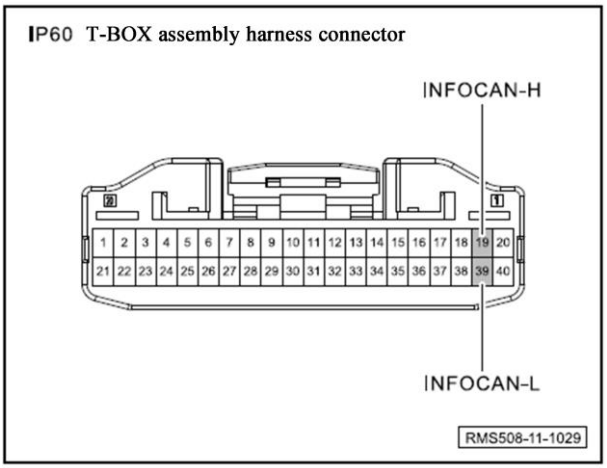
A Turn the start switch to "OFF" position.
B Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 11 of the HV electrical appliance two-in-one assembly harness connector BD56 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 12 of the HV electrical appliance two-in-one assembly harness connector BD56 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

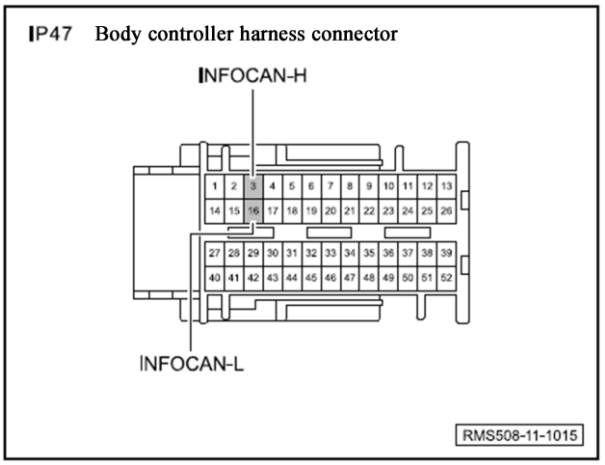
Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.

IP60 T-BOX assembly harness connector



IP47 Body controller harness connector



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the HV electrical appliance two-in-one assembly.

A Check whether the power supply ground wire of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.16 DTC: U010087

DTC	DTC definition
U010087	Lost communication with EMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

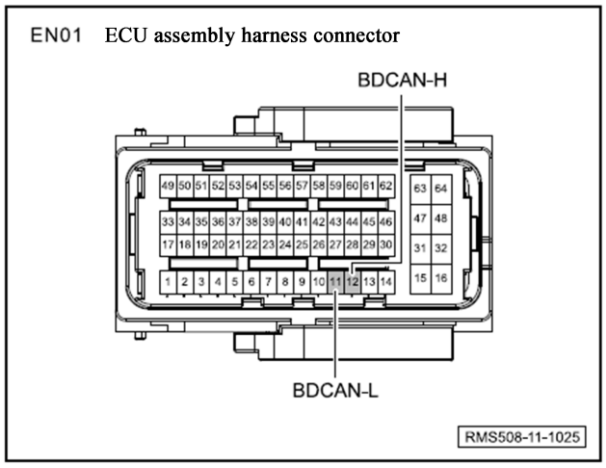
D Read the DTC again.

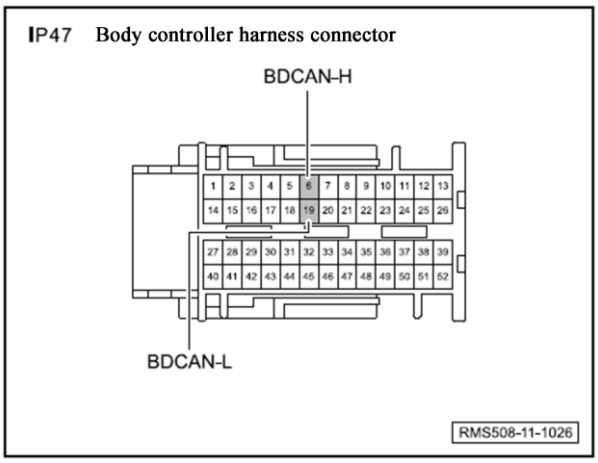
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the ECU assembly and the body controller.



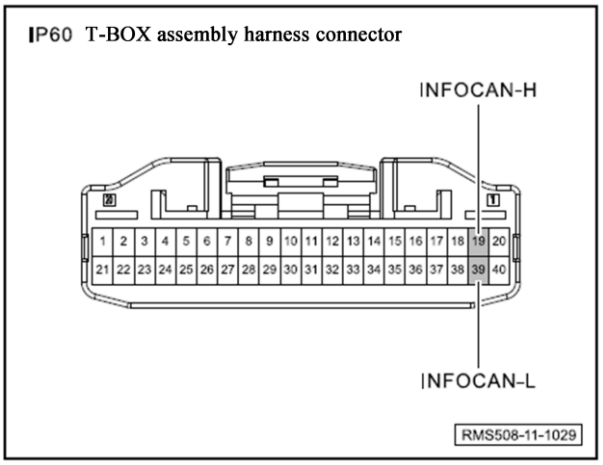


A Turn the start switch to "OFF" position.
B Disconnect the ECU assembly harness connector EN01.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the ECU assembly harness connector EN01 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 11 of the ECU assembly harness connector EN01 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

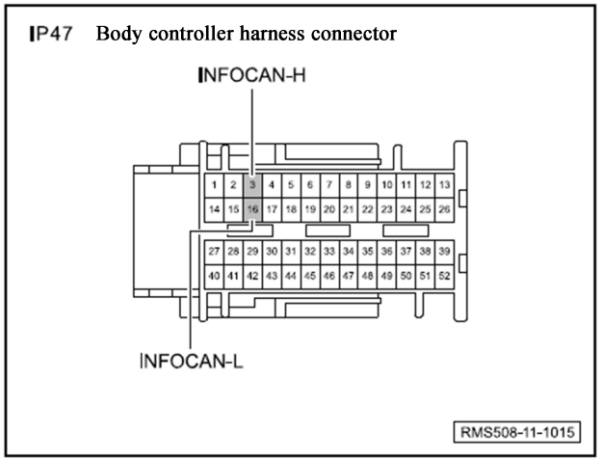
Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the T-BOX assembly harness connector IP60.
D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the ECU assembly.

A Replace the ECU assembly.

B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.17 DTC: U010387

DTC	DTC definition
U010387	Lost communication with GSM

1. Diagnosis steps

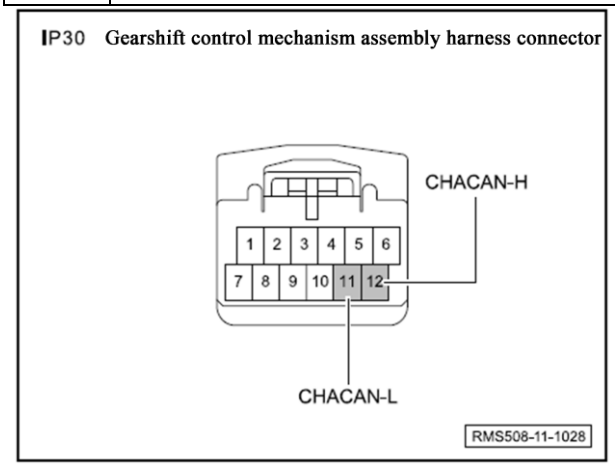
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

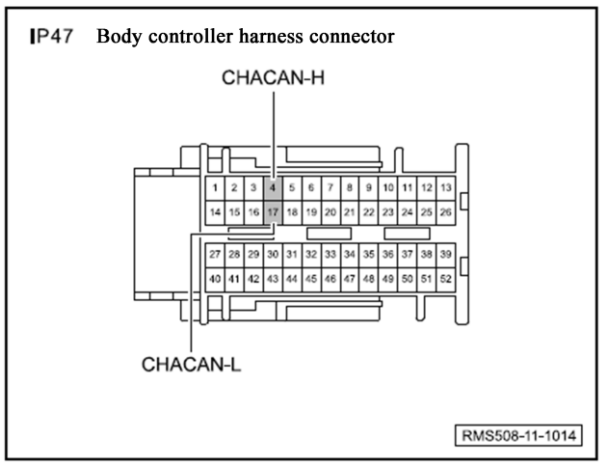
Yes

Step 2	Check the CAN data communication wire between the gearshift control mechanism assembly and the body controller.



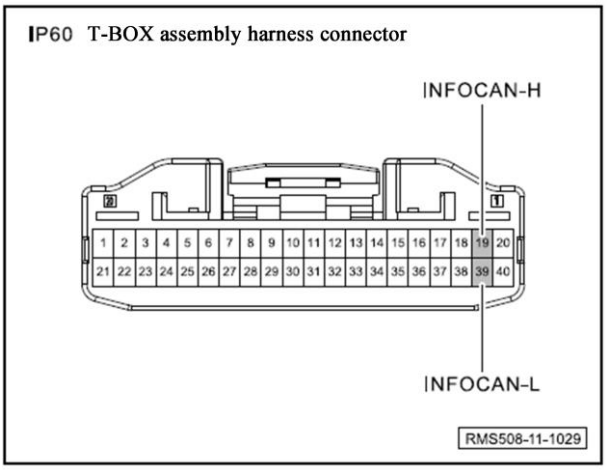
A Turn the start switch to "OFF" position.
B Disconnect the gearshift control mechanism assembly harness connector IP30.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the gearshift control mechanism assembly harness connector IP30 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 11 of the gearshift control mechanism assembly harness connector IP30 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

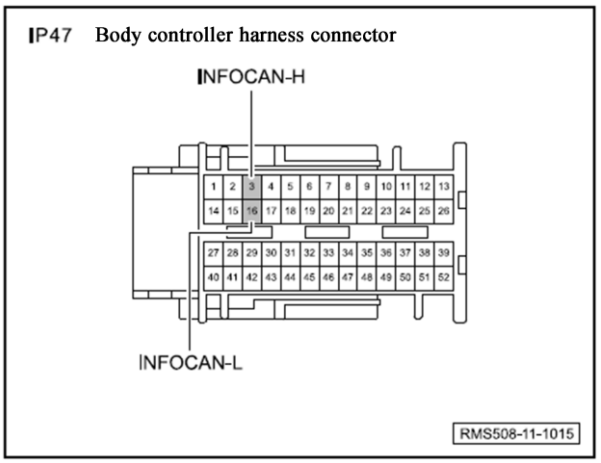
No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.18 DTC: U012687

DTC	DTC definition
U012687	Lost communication with PCM

1. Diagnosis steps

Step 1	Check the DTCs.

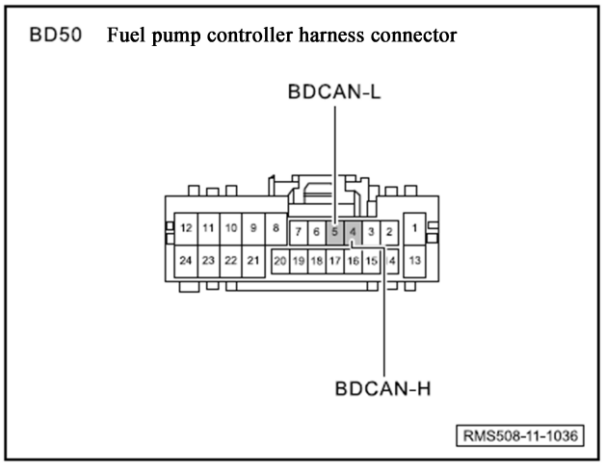
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

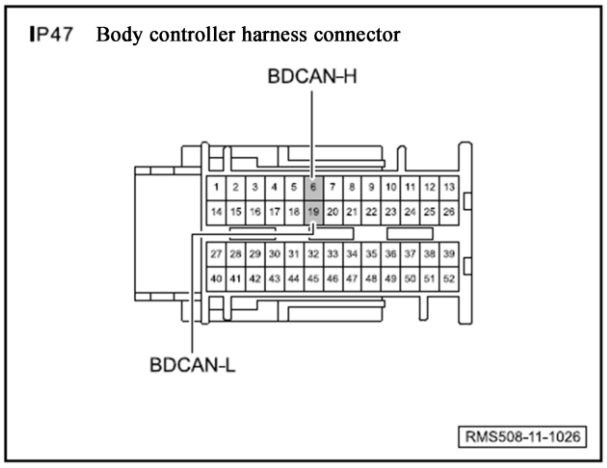
Yes

Step 2	Check the CAN data communication wire between the fuel pump controller and the body controller.

BD50 Fuel pump controller harness connector



IP47 Body controller harness connector



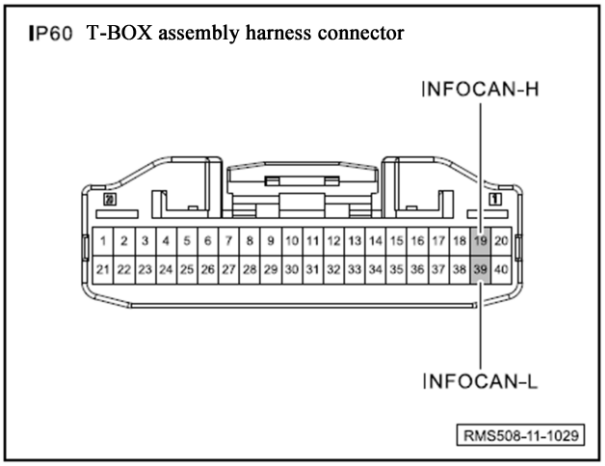
A Turn the start switch to "OFF" position.
B Disconnect the fuel pump controller harness connector BD50.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 4 of the fuel pump controller harness connector BD50 and terminal 6 of the body controller harness connector IP47.
E Measure the resistance between terminal 5 of the fuel pump controller harness connector BD50 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

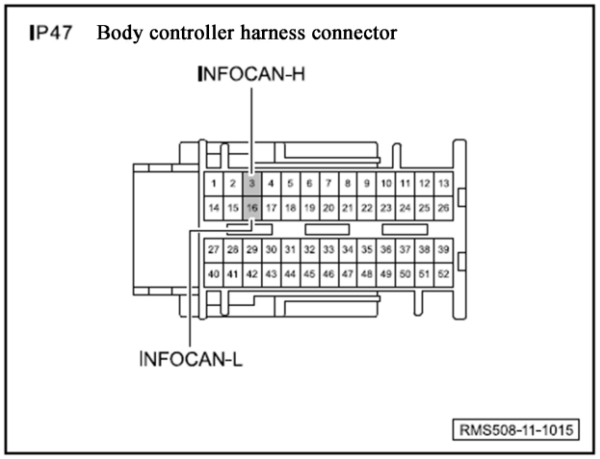
Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.

IP60 T-BOX assembly harness connector



IP47 Body controller harness connector



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the oil pump controller.

A Check whether the power supply ground wire of the oil pump controller is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the oil pump controller.

A Replace the oil pump controller.

B Is the fault eliminated after replacing the fuel pump controller?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.19 DTC: U013187

DTC	DTC definition
U013187	Lost communication with EPS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

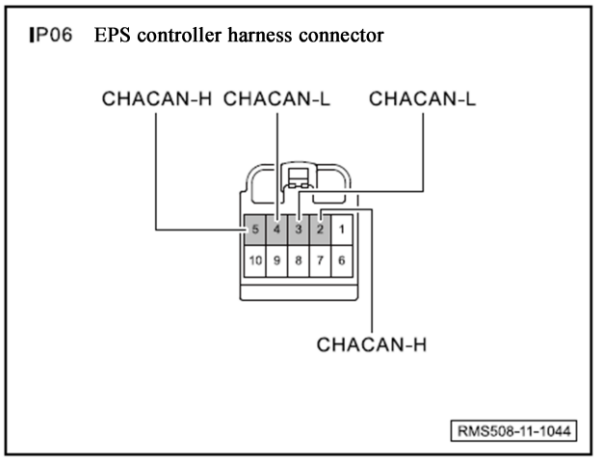
D Read the DTC again.

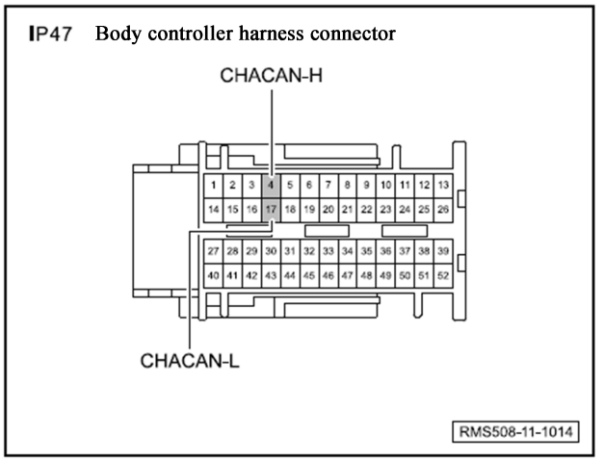
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the EPS controller and the body controller.



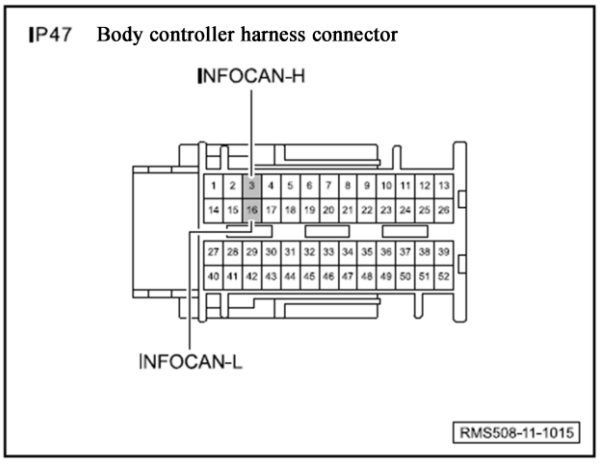


A Turn the start switch to "OFF" position.
B Disconnect the EPS controller harness connector IP06.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 2/5 of EPS controller harness connector IP06 and terminal 4 of body controller harness connector IP47.
E Measure the resistance between terminal 3/4 of EPS controller harness connector IP06 and terminal 17 of body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

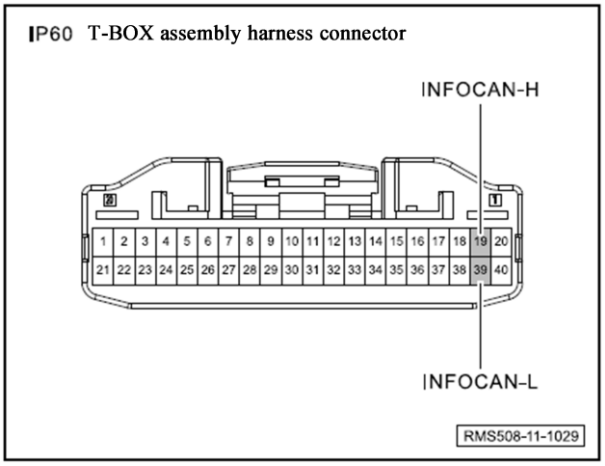
Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the T-BOX assembly harness connector IP60.
D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the EPS controller.

A Check whether the power supply and ground wires of the EPS controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.20 DTC: U015187

DTC	DTC definition
U015187	Lost communication with ABM

1. Diagnosis steps

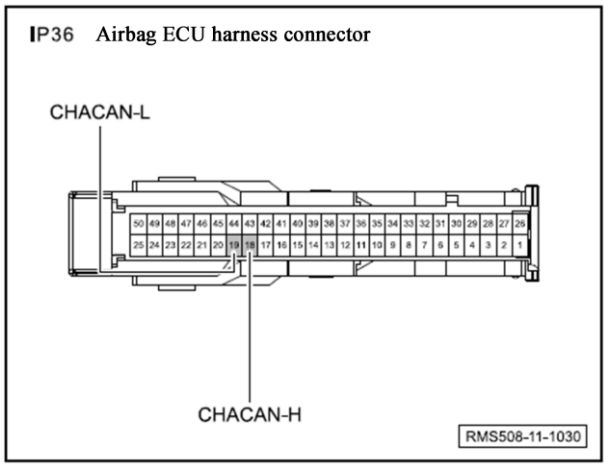
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

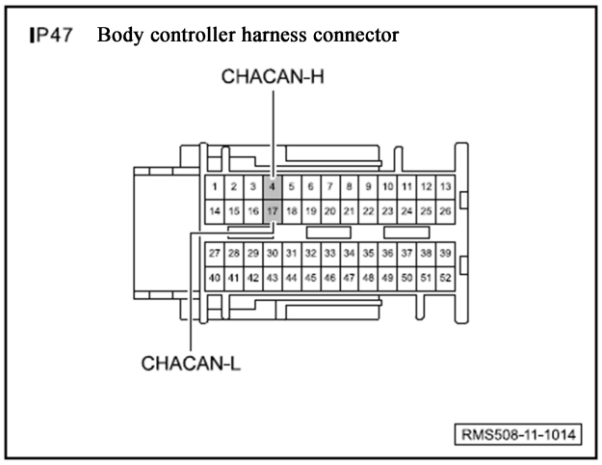
Yes

Step 2	Check the CAN data communication wire between the airbag ECU and the body controller.



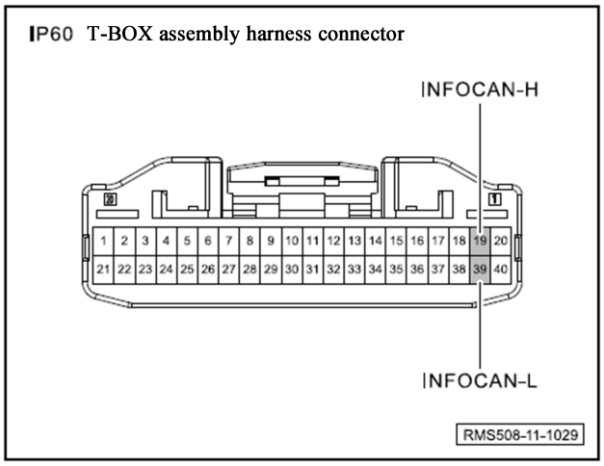
A Turn the start switch to "OFF" position.
B Disconnect airbag ECU harness connector IP36.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 18 of the airbag ECU harness connector IP36 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 19 of the airbag ECU harness connector IP36 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

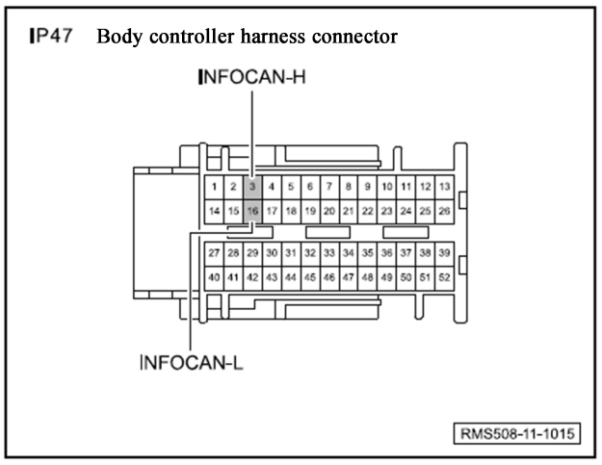
No — Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.17.5.21 DTC: U012887

DTC	DTC definition
U012887	Lost communication with EPB

1. Diagnosis steps

Step 1	Check the DTCs.

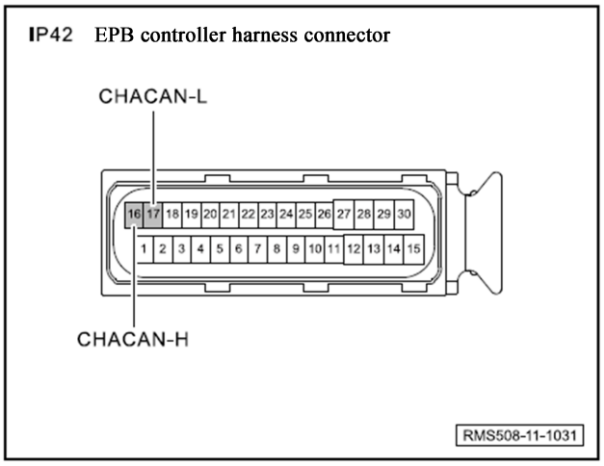
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

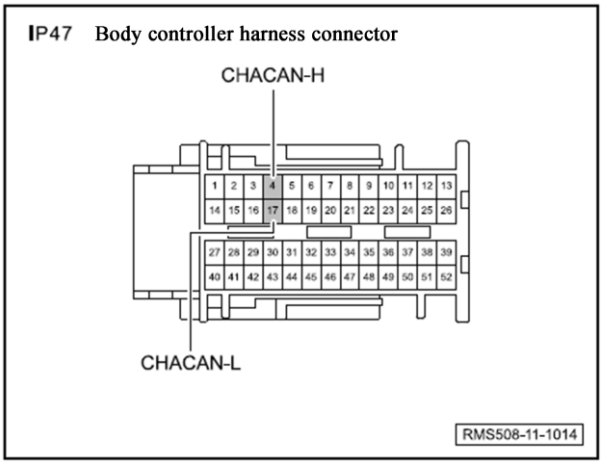
Yes

Step 2	Check the CAN data communication wire between the EPB controller and the body controller.

IP42 EPB controller harness connector



IP47 Body controller harness connector

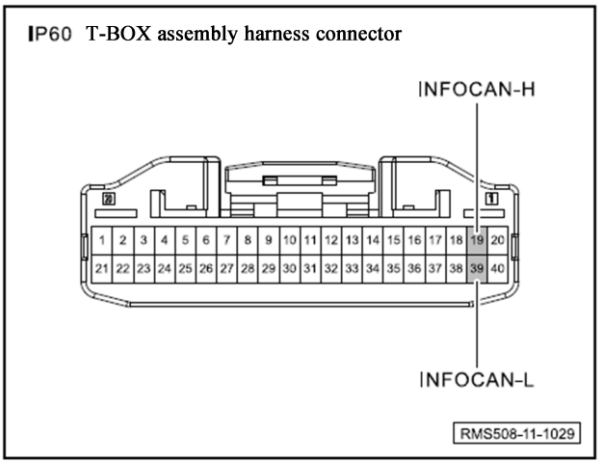


A Turn the start switch to "OFF" position.
B Disconnect EPB controller harness connector IP42.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 16 of EPB controller harness connector IP42 and terminal 4 of body controller harness connector IP47.
E Measure the resistance between terminal 17 of EPB controller harness connector IP42 and terminal 17 of body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

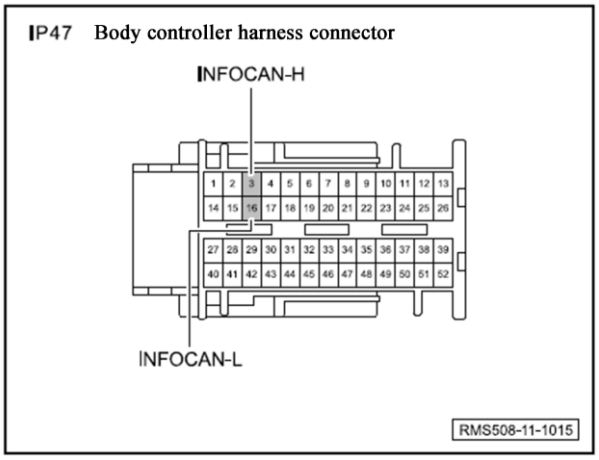
C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.



No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the EPB controller.

A Replace the EPB controller.

B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

No

Step 2	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 3	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.17.5.22 DTC: U012287

DTC	DTC definition
U012287	Lost communication with ESP

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

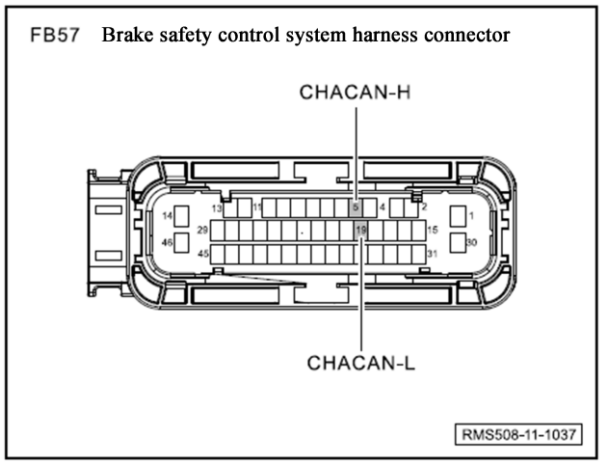
D Read the DTC again.

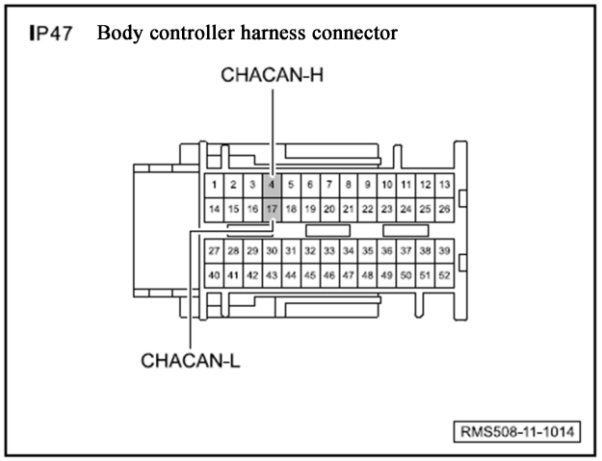
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.



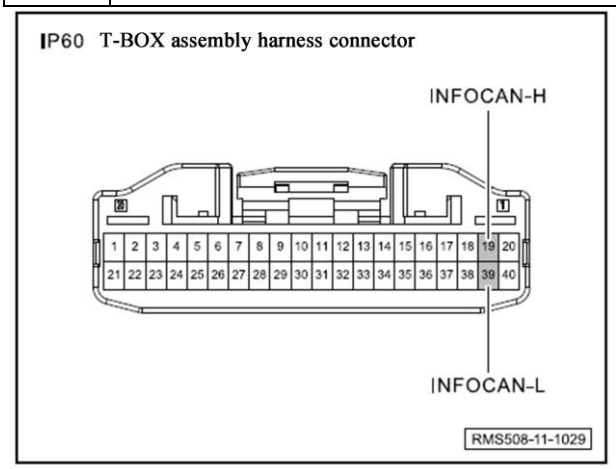


A Turn the start switch to "OFF" position.
B Disconnect the brake safety control system harness connector FB57.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

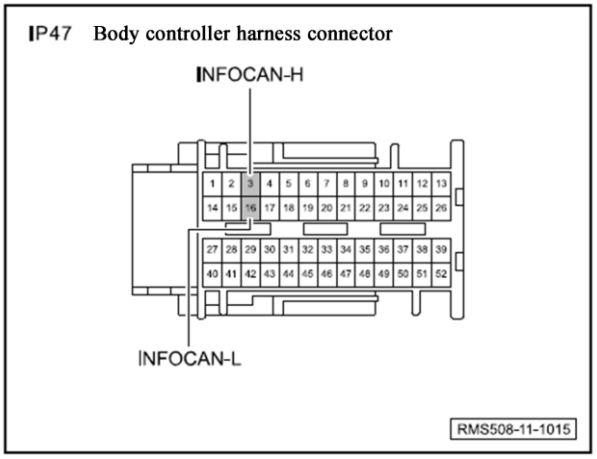
Yes

Step 3	Check the CAN data communication wire between the body controller and the T-BOX assembly.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the T-BOX assembly harness connector IP60.
D Measure the resistance between terminal 3 of the body controller harness connector IP47 and T-BOX assembly harness
.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes →

Next

Step 8	The diagnosis is over.

8.17.5.23 DTC: U023287

DTC	DTC definition
U023287	Lost communication with SRR

1. Diagnosis steps

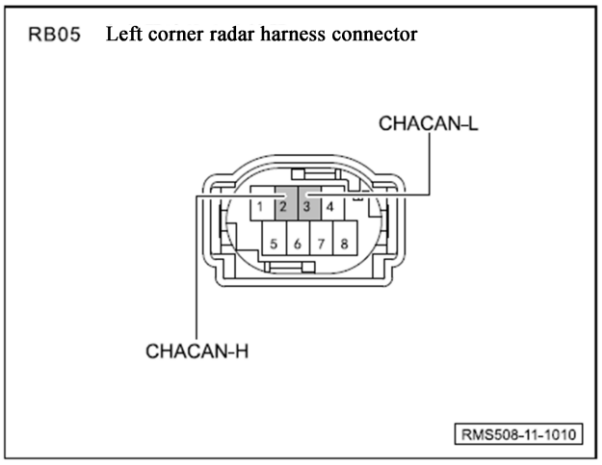
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

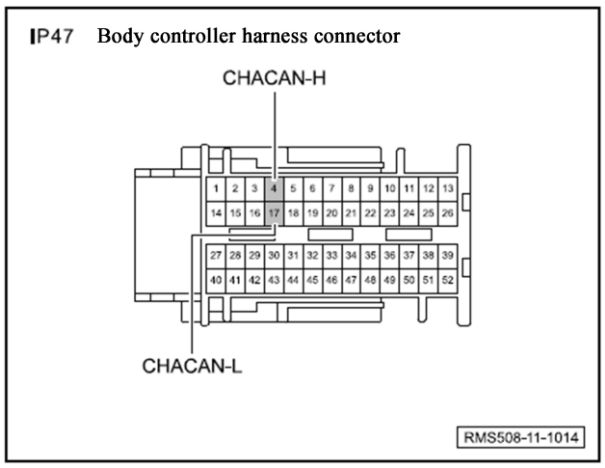
Yes

Step 2	Check the CAN data communication wire between the left corner radar and the body controller.

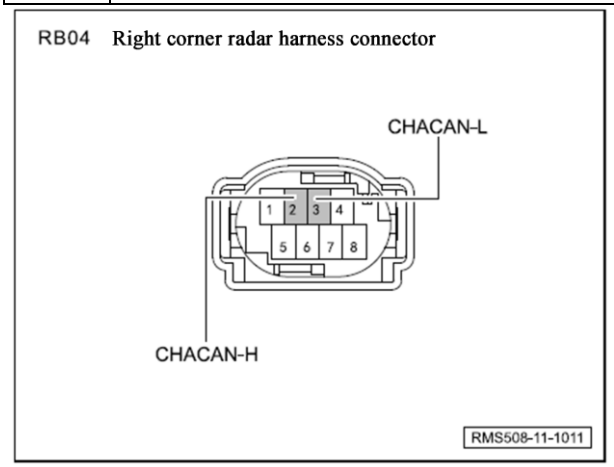


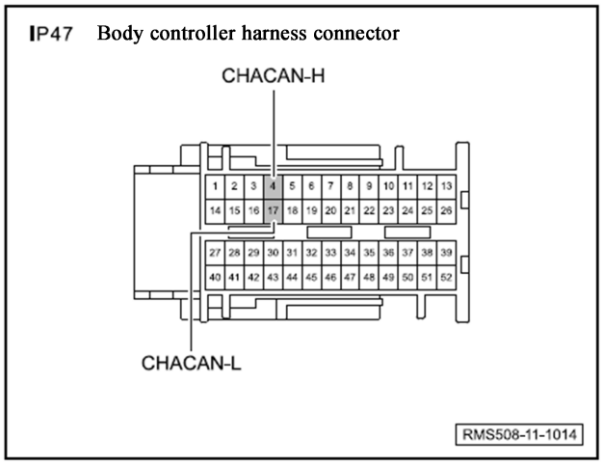
A Turn the start switch to "OFF" position.
B Disconnect the left corner radar harness connector RB05.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 2 of the left corner radar harness connector RB05 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 3 of the left corner radar harness connector RB05 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Step 3	Check the CAN data communication wire between the right corner radar and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the right corner radar harness connector RB04.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 2 of the right corner radar harness connector RB04 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 3 of the right corner radar harness connector RB04 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**

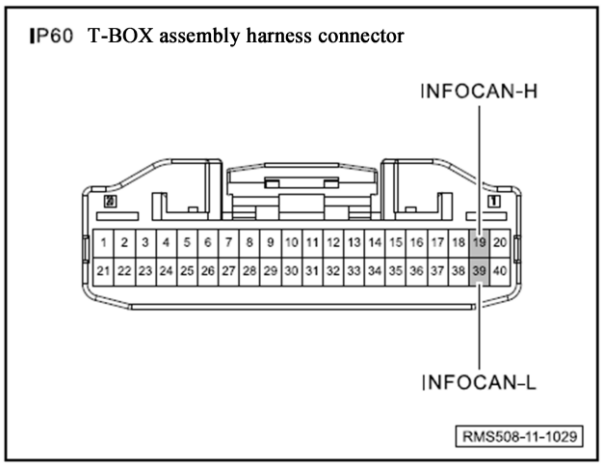
F Confirm whether the resistance conforms to the standard.

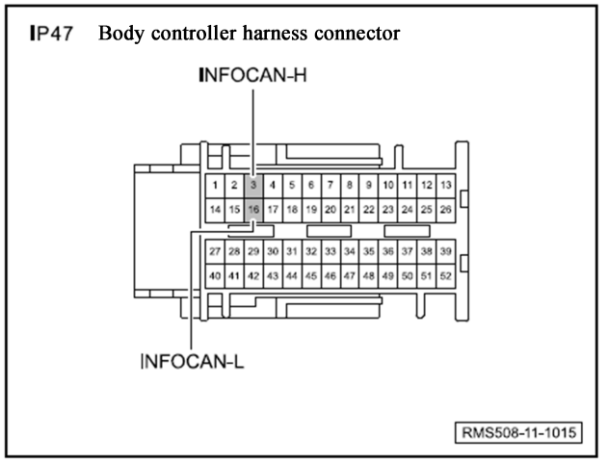
No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the CAN data communication wire between the body controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the T-BOX assembly harness connector IP60.
D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 5	Check the power supply and ground wires of the left and right corner radars.

A Check whether the power supply and ground wires of the left and right corner radars are normal.

No → Repair or replace the harness.

Yes

Step 6	Replace the left and right corner radars.

A Replace the left and right corner radars.
B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.17.5.24 DTC: U023087

DTC	DTC definition
U023087	Lost communication with PLG

1. Diagnosis steps

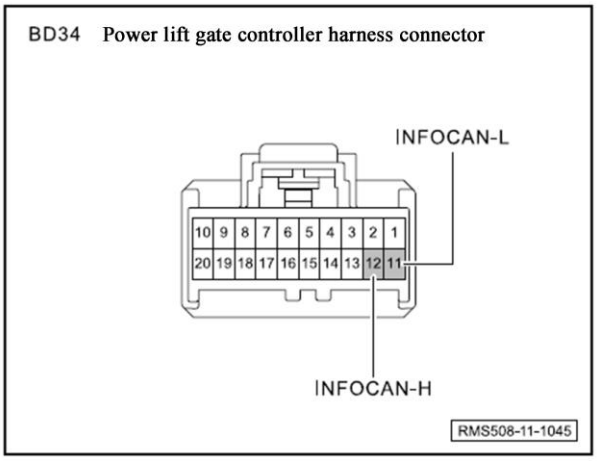
Step 1	Check the DTCs.

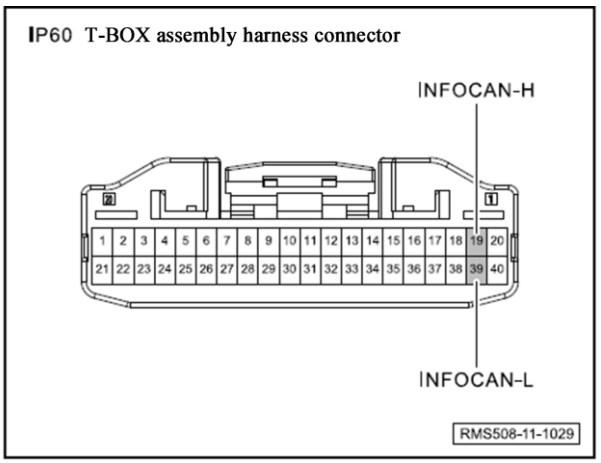
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the power lift gate controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.

B Disconnect the power lift gate controller harness connector BD34.

C Disconnect the T-BOX assembly harness connector IP60.

D Measure the resistance between terminal 12 of the power lift gate controller harness connector BD34 and terminal 19 of the T-BOX assembly harness connector IP60.

E Measure the resistance between terminal 11 of the power lift gate controller harness connector BD34 and terminal 39 of the T-BOX assembly harness connector IP60.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the power lift gate controller.

A Check whether the power supply and ground wires of the power lift gate controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

No

Step 5	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 4	

8.17.5.25 DTC: U015587

DTC	DTC definition
U015587	Lost communication with IC

1. Diagnosis steps

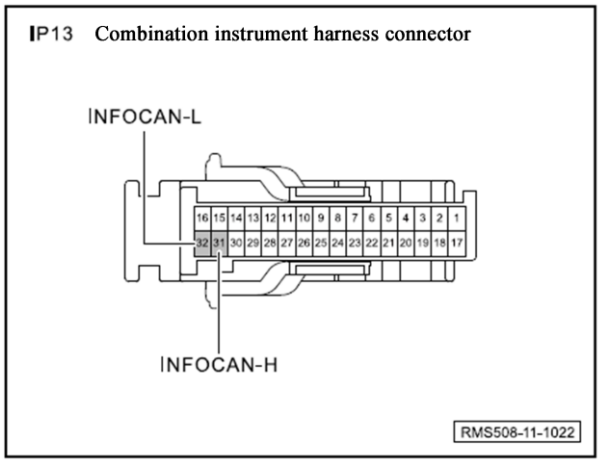
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

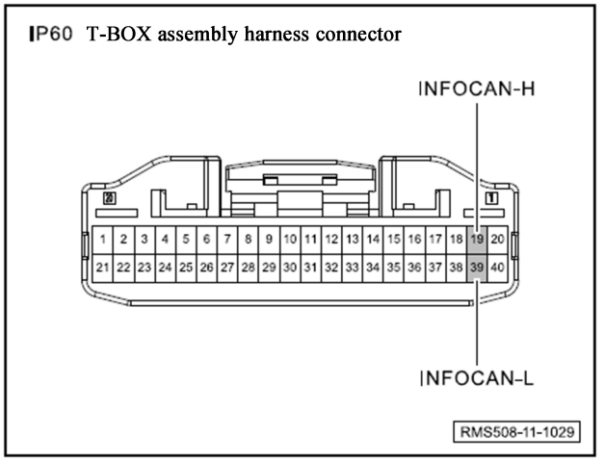
Yes

Step 2	Check the CAN data communication wire between the instrument cluster and the T-BOX assembly.



A Turn the start switch to "OFF" position.
B Disconnect the instrument cluster harness connector IP13.
C Disconnect the T-BOX assembly harness connector IP60.
D Measure the resistance between terminal 31 of instrument cluster harness connector IP13 and terminal 19 of T-BOX assembly harness connector IP60.
E Measure the resistance between terminal 32 of instrument cluster harness connector IP13 and terminal 39 of T-BOX assembly harness connector IP60.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

No

Step 5	Replace the T-BOX assembly.

A Replace the T-BOX assembly.

B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.17.6 Removal and installation

8.17.6.1 Removal and installation of T-BOX assembly

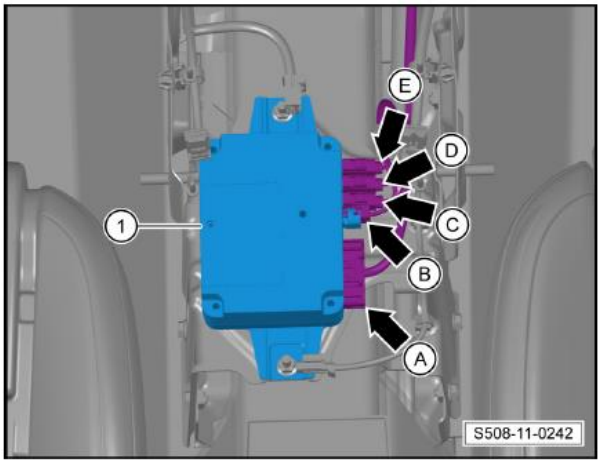
Disassembly procedures

Notes

Carefully remove and install the T-BOX assembly to avoid collision and moisture.

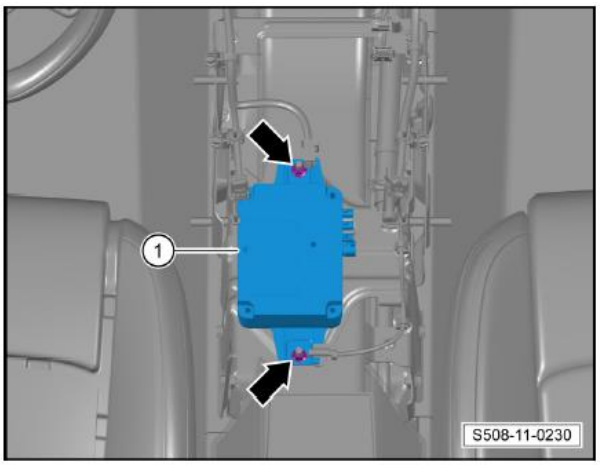
During removal and installation, do not touch connector pins with your hands or forcefully remove the housing. Otherwise, the internal electric elements can be damaged.

1 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly



2 Remove the T-BOX assembly

a. Disconnect the connectors (see arrows A, B, C, D and E) of the T-BOX assembly ①.



b. Unscrew the fixing nut (see arrows) and remove the T-BOX assembly ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, match the T-BOX assembly or set other

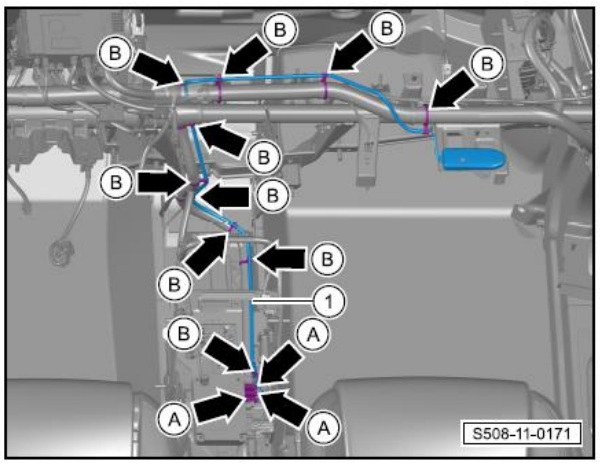
functions. Refer to 1.4.2.6 After-sales matching after module replacement

8.17.6.2 Removal and Installation of two-in-one antenna assembly

Disassembly procedures

1 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

2 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly



3 Removal of two-in-one antenna assembly

a. Disconnect the connector (see arrows A) of two-in-one antenna assembly ①.

b. Disengage the fixing clips (see arrow B) and remove the two-in-one antenna assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, perform a functional test on the two-in-one antenna assembly.

8.18 Power lift gate system

8.18.1 Specification

8.18.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Lift gate lock body assembly	Glued hex lobular screw and plastic washer assembly	10±1
Connection of lift gate stay rod bracket and vehicle body	Hexagon socket flange bolt M6×1.0×12	28±2

8.18.2 System description

8.18.2.1 System description

System composition

The power lift gate system is composed of lift gate lock body assembly, lift gate lock catch, power lift gate switch, lift gate micro switch, left/right electric stay rod, lift gate lock motor, electric lift gate controller, etc.

Operation method of power lift gate

1. Instrument panel switch operation:

- To open the lift gate: Press the power lift gate switch on the left instrument panel of the steering wheel, and the lift gate will be opened electrically (the lift gate is not fully opened).
- To close the lift gate: Press the power lift gate switch on the left instrument panel of the steering wheel, and the lift gate will be closed electrically (the lift gate is not fully closed).
- To suspend the lift gate: During lift gate operation, press the power lift gate switch on the left instrument panel of the steering wheel, and the lift gate opening/closing will be suspended.

2. Operation of lift gate outside switch:

To open the lift gate: Press the switch, and the lift gate will be opened electrically.

3. Operation of lift gate inside switch:

To close the lift gate: Press the lift gate inside button, the lift gate will be closed electrically.

4. Operation of remote key switch:

- To open the lift gate: Press the lift gate button on the remote key for two times continuously, the lift gate will be opened electrically (when the lift gate is fully closed).
- To close the lift gate: Press the lift gate button on the remote key for two times continuously, the lift gate will be closed electrically (when the lift gate is fully open).
- To suspend the lift gate: During lift gate operation, press the lift gate button on the remote key, and the lift gate opening/closing will be suspended.

5. Voice control of opening/closing of power lift gate:

- After voice activation, enter "open lift gate" and "lift gate open" voices to open the lift gate (when the lift gate is fully closed).
- After voice activation, enter "close lift gate" and "lift gate close" voices to close the lift gate (when the lift gate is fully open).
- After voice activation, enter "close lift gate", "lift gate close", "open lift gate" and "lift gate open" to suspend the lift gate during opening/closing.

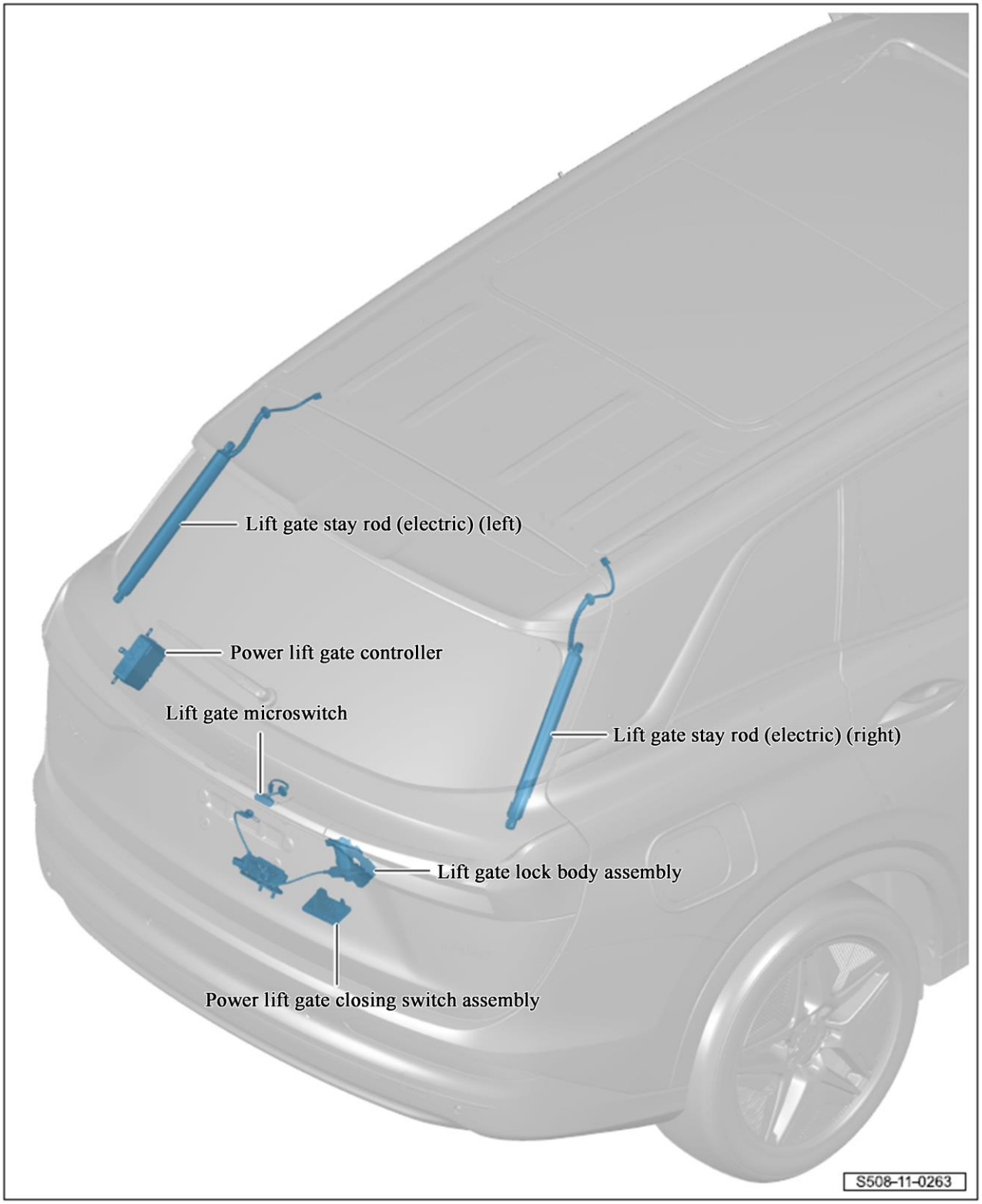
6. Adjustment of opening height:

- Open the lift gate manually to the required opening height (above 50% of the complete opening degree).
- Press and hold the close switch button on the silvery grey for 5 seconds. The setting is completed after a buzzer sounds.

8.18.3 Component position

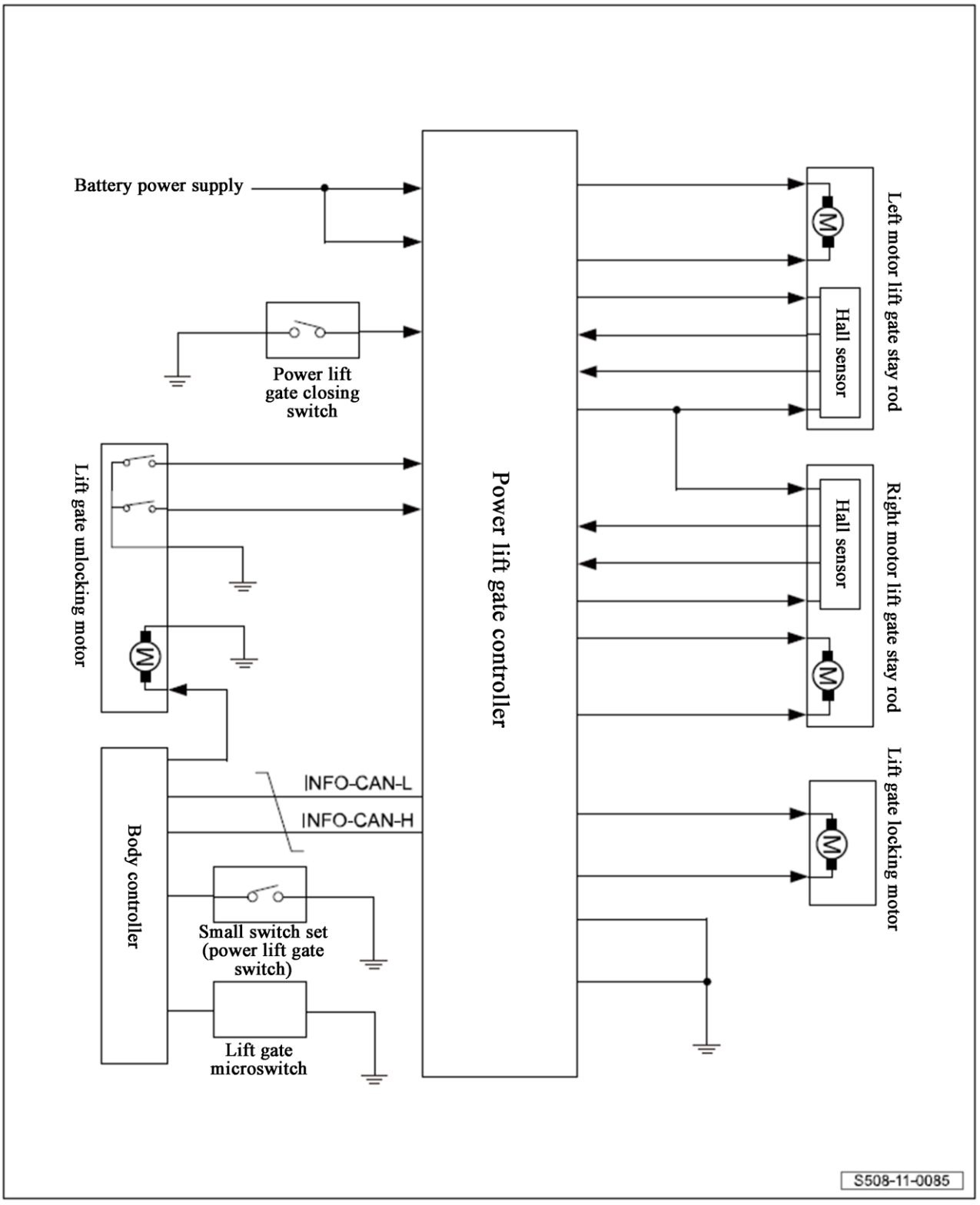
8.18.3.1 Component position

Component position



8.18.4 Electrical schematic diagram

8.18.4.1 Electrical schematic diagram



8.18.5 Diagnosis information and steps

8.18.5.1 Diagnostic instructions

With a diagnostic scanner, DTCs can be read through the OBD interface of the vehicle. By comparing the data sheet provided by the PLGM with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

8.18.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

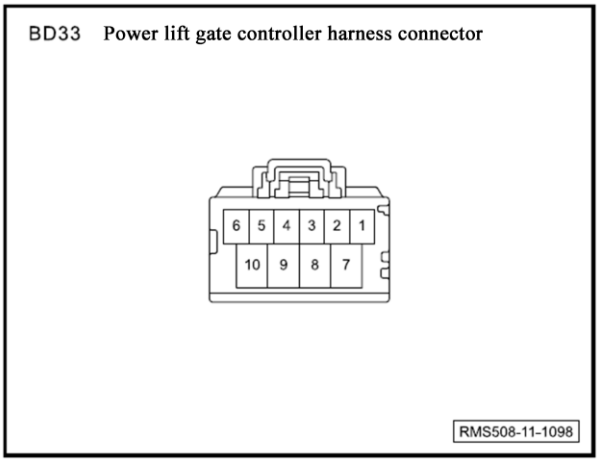
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

8.18.5.3 ECU terminals

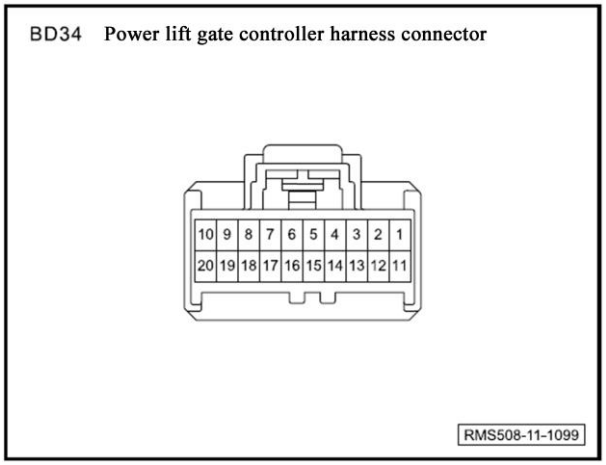
Power lift gate controller harness connector (BD33)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.5/white-black	Locker-	—	—
2	0.5/white	Locker+	—	—
3	0.75 black-white	Left lever-(compression)	—	—
4	0.75/red	Left lever+(extension)	—	—
5	0.75/green-white	Right lever-(compression)	—	—
6	0.75/green-black	Right lever+(extension)	—	—
7	1.5/red-yellow	Battery power supply	The start switch is put to any position	Battery voltage

8	0.75/black	Ground	—	0V
9	0.75/black	Ground	—	0V

Power lift gate controller harness connector (BD34)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/purple-red	BAT+	The start switch is put to any position	Battery voltage
2	0.35/White and red	Left rod Hall+	—	—
3	0.35/white-blue	Right rod Hall+	—	—
4	0.35/white-orange	Left Hall signal 1	—	—
5	0.35/white-green	Right Hall signal 1	—	—
6	0.35/green-gray	Hall ground	—	—
8	0.35/black-blue	Fully-locked door opening/closing signal+	—	—
11	0.35/Orange and white	Entertainment CAN-L	—	—
12	0.35/Orange	Entertainment CAN-H	—	—
14	0.35/green-purple	Left Hall signal 2	—	—
16	0.35/white-yellow	Lift gate closing switch	—	—
17	0.35/green-yellow	Half-locked state	—	—

8.18.5.4 Active test

Overview:

To conduct an active test with a diagnostic scanner, you may operate the relay, actuator and other elements without removing any part. This can eliminate faults more effectively and quickly, greatly reducing the man-hours required for troubleshooting and improving the efficiency of fault diagnosis.

- Connect the intelligent tester to the vehicle.
- Turn the start switch to “ON” position.
- Perform the “active test” as displayed on the diagnostic scanner.

Note:

During the action test, do not operate for more than 3s; otherwise, ECU may be damaged. Repeated opening and closing within a period of time may damage parts.

S/N	Tester display items

1	Electric support bar control	Forced Off
2		Forced Open

S/N	Tester display items	
3	Buzzer control	07: Alarm once, with a sound length of 500ms
4		06: Stop alarming
5		05: Continuous alarm for 1min, with a sound length of 200ms and an interval of 200ms
6		04: Continuous alarm for 3s
7		03: Continuous alarm, with a sound length of 500ms and an interval of 500ms
8		02: Continuous alarm for 1s
9		01: Alarm twice, with a sound length of 50ms and an interval of 100ms
10		00: Alarm for 3 times, with a sound length of 220ms and an interval of 200ms

8.18.5.5 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-
		Date of programming	1	31	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
F186	Current diagnosis session mode	-	1	3	-
F199	Date on which the software is issued	Year (MSB)	0	99	-
		Year (LSB)	0	99	-
		Month	0	99	-
		Day	0	99	-
1A01	Digital power line voltage	Range: 0~0x0400	0	1024	V
1A04	Lift gate position	Number of Hall pulses of rear lift gate position	0	1500	Hall
1A05	Central control switch (F537&F517reserved)	0:OFF1:ON	0	1	-
	External closing switch (F537&F517reserved)	0:OFF1:ON	0	1	-

	Full-lock position	0:OFF1:ON	0	1	-
	Half-lock position	0:OFF1:ON	0	1	-
	Locking device status	0:OFF1:ON	0	1	-
	B7 digital input status	0:OFF1:ON	0	1	-

	(F537&F517reserved)				
	Pawl signal (F517 reserved)	0:OFF1:ON	0	1	-
	Digital input 7	Reserved	0	1	-

8.18.5.6 DTC list

DTC	DTC definition	Fault cause	Recommendations for Maintenance
B111716	Battery voltage is too low	Battery voltage is too low	1. Replace the battery 2. Replace the PLGECU
B111717	Battery voltage is too high	Battery voltage is too high	1. Replace the battery 2. Replace the PLGECU
U012287	Lost communication with ESP	ECU lost	1, Replace the ESP 2. Replace the PLGECU
U014087	Lost communication with BCM	ECU lost	1. Replace the BCM 2. Replace the PLGECU
U014687	Lost communication with IVI	ECU lost	1, Replace GW 2. Replace the PLGECU
U007588	BodyCAN bus fault	Short circuit between CAN_H and CAN_L	1. Check the electrical connection 2. Replace the PLGECU
B150200	PCS adhesion	PCS short-circuited	Replace PCS
B151800	Electrical error of electric stay rod motor	Electrical short circuit of stay rod	Replace the stay rod
B151900	Overcurrent of electric stay rod	Electrical short circuit of stay rod	Replace the stay rod
B150700	Hall power supply error of electric stay rod	Hall sensor error	Replace the stay rod
B150900	Abnormal Hall 1 of electric stay rod	Hall sensor error	Replace the stay rod
B150A00	Abnormal Hall 2 of electric stay rod	Hall sensor error	Replace the stay rod
B150B00	Electrical error of locker motor	The lock fails to provide correct full-lock or half-lock signal	Replace the lock
B150C00	PCM control timeout	The lock fails to provide correct full-lock or half-lock signal	Replace the lock
B150D00	PCM control recovery timeout	The lock fails to provide correct full-lock or half-lock signal	Replace the lock
B151000	Lock full-lock position abnormal	The lock fails to provide correct full-lock or half-lock signal	Replace the lock
B151100	Lock half-lock position abnormal	The lock fails to provide correct full-lock or half-lock signal	Replace the lock
B151200	Rear lift gate closing speed	Stay rod motor abnormal	Replace the stay rod

	abnormal		
B151300	Rear lift gate opening time too long	Stay rod motor abnormal	Replace the stay rod
B151400	Rear lift gate closing time too long	Stay rod motor abnormal	Replace the stay rod
B151600	Abnormal power-on reset	Lock motor abnormal	Replace the lock

B111716	Battery voltage is too low	Battery voltage is too low	1. Replace the battery 2. Replace the PLGECU
B151700	Left stay rod inconsistent with right stay rod	Left and right Hall signal abnormal	Replace the stay rod
U100587	BDCAN network management, limp home	The node is not in the network system	Check the CAN bus connected to the node for open circuit

8.18.5.7 DTC: B111717 &B111716

DTC	DTC definition
B111717	Battery voltage is too high
B111716	Battery voltage is too low

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.
Standard voltage value: **11~14V**
B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check fuses ISB07 and IF14 of the power lift gate controller.

A Check whether fuses ISB07 and IF14 are blown.

No → Go to Step 5.

Yes

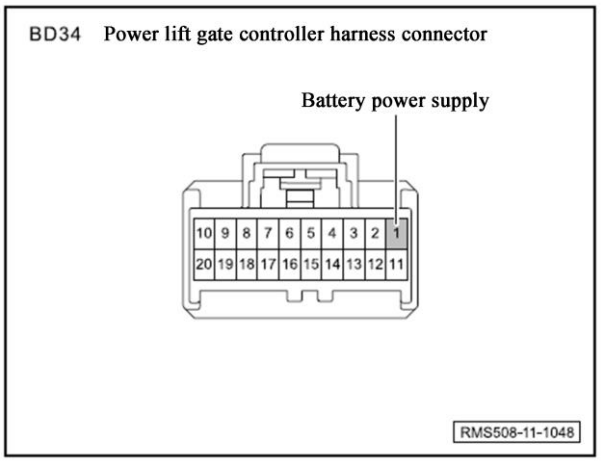
Step 4	Check and repair fuse ISB07 and IF14 lines.

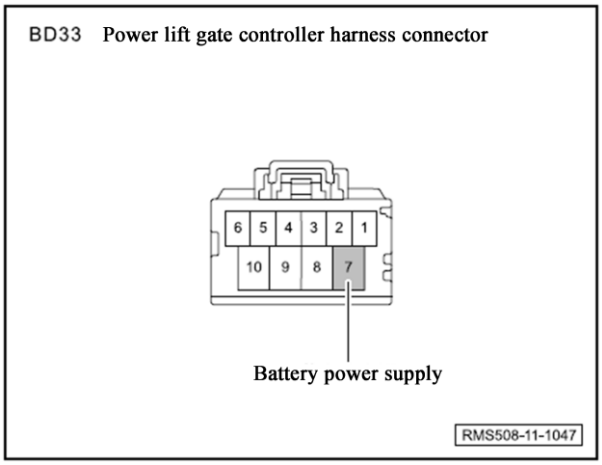
A Check whether fuses ISB07 and IF14 are short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF145A, ISB0720A**
D Confirm whether the power lift gate controller works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the power lift gate controller.



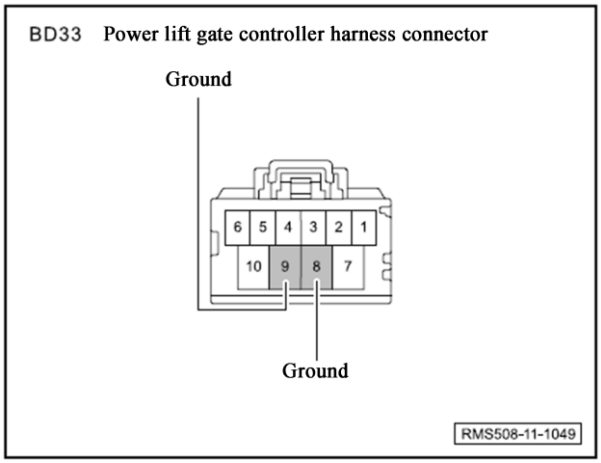


A Turn the start switch to "OFF" position.
B Disconnect the power lift gate controller harness connectors BD33 and BD34.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 7 of the power lift gate controller harness connector BD33 and the body ground
E Measure the voltage between terminal 1 of the power lift gate controller harness connector BD34 and the body ground.
Standard voltage value: **11~14V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the power lift gate controller.



A Turn the start switch to "OFF" position.

B Disconnect the power lift gate controller harness connector BD33.

C Measure the resistance between terminal 8/9 of the power lift gate controller harness connector BD33 and the body ground.
Standard resistance value: **<1Ω**

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.18.5.8 DTC: U012287

DTC	DTC definition
U012287	Lost communication with ESP

1. Diagnosis steps

Step 1	Check the DTCs.

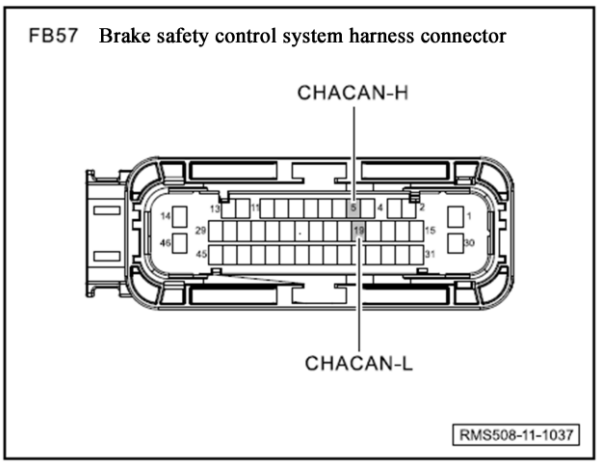
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

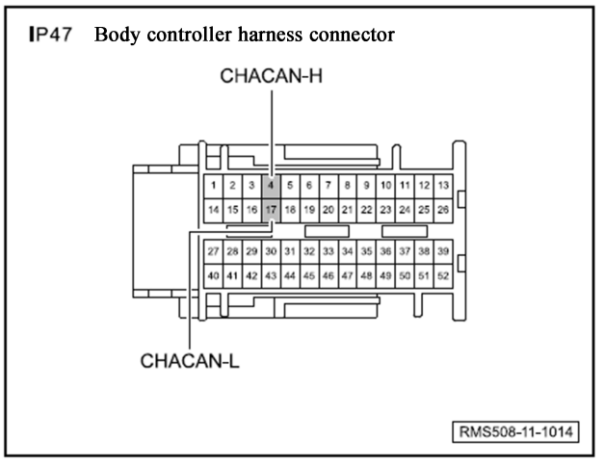
Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the body controller.

FB57 Brake safety control system harness connector



IP47 Body controller harness connector

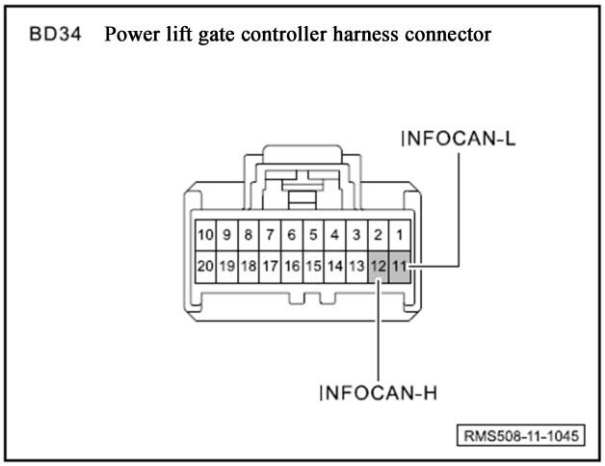


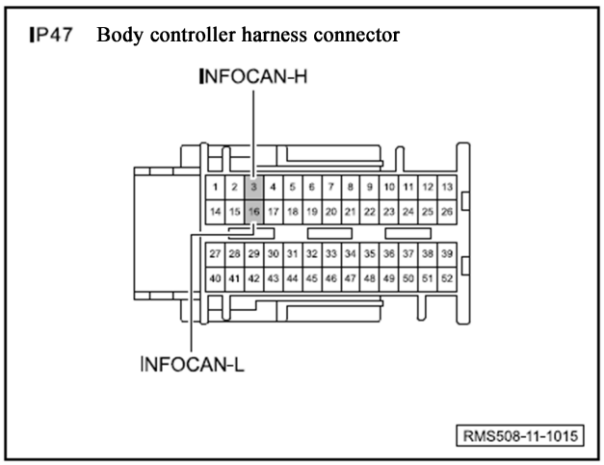
A Turn the start switch to "OFF" position.
B Disconnect the brake safety control system harness connector FB57.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 5 of the brake safety control system harness connector FB57 and terminal 4 of the body controller harness connector IP47.
E Measure the resistance between terminal 19 of the brake safety control system harness connector FB57 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the body controller and the power lift gate controller.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the power lift gate controller harness connector BD34.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 12 of the power lift gate controller harness connector BD34.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal 11 of the power lift gate controller harness connector BD34.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.18.5.9 DTC: U014087

DTC	DTC definition
U014087	Loss of communication with BCM

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

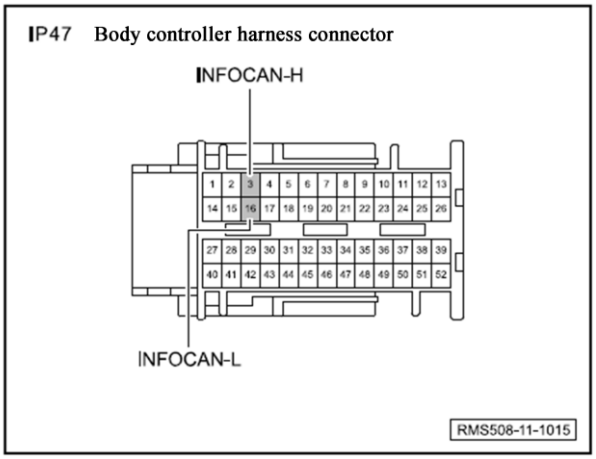
D Read the DTC again.

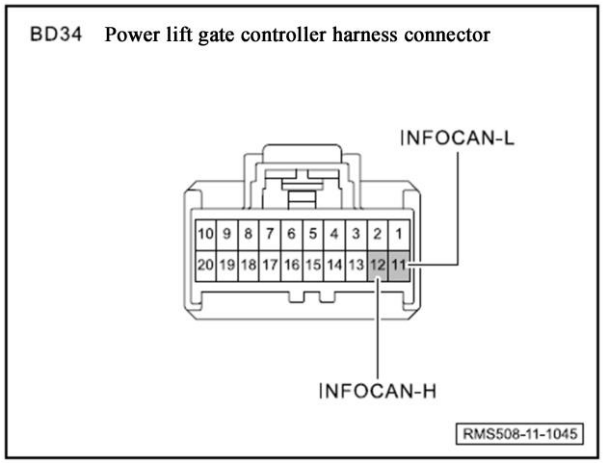
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the power lift gate controller and the body controller.





A Turn the start switch to "OFF" position.
B Disconnect the power lift gate controller harness connector BD34.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the power lift gate controller harness connector BD34 and terminal 3 of the body controller harness connector IP47.
E Measure the resistance between terminal 11 of the power lift gate controller harness connector BD34 and terminal 16 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 5	Replace the power lift gate controller.

A Replace the power lift gate controller.
B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.18.5.10 DTC: U014687

DTC	DTC definition
U014687	Lost communication with IVI

1. Diagnosis steps

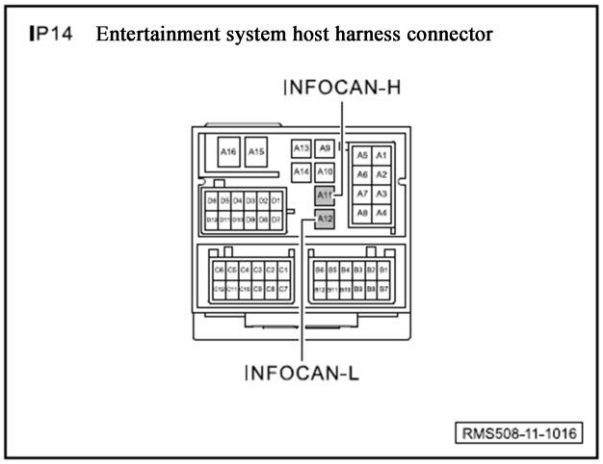
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

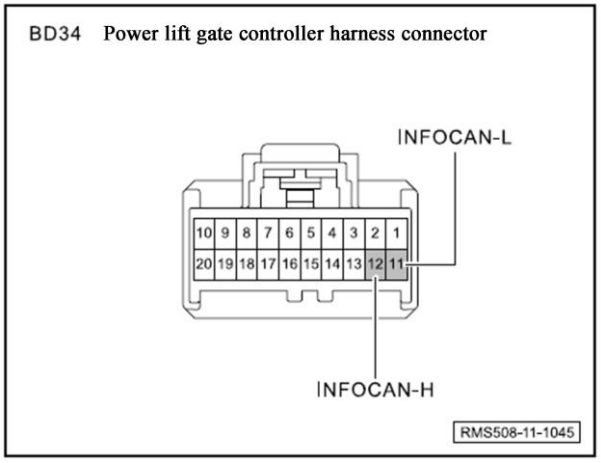
Yes

Step 2	Check the CAN data communication wire between the power lift gate controller and the entertainment system host.



A Turn the start switch to "OFF" position.
B Disconnect the power lift gate controller harness connector BD34.
C Disconnect the entertainment system host harness connector IP14.
D Measure the resistance between terminal 12 of the power lift gate controller harness connector BD34 and terminal A11 of the entertainment system host harness connector IP14.
E Measure the resistance between terminal 11 of the power lift gate controller harness connector BD34 and terminal A12 of the entertainment system host harness connector IP14.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 5	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.18.5.11 DTC: U007588, U100587

DTC	DTC definition
U007588	The CAN bus is faulty
U100587	Network management limp home

1. Diagnosis steps

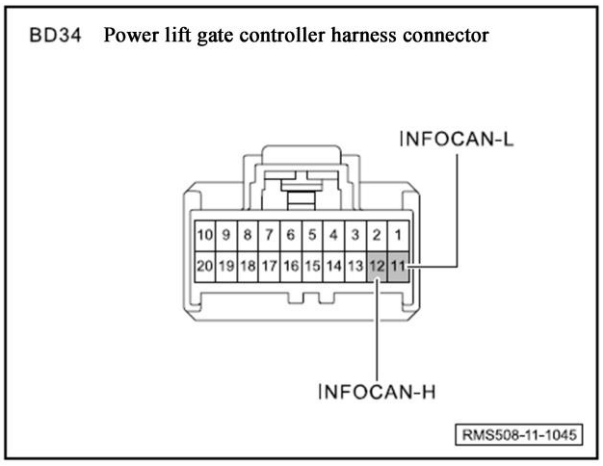
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit.



A Turn the start switch to "OFF" position.
B Disconnect the power lift gate controller harness connector BD34.
C Measure the resistance of circuit between terminals 12 and 11 of the power lift gate controller harness connector BD34.
Standard resistance value: about **120Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the power lift gate controller.

A Check whether the power supply and ground wires of the power lift gate controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the power lift gate controller.

A Replace the power lift gate controller.
B Is the fault eliminated after replacing the power lift gate controller?

Yes	The system works normally.

Next

Step 5	The diagnosis is over.

8.18.5.12 DTC: B150200

DTC	DTC definition
B150200	PCS adhesion

1. Diagnosis steps

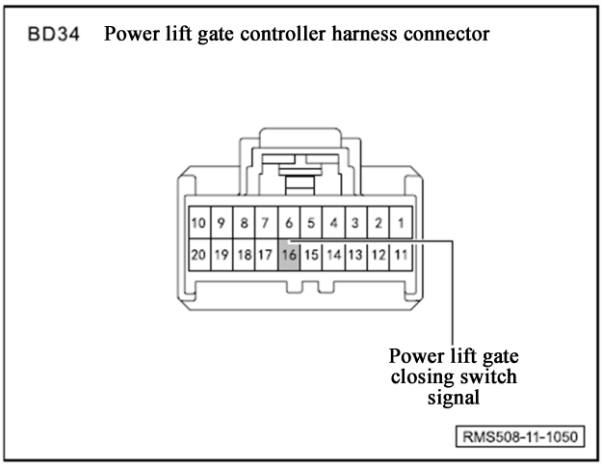
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No	As the DTCs may be triggered by intermittent fault, check for intermittent fault.

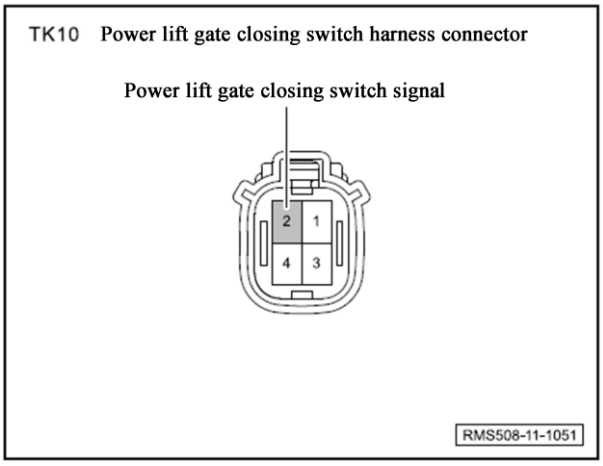
Yes

Step 2	Check whether the wire between the power lift gate closing switch and the power lift gate controller is open-circuited.



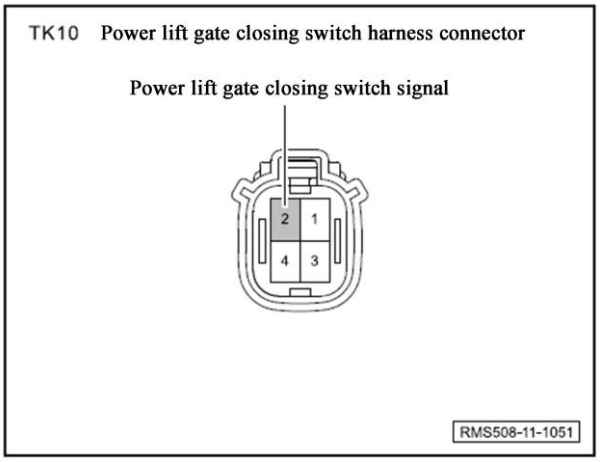
A Turn the start switch to "OFF" position.
B Disconnect the power lift gate controller harness connector BD34.
C Disconnect the power lift gate close switch harness connector TK10.
D Measure the resistance between terminal 16 of the power lift gate controller harness connector BD34 and terminal 2 of the power lift gate closing switch harness connector TK10.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness or connector.



Yes

Step 3	Check whether the wire between the power lift gate closing switch and the power lift gate controller is short-circuited to ground.

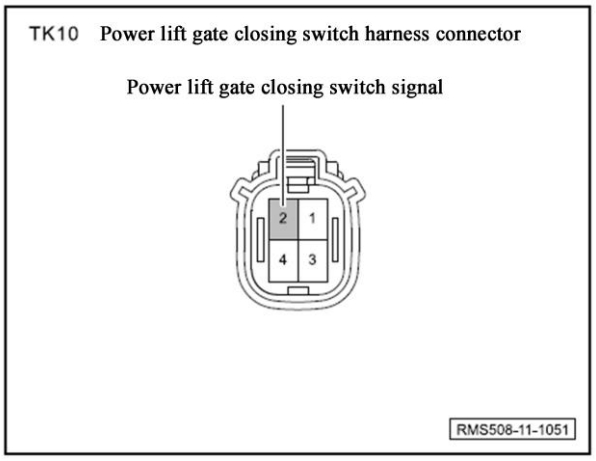


A Turn the start switch to "OFF" position.
B Disconnect the power lift gate controller harness connector BD34.
C Disconnect the power lift gate close switch harness connector TK10.
D Measure the resistance of the circuit between terminal 2 of the power lift gate close switch harness connector TK10 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector.

Yes

Step 4	Check whether the wire between the power lift gate closing switch and the power lift gate controller is short-circuited to power supply.



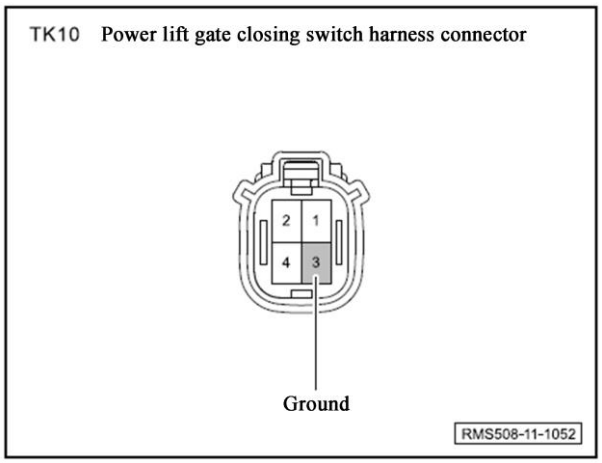
A Turn the start switch to "OFF" position.
B Disconnect the power lift gate controller harness connector BD34.
C Disconnect the power lift gate close switch harness connector TK10.
D Put the start switch to “ON” position.
E Measure the voltage between terminal 2 of the power lift gate close switch harness connector TK10 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness or

connector.

Yes

Step 5	Check the ground wire of the power lift gate close switch.



A Turn the start switch to "OFF" position.

B Disconnect the power lift gate close switch harness connector TK10.

C Measure the resistance between terminal 3 of the power lift gate closing switch harness connector TK10 and the body ground.
Standard resistance value: **<1Ω**

D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness or connector.

Yes

Step 6	Replace the power lift gate closing switch.

A Replace the power lift gate closing switch

B Is the fault eliminated after replacing the power lift gate close switch?

Yes → The system works normally.

No

Step 7	

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.18.5.13 DTC: B151800, B151900

DTC	**DTC definition**
B151800	Electrical error of electric stay rod motor
B151900	Overcurrent of electric stay rod

1. Diagnosis steps

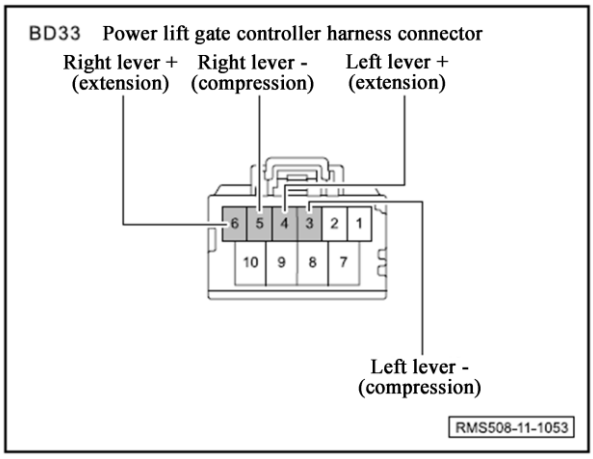
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

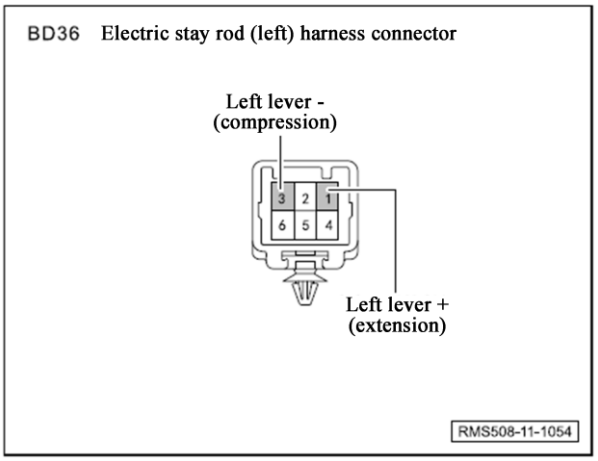
Yes

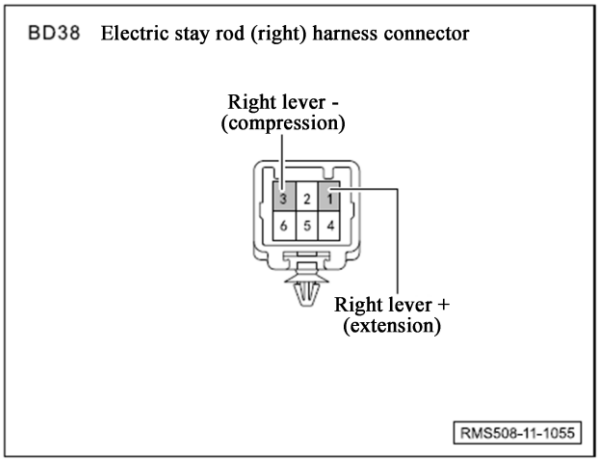
Step 2	Check whether the circuit between the electric stay rod motor and the power lift gate controller is open-circuited.



A Turn the start switch to "OFF" position.
B Disconnect the electric stay rod (left) harness connector BD36.
C Disconnect the electric stay rod (right) harness connector BD38.
D Disconnect the power lift gate controller harness connector BD33.
E Measure the resistance of circuit between terminal 1 of the electric stay rod (left) harness connector BD36 and terminal 4 of the power lift gate controller harness connector BD33.
F Measure the resistance of circuit between terminal 3 of the electric stay rod (left) harness connector BD36 and terminal 3 of the power lift gate controller harness connector BD33.
G Measure the resistance of circuit between terminal 1 of the electric stay rod (right) harness connector BD38 and terminal 6 of the power lift gate controller harness connector BD33.
H Measure the resistance of circuit between terminal 3 of the electric stay rod (right) harness connector BD38 and terminal 5 of the power lift gate controller harness connector BD33.
Standard resistance value: **<1Ω**
I Make sure that the measured value conforms to the standard value.

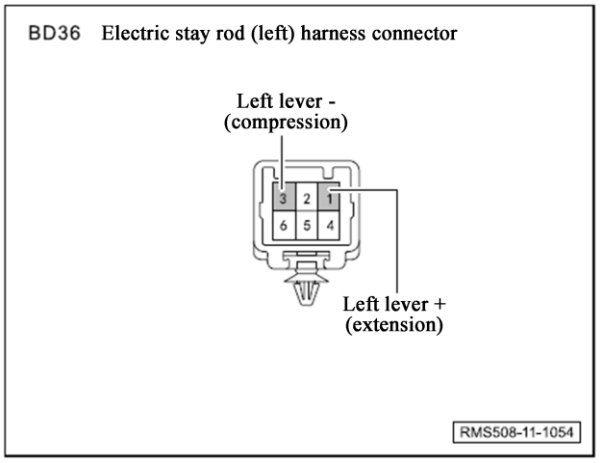
No → Replace or repair the harness or connector.





Yes

Step 3	Check whether the control circuit of the electric stay rod is short-circuited to the ground.



A Turn the start switch to "OFF" position.

B Disconnect the electric stay rod (left) harness connector BD36.

C Disconnect the electric stay rod (right) harness connector BD38.

D Disconnect the power lift gate controller harness connector BD33.

E Measure the resistance between terminal 1 of the electric stay rod (left) harness connector BD36 and the body ground.

F Measure the resistance between terminal 3 of the electric stay rod (left) harness connector BD36 and the body ground.

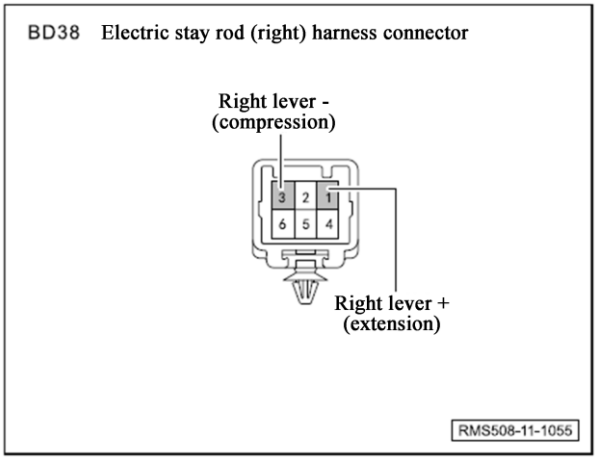
G Measure the resistance between terminal 1 of the electric stay rod (right) harness connector BD38 and the body ground.

H Measure the resistance between terminal 3 of the electric stay rod (right) harness connector BD38 and the body ground.

Standard resistance value: 10 kΩ or higher

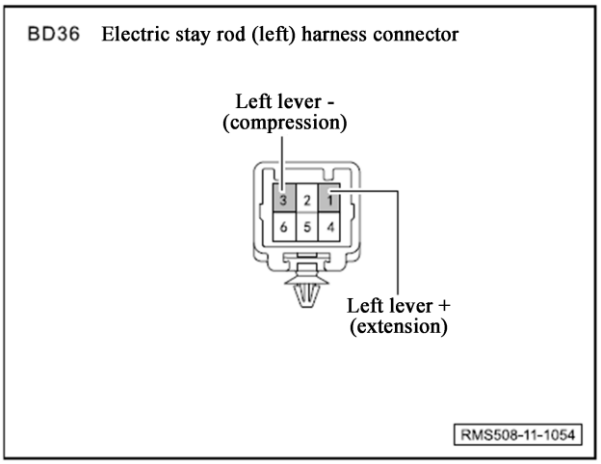
I Confirm if the resistance conforms to the standard value

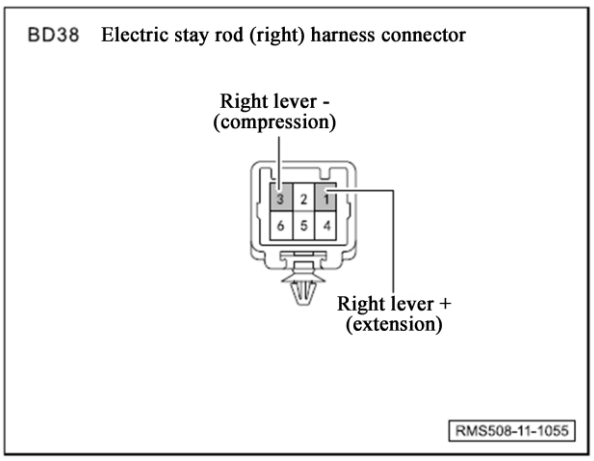
No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the control circuit of the electric stay rod is short-circuited to the power supply.





A Turn the start switch to "OFF" position.
B Disconnect the electric stay rod (left) harness connector BD36.
C Disconnect the electric stay rod (right) harness connector BD38.
D Disconnect the power lift gate controller harness connector BD33.
E Put the Start switch to “ON” position.
F Measure the voltage between terminal 1 of the electric stay rod (left) harness connector BD36 and the body ground.
G Measure the voltage between terminal 3 of the electric stay rod (left) harness connector BD36 and the body ground.
H Measure the voltage between terminal 1 of the electric stay rod (right) harness connector BD38 and the body ground.
I Measure the voltage between terminal 3 of the electric stay rod (right) harness connector BD38 and the body ground.
Standard voltage value: **0V**
J Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the electric stay rods.

A Replace the electric stay rods.
B Is the fault eliminated after replacing the electric stay rods?

Yes → The system works normally.

No

Step 6	Replace the power lift gate controller.

A Replace the power lift gate controller.
B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.18.5.14 DTC: B150700, B150900.....

DTC	**DTC definition**
B150700	Hall power supply error of electric stay rod
B150900	Abnormal Hall 1 of electric stay rod
B150A00	Abnormal Hall 2 of electric stay rod

1. Diagnosis steps

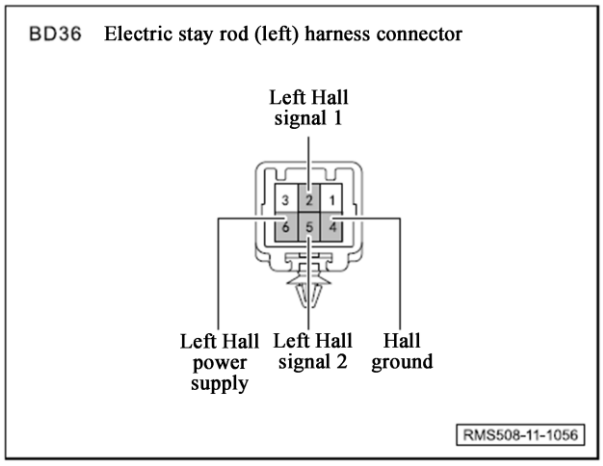
Step 1	Check the DTCs.

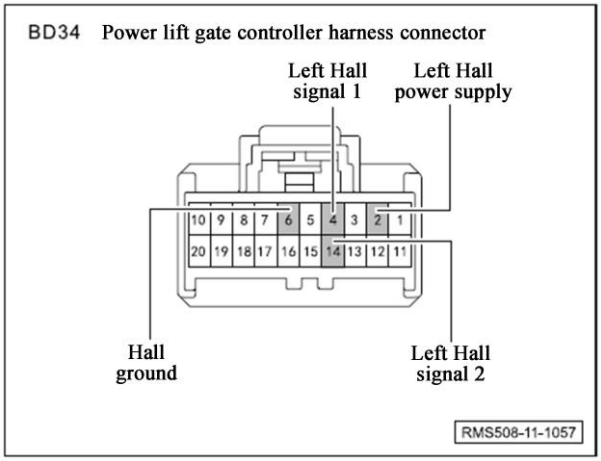
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the Hall signal circuit of the left stay rod is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the electric stay rod (left) harness connector BD36.

C Disconnect the power lift gate controller harness connector BD34.

D Measure the resistance of circuit between terminal 2 of the electric stay rod (left) harness connector BD36 and terminal 4 of the power lift gate controller harness connector BD34.

E Measure the resistance of circuit between terminal 4 of the electric stay rod (left) harness connector BD36 and terminal 6 of the power lift gate controller harness connector BD34.

F Measure the resistance of circuit between terminal 5 of the electric stay rod (left) harness connector BD36 and terminal 14 of the power lift gate controller harness connector BD34.

G Measure the resistance of circuit between terminal 6 of the electric stay rod (left) harness connector BD36 and terminal 2 of the power lift gate controller harness connector BD34.

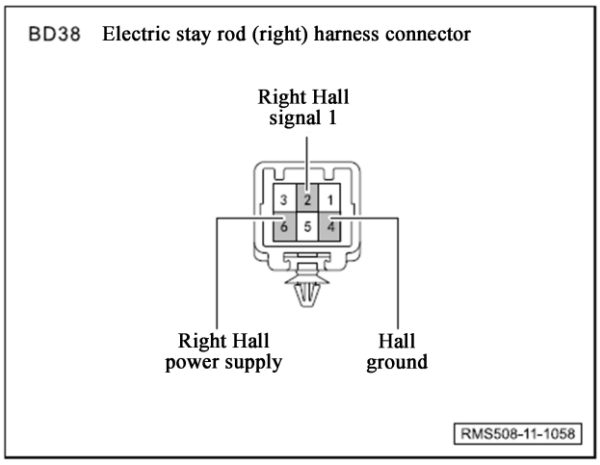
Standard resistance value: **<1Ω**

H Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 3	Check whether the Hall signal circuit of the right stay rod is open-circuited.



A Turn the start switch to "OFF" position.

B Disconnect the electric stay rod (right) harness connector BD38.

C Disconnect the power lift gate controller harness connector BD34.

D Measure the resistance of circuit between terminal 2 of the electric stay rod (right) harness connector BD38 and terminal 5 of the power lift gate controller harness connector BD34.

E Measure the resistance of circuit between terminal 4 of the electric stay rod (right) harness connector BD38 and terminal 6 of the power lift gate controller harness connector BD34.

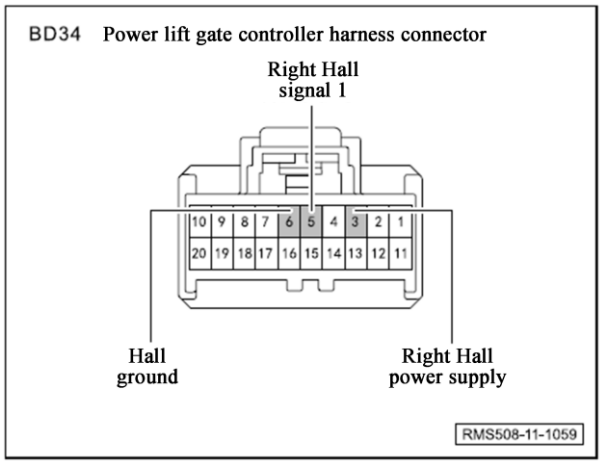
F Measure the resistance of circuit between terminal 6 of the electric stay rod (right) harness connector BD38 and terminal 3 of the power lift gate controller harness connector BD34.

Standard resistance value: **<1Ω**

G Confirm if the resistance conforms to the standard value

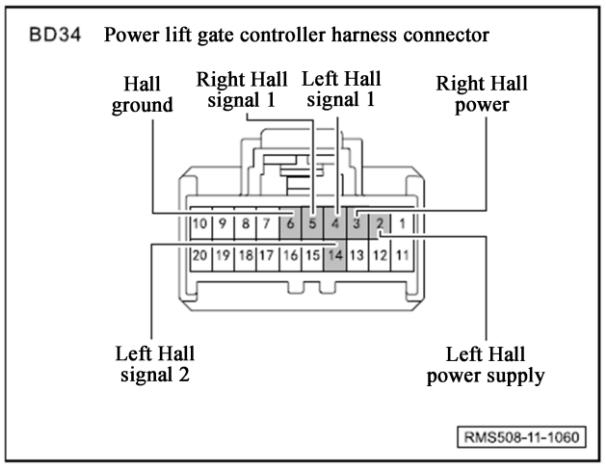
No → Replace or repair the harness or

connector.



Yes

Step 4	Check whether the Hall signal circuit of the left and right electric stay rods is short-circuited to the ground.



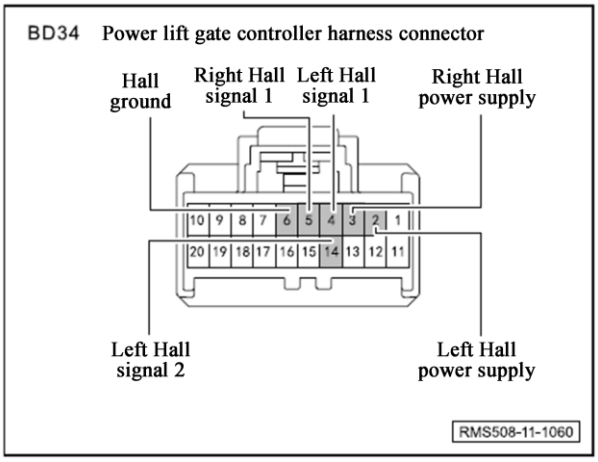
A Turn the start switch to "OFF" position.
B Disconnect the electric stay rod (left) harness connector BD36.
C Disconnect the electric stay rod (right) harness connector BD38.
D Disconnect the power lift gate controller harness connector BD34.
E Measure the resistance between terminals 2/3/4/5/6/14 of the power lift gate controller harness connector BD34 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the Hall signal circuit of the left and right electric stay rods is short-circuited to the power supply.

A Turn the start switch to "OFF" position.
B Disconnect the electric stay rod (left) harness connector BD36.
C Disconnect the electric stay rod (right) harness connector BD38.
D Disconnect the power lift gate controller harness connector BD34.
E Put the Start switch to “ON” position.
F Measure the resistance between terminals 2/3/4/5/6/14 of the power lift gate controller harness connector BD34 and the body ground.
Standard voltage value: **0V**



G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the electric stay rods.

A Replace the electric stay rods.

B Is the fault eliminated after replacing the electric stay rods?

Yes → The system works normally.

No

Step 7	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.18.5.15 DTC: B150B00

DTC	**DTC definition**
B150B00	Electrical error of locker motor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

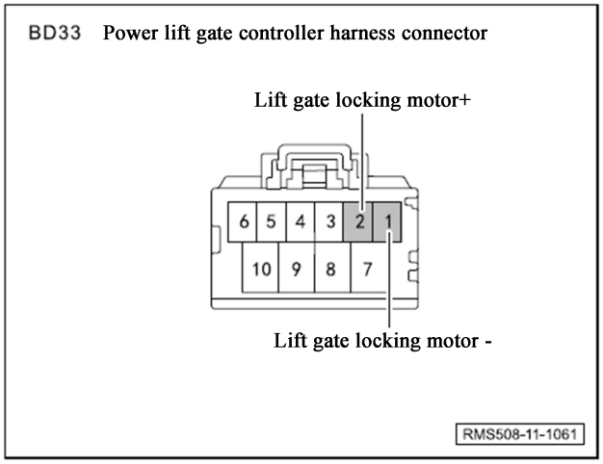
D Read the DTC again.

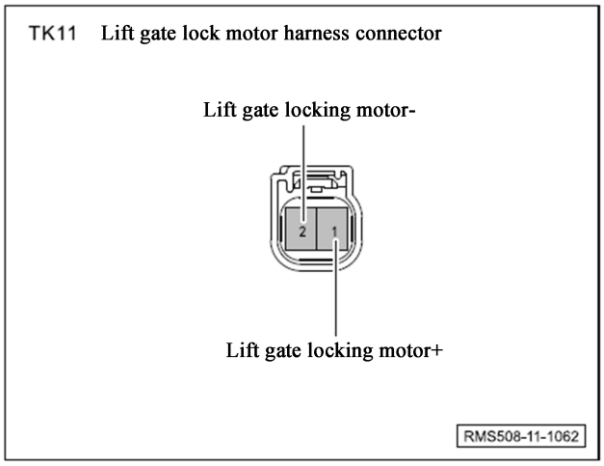
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit between the lift gate locking motor and the power lift gate controller is open-circuited.



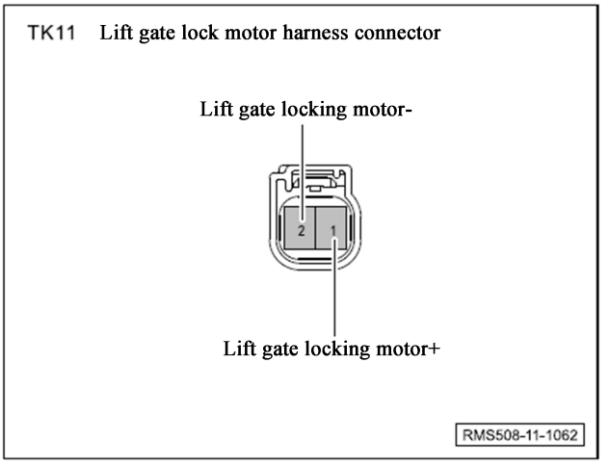


A Turn the start switch to "OFF" position.
B Disconnect the lift gate locking motor harness connector TK11.
C Disconnect the power lift gate controller harness connector BD33.
D Measure the resistance of circuit between terminal 1 of the lift gate locking motor harness connector TK11 and terminal 2 of the power lift gate controller harness connector BD33.
E Measure the resistance of circuit between terminal 2 of the power gate locking motor harness connector TK11 and terminal 1 of the power lift gate controller harness connector BD33.
Standard resistance value: **<1Ω**
F Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 3	Check whether the control circuit of the lift gate locking motor is short-circuited to the ground.

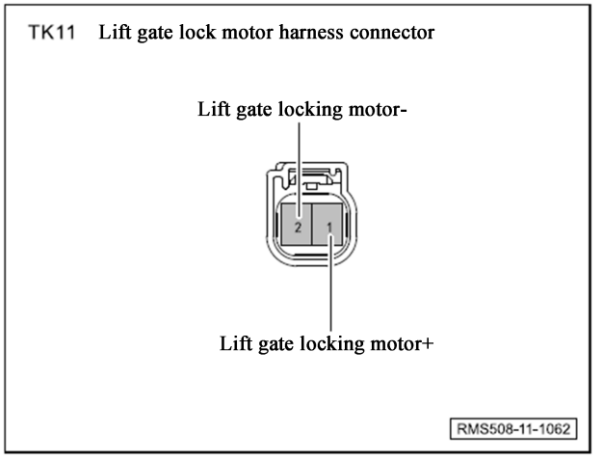


A Turn the start switch to "OFF" position.
B Disconnect the lift gate locking motor harness connector TK11.
C Disconnect the power lift gate controller harness connector BD33.
D Measure the resistance between terminal 1 of the lift gate lock motor harness connector TK11 and the body ground.
E Measure the resistance between terminal 2 of the lift gate lock motor harness connector TK11 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the lift gate locking motor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the lift gate locking motor harness connector TK11.
C Disconnect the power lift gate controller harness connector BD33.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the lift gate lock motor harness connector TK11 and the body ground.
F Measure the voltage between terminal 2 of the lift gate lock motor harness connector TK11 and the body ground.
Standard voltage value: **0V**
G Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 5	Replace the lift gate lock motor.

A Replace the lift gate lock motor.
B Is the fault eliminated after replacing the lift gate locking motor?

Yes → The system works normally.

No

Step 6	Replace the power lift gate controller.

A Replace the power lift gate controller.
B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.18.5.16 DTC: B150C00, B150D00

DTC	**DTC definition**
B150C00	PCM control timeout
B150D00	PCM control recovery timeout

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

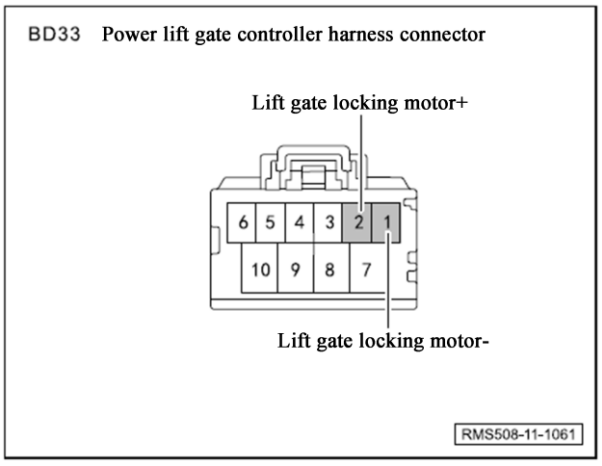
Step 2	Check the lift gate lock.

A Check whether the lift gate lock is stuck or damaged.

Yes → Repair or replace the lift gate lock.

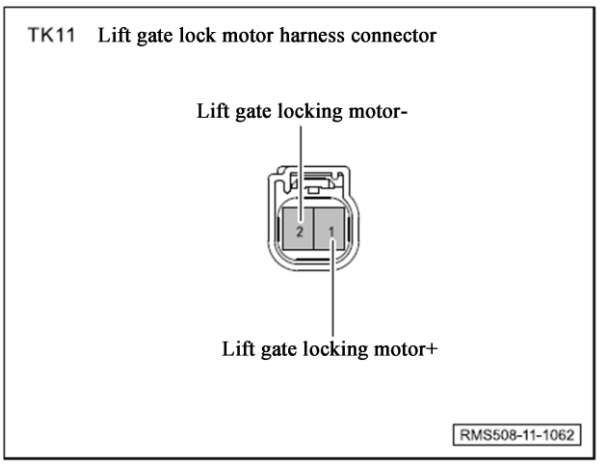
No

Step 3	Check whether the circuit between the lift gate locking motor and the power lift gate controller is open-circuited.



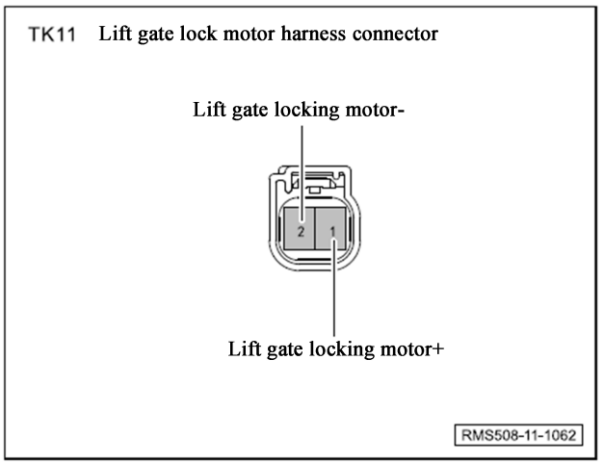
A Turn the start switch to "OFF" position.
B Disconnect the lift gate locking motor harness connector TK11.
C Disconnect the power lift gate controller harness connector BD33.
D Measure the resistance of circuit between terminal 1 of the lift gate locking motor harness connector TK11 and terminal 2 of the power lift gate controller harness connector BD33.
E Measure the resistance of circuit between terminal 2 of the power gate locking motor harness connector TK11 and terminal 1 of the power lift gate controller harness connector BD33.
Standard resistance value: **<1Ω**
F Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the control circuit of the lift gate locking motor is short-circuited to the ground.

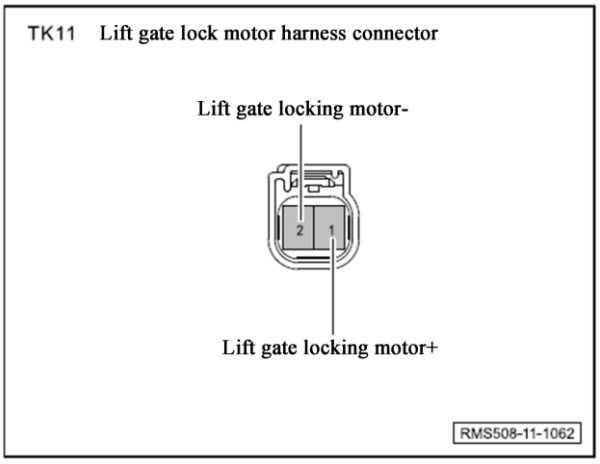


A Turn the start switch to "OFF" position.
B Disconnect the lift gate locking motor harness connector TK11.
C Disconnect the power lift gate controller harness connector BD33.
D Measure the resistance between terminal 1 of the lift gate lock motor harness connector TK11 and the body ground.
E Measure the resistance between terminal 2 of the lift gate lock motor harness connector TK11 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the control circuit of the lift gate locking motor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the lift gate locking motor harness connector TK11.
C Disconnect the power lift gate controller harness connector BD33.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1 of the lift gate lock motor harness connector TK11 and the body ground.
F Measure the voltage between terminal 2 of the lift gate lock motor harness connector TK11 and the body ground.
Standard voltage value: **0V**
G Make sure that the voltage conforms to the

standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the lift gate lock motor.

A Replace the lift gate lock motor.
B Is the fault eliminated after replacing the lift gate locking motor?

Yes → The system works normally.

No

Step 7	Replace the power lift gate controller.

A Replace the power lift gate controller.
B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.18.5.17 DTC: B151000, B151100

DTC	**DTC definition**
B151000	Lock full-lock position abnormal
B151100	Lock half-lock position abnormal

1. Diagnosis steps

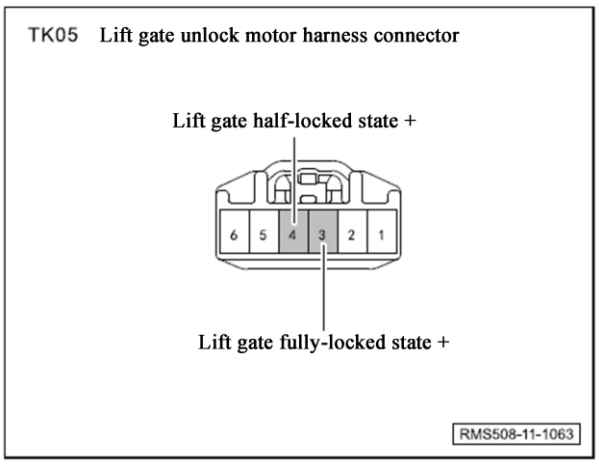
Step 1	Check the DTCs.

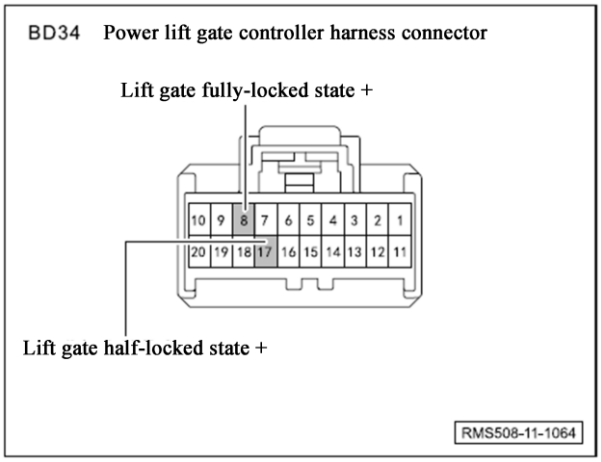
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the circuit between the lift gate unlocking motor and the power lift gate controller is open-circuited.



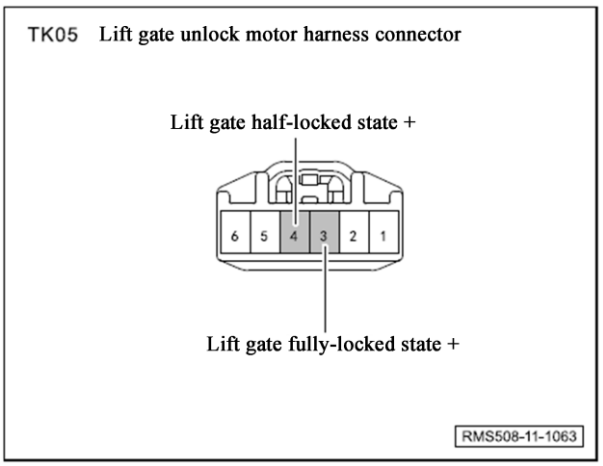


A Turn the start switch to "OFF" position.
B Disconnect the lift gate unlocking motor harness connector TK05.
C Disconnect the power lift gate controller harness connector BD34.
D Measure the resistance of circuit between terminal 3 of the lift gate unlocking motor harness connector TK05 and terminal 8 of the power lift gate controller harness connector BD34.
E Measure the resistance of circuit between terminal 4 of the lift gate unlocking motor harness connector TK05 and terminal 17 of the power lift gate controller harness connector BD34.
Standard resistance value: **<1Ω**
F Make sure that the measured value conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 3	Check whether the control circuit of the lift gate unlocking motor is short-circuited to the ground.

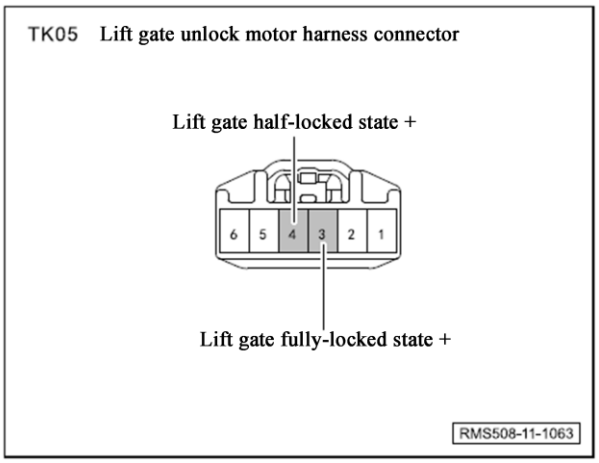


A Turn the start switch to "OFF" position.
B Disconnect the lift gate unlocking motor harness connector TK05.
C Disconnect the power lift gate controller harness connector BD34.
D Measure the resistance between terminal 3 of the lift gate unlock motor harness connector TK05 and the body ground.
E Measure the resistance between terminal 4 of the lift gate unlock motor harness connector TK05 and the body ground.
Standard resistance value: 10 kΩ or higher
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the control circuit of the lift gate unlocking motor is short-circuited to the power supply.

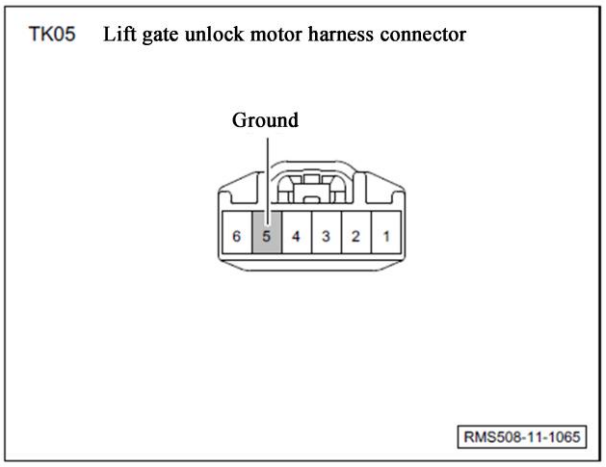


A Turn the start switch to "OFF" position.
B Disconnect the lift gate unlocking motor harness connector TK05.
C Disconnect the power lift gate controller harness connector BD34.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 3 of the lift gate unlock motor harness connector TK05 and the body ground.
F Measure the voltage between terminal 4 of the lift gate unlock motor harness connector TK05 and the body ground.
Standard voltage value: **0V**
G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 5	Check the ground circuit of the lift gate unlocking motor.



A Turn the start switch to "OFF" position.
B Disconnect the lift gate unlocking motor harness connector TK05.
C Measure the resistance of the circuit between terminal 5 of the lift gate unlocking motor harness connector TK05 and the body ground.
Standard resistance value: **<1Ω**
D Make sure that the measured value conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the lift gate lock body assembly.

A Replace the lift gate lock body assembly.
B Is the fault eliminated after replacing the lift gate lock body assembly?

Yes	The system works normally.

No

Step 7	Replace the power lift gate controller.

A Replace the power lift gate controller.
B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.18.5.18 DTC: B151200, B151300.....

DTC	**DTC definition**
B151200	Rear lift gate closing speed abnormal
B151300	Rear lift gate opening time too long
B151400	Rear lift gate closing time too long

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power lift gate.

A Check whether the power lift gate is deformed by load or squeezing.

Yes → Remove the load; repair or replace the power lift gate.

No

Step 3	Check the circuit between the electric stay rod and the power lift gate controller.

A Check whether the circuit between the electric stay rod and the power lift gate controller is short-circuited or open-circuited.

No → Replace or repair the harness or connector.

Yes

Step 4	Replace the electric stay rods.

A Replace the electric stay rods.
B Is the fault eliminated after replacing the electric stay rods?

Yes → The system works normally.

No

Step 5	Replace the power lift gate controller.

A Replace the power lift gate controller.
B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.18.5.19 DTC: B151600

DTC	**DTC definition**
B151600	Abnormal power-on reset

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power lift gate controller harness connector.

A Check the harness connector of the power lift gate controller for looseness, poor contact, bending, corrosion, contamination, deterioration or damage.

Yes → Repair or replace the harness or connector.

No

Step 3	Check the power supply grounding circuit of the power lift gate controller.

A Check whether the power supply grounding circuit of the power lift gate controller is normal.

No → Repair or replace the harness or connector.

Yes

Step 4	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.18.5.20 DTC: B151700, B151800.....

DTC	**DTC definition**
B151700	Left stay rod inconsistent with right stay rod

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the power lift gate.

A Check whether the power lift gate is deformed by load or squeezing.

Yes → Remove the load; repair or replace the power lift gate.

No

Step 3	Check the circuit between the electric stay rod and the power lift gate controller.

A Check whether the circuit between the electric stay rod and the power lift gate controller is short-circuited or open-circuited.

No → Replace or repair the harness or connector.

Yes

Step 4	Replace the electric stay rods.

A Replace the electric stay rods.

B Is the fault eliminated after replacing the electric stay rods?

Yes → The system works normally.

No

Step 5	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.18.6 Removal and installation

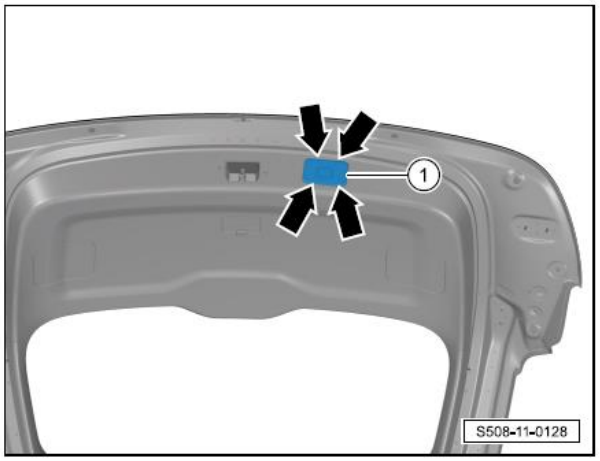
8.18.6.1 Removal and installation of power lift gate closing switch assembly (optional)

Disassembly procedures

1 Open the lift gate.

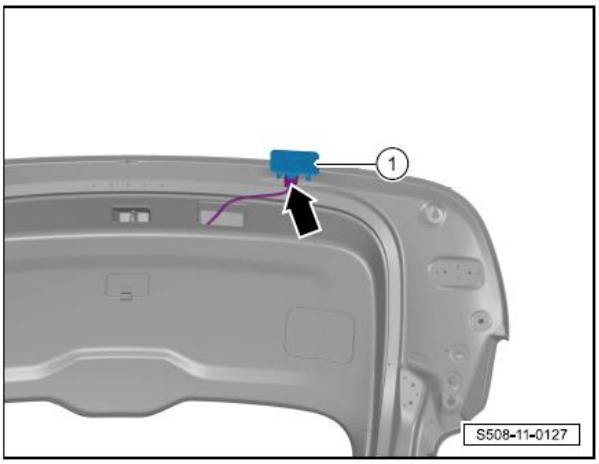
2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



4 Remove the power lift gate closing button assembly

a. Disengage the fixing clips (see arrows) and remove the power lift gate closing switch assembly ①.



b. Disconnect the connector (see arrow) and take out the power lift gate closing switch assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the power lift gate close switch.

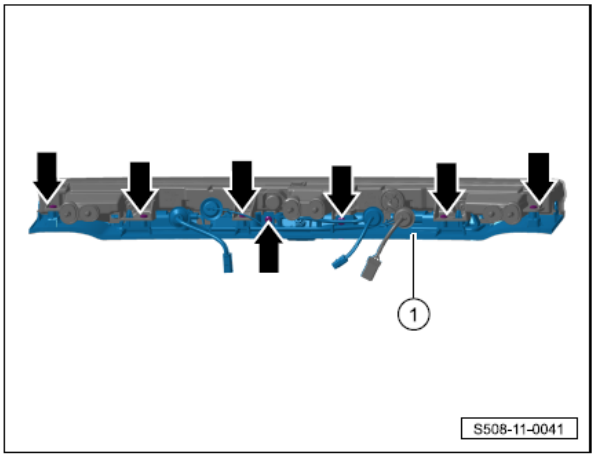
8.18.6.2 Removal and installation of lift gate micro switch (optional)

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

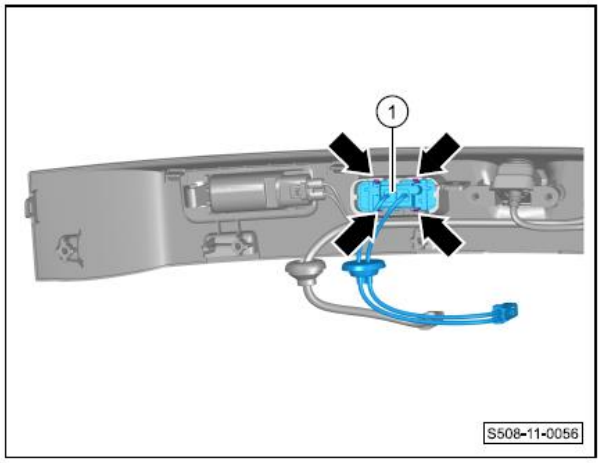
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate light assembly. Refer to 8.3.5.5 Removal and installation of lift gate light assembly



4 Remove the lift gate microswitch

a. Unscrew the fixing screws (see the arrows), and remove the rear license light cover mounting bracket assembly ①.



b. Disengage the clips (see arrows) and remove the lift gate microswitch ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the lift gate micro switch.

8.18.6.3 Removal and installation of power lift gate controller

Disassembly procedures

1 Notes

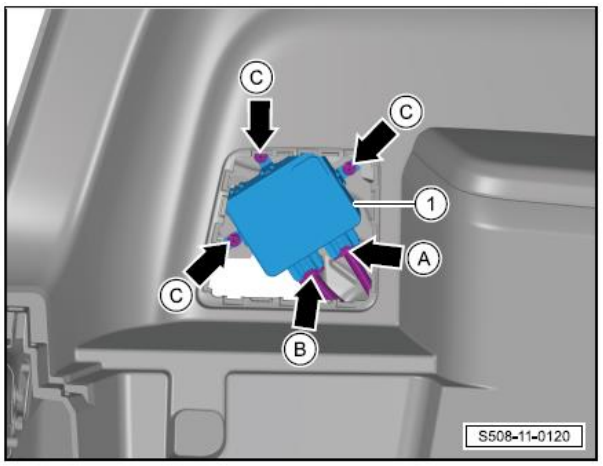
Carefully remove and install the power lift gate controller to avoid collision and moisture.

During removal and installation, do not touch connector pins with your hands or forcefully remove the housing. Otherwise, the internal electric elements can be damaged.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear side wall ventilation cover (left). Refer to 9.14.2.16 Removal and installation of rear side wall ventilation cover (left)



4 Remove the power lift gate controller

a. Disconnect the connectors (see arrows A and B) of power lift gate controller ①.

b. Unscrew the fixing bolts (see arrow C) and take out the power lift gate controller ①.

- Tightening torque of bolt (see arrow **C**): **10±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Perform matching of the power lift gate controller or other function settings. Refer to 1.4.2.6 After-sales matching operation after module replacement

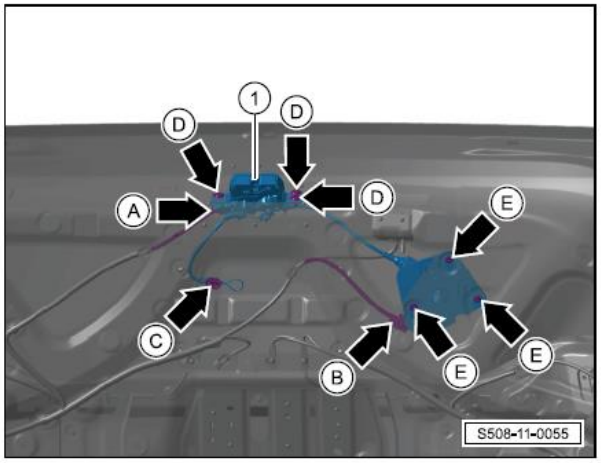
8.18.6.4 Removal and installation of lift gate lock body assembly (power lift gate)

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly



4 Remove the lift gate lock body assembly

a. Disconnect the connectors (see arrows A and B) of the lift gate lock body assembly ①.

b. Disengage the unlocking cable clip of the lift gate lock body assembly ① (see arrow C).

c. Unscrew the fixing screw (see arrows D and E), and remove the lift gate lock body assembly ①.

- Tightening torque of screw (see arrow **D**): **3±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Perform a function test on the lift gate lock, if the test result meets requirements, install the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly

8.18.6.5 Removal and installation of lift gate stay rod (electric)

Disassembly procedures

Tip:

The removal and installation procedures are only for the left lift gate stay rod (electric), which can be basically referred to for the right one.

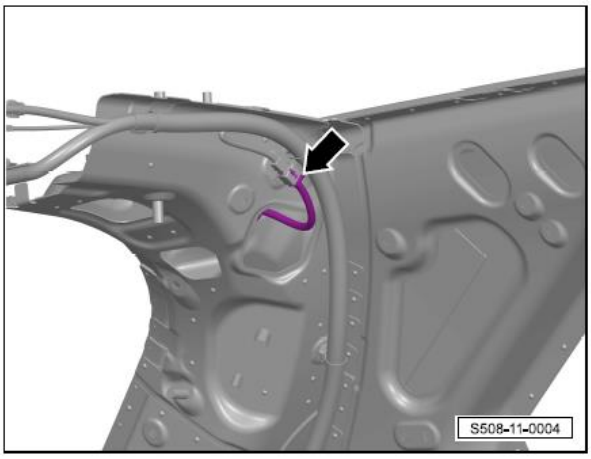
The lift gate must be supported by something when removing the lift gate stay rod (electric). Otherwise, a single lift gate drive component cannot keep the lift gate open.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

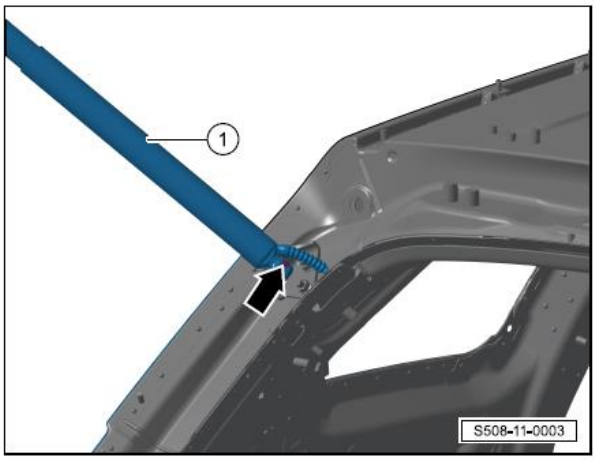
3 Remove the rear left side wall lower interior trim panel assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

4 Remove the rear left side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly



5 Remove the lift gate stay rod (electric)

a. Disconnect the connector of the lift gate stay rod (electric) (see the arrow).

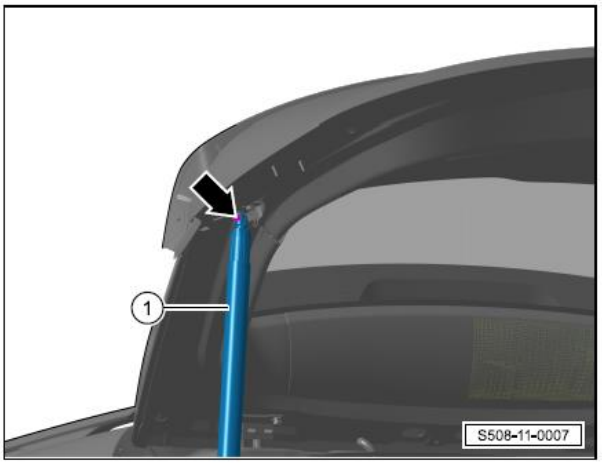


b. Use a mini straight screwdriver to pry up the fixing clip of the lift gate stay rod (electric) (see the arrow).

c. Disengage the lift gate stay rod (electric) ① from the lift gate stay rod upper mounting bracket assembly.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod (electric) completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod (electric) cannot be fixed. The lift gate stay rod (power) may pop up from the ball pin, damaging parts or injuring people.



d. Use a mini straight screwdriver to pry up the fixing clip of the lift gate stay rod (electric) ① (see the arrow) .

e. Disengage the lift gate stay rod (electric) ① from the lower mounting bracket assembly of the lift gate stay rod, and take out the lift gate stay rod (electric) ①.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod (electric) completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod (electric) cannot be fixed. The lift gate stay rod (power) may pop up from the ball pin, damaging parts or injuring people.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, carry out functional test on the electric lift gate stay rod.

8.19 Cruise control system

8.19.1 Description and operation

8.19.1.1 System Overview

1. System Overview

During a long distance driving or driving on the highway, if permitted, the driver can activate cruise control of the vehicle by open the cruise control system. The driver can then release the accelerator pedal and drive the vehicle at a set cruising speed which is generally 40~120km/h.

Cruise function:

- When the driver intervenes, such as depressing the brake pedal, the vehicle will ensure that the driver's operation takes precedence and stop cruise control; when the conditions such as speed exceeds the specified range are not met, the cruise system will also automatically stop working to ensure driving safety. Cruise memory speed: When cruise is activated, depress the brake pedal to exit cruise function, but the body domain controller still memorizes and retains the set cruise speed value before exiting, i.e. cruise memory speed.

Notes

- Do not use the cruise control system when driving on dense traffic sections, slopes, curves or slippery roads to avoid accidents.
- The cruise control system shall be used with caution. After the vehicle speed is set, it shall be ensured that the vehicle can keep a safe distance from the front vehicle.
- The cruise control system shall be shut down timely after stopping cruise control.
- Constant speed cruise is only used for auxiliary driving, can not replace autopilot, drivers must be vigilant during driving to control the vehicle.

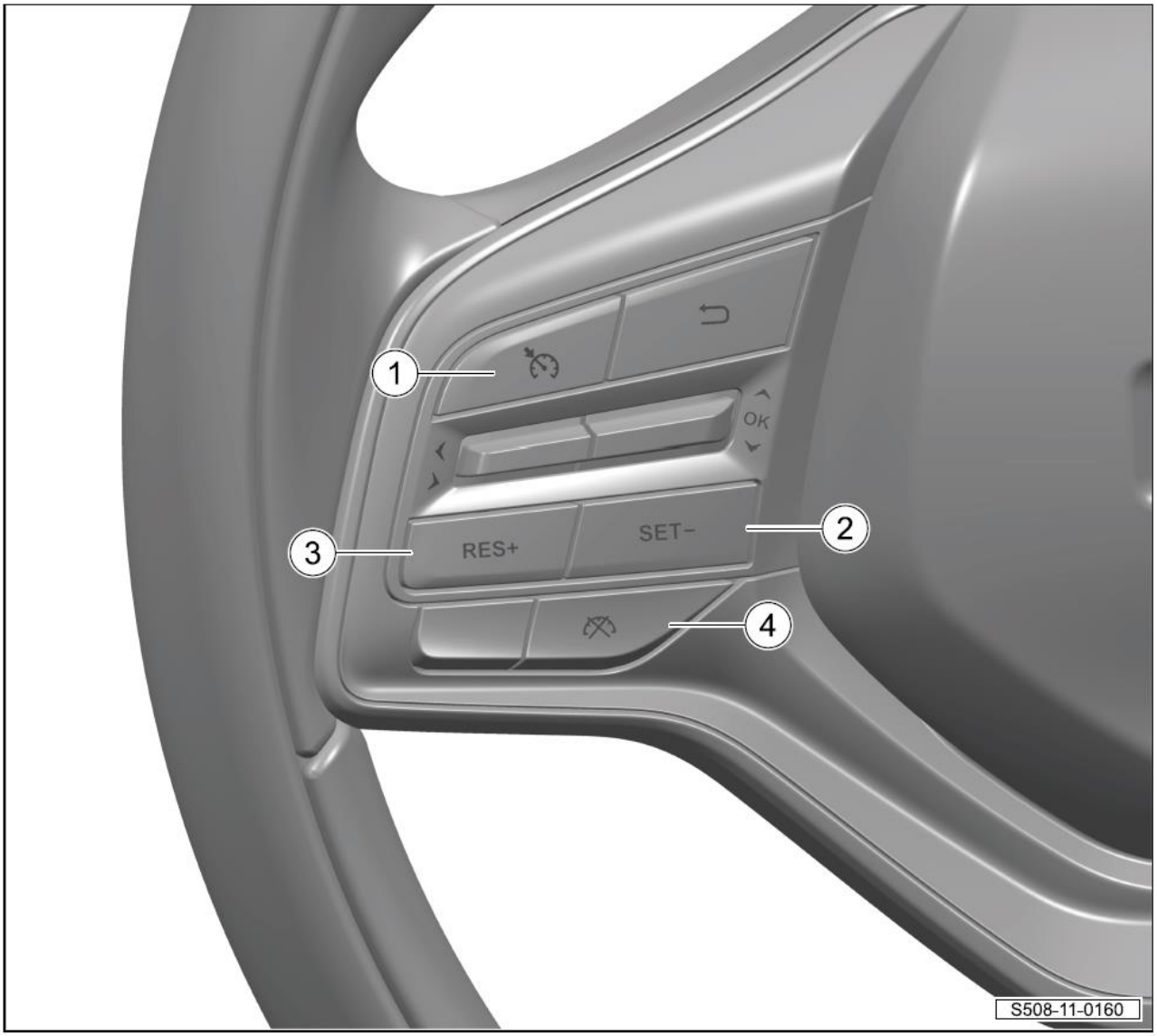
2. Advantages of cruise control system

The vehicle speed can be kept stable, especially on a straight road. As long as the cruise speed is within the allowable range, the vehicle can keep running at a constant speed.

The driving comfort can be improved, and the fatigue strength of the driver is reduced when using the cruise control system.

When the vehicle runs at a constant speed, the energy consumption and the output power of the drive motor can match the best.

8.19.1.2 Operating instructions for cruise control



Cruise switch (button):

- Press the cruise main switch button ①: turn on or off the cruise control.
- Press "SET/-" button ②: activate cruise control/deceleration.
- Press "RES/+" button ③: to restore cruise control/acceleration.
- Press cruise cancel button ④: release the cruise control.

Activating or deactivating the cruise control function

- The vehicle runs at 40 km/h-120 km/h.
- The gearshift lever is in the D gear.
- Press the cruise main switch button ① on the steering wheel, and the cruise control function will enter the standby status. At this time, the cruise control indicator light on the instrument cluster turns white.
- Press "SET/-" button ② to activate the cruise function (the current speed is the set speed for cruise), and the cruise indicator turns green.
- Press the cruise main switch button ④ to release the cruise function, and the cruise control indicator turns white.

Setting the speed

When the vehicle is in constant speed cruise mode:

- Press "RES/+" button ③: Short press (≤0.5s) to increase the speed by 1km/h each time; long press (>0.5s) to increase the speed by 5km/h each time. When the desired speed is reached, release the cruise control button.
- Press "SET/-" button ②: Short press (≤0.5s) to decelerate by 1km/h each time; long press (>0.5s) to decelerate by 5km/h each time. Release the button when the expected speed is reached.
- Depress the accelerator pedal to accelerate the vehicle to the required speed (the vehicle speed is in the range of about 40 km/h-120 km/h), and press "SET/-" button ② to set a new speed.

Disable cruise control

The following operations will stopping cruise control:

- Depress the brake pedal, and the cruise control function will be temporarily interrupted.
- Press the cruise control main switch ① to turn off the cruise control function.
- Press the cruise cancel button ④ to release the cruise control function. Resuming the cruise control function

When the vehicle meets the speed, gear and other conditions required for cruise control, press "RES/+" button ③ to restore the memorized speed and continue cruising, and the cruise control function will be restored.

Accelerating Temporarily

During cruise control, if the driver wants to accelerate temporarily, he can press the accelerator pedal to accelerate and overtake for a short time; after releasing the accelerator pedal, the vehicle will return to the speed set before overtaking and continue cruise.

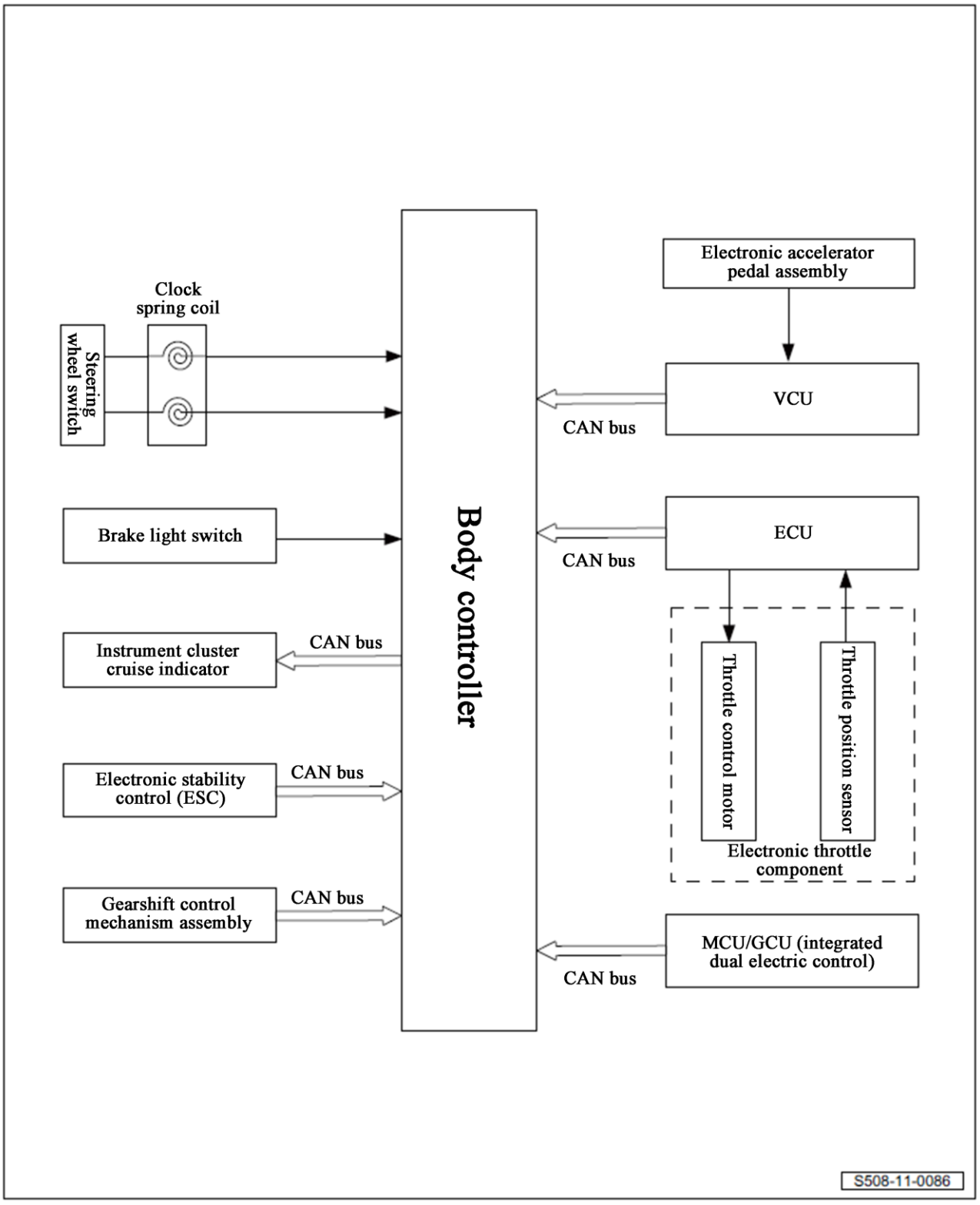
8.19.2 Component position

8.19.2.1 Component position

Component position

8.19.3 Electrical schematic diagram

8.19.3.1 Electrical schematic diagram



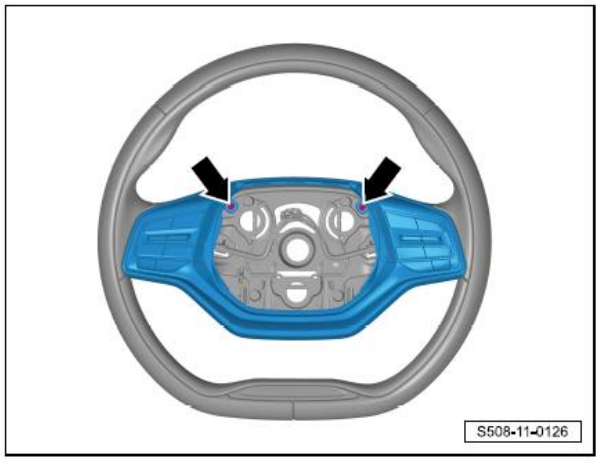
8.19.4 Removal and installation

8.19.4.1 Removal and installation of steering wheel multi-function button assembly

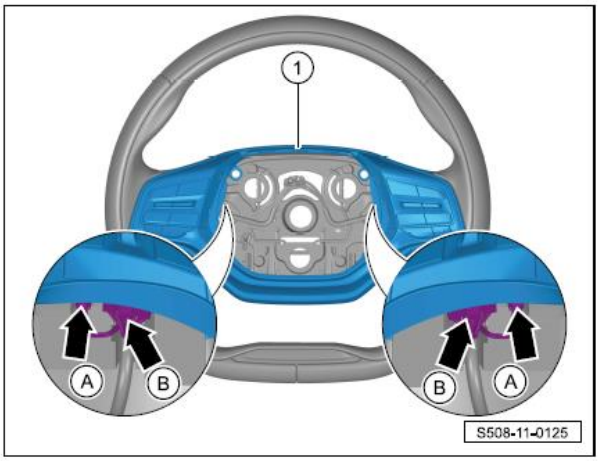
Disassembly procedures

1 Remove the driver seat airbag module. Refer to 7.1.7.2 Removal and installation of driver seat airbag module

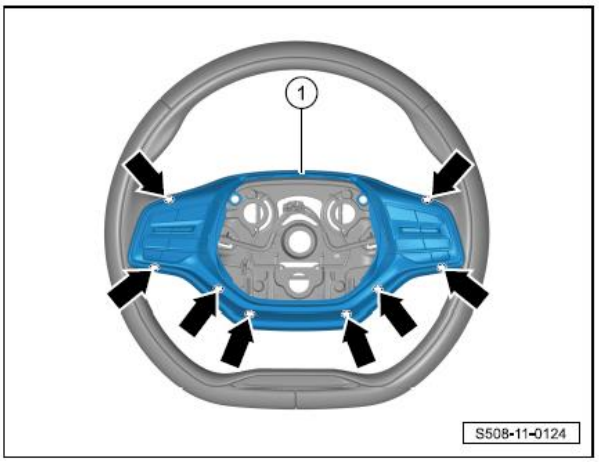
2 Remove the steering wheel multi-function button assembly



a. Unscrew the fixing screws of the steering wheel multi-function button assembly (see the arrow).



b. Disconnect the connectors (see arrows A and B) of steering wheel multi-function button assembly ①.



c. Disengage the fixing clip (see the arrow), and remove the steering wheel multi-function button assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, carry out functional test on the steering wheel multi-function buttons.

8.20 Parking assist system

8.20.1 System description

8.20.1.1 System description

System Overview

Parking Sensor system can assist the driver in parking and adjusting the parking position.

This system detects the distance of the front/rear of the vehicle to an obstacle through 2 ultrasonic sensors on the front bumper and 4 ultrasonic sensors on the rear bumper. The sensors send and receive ultrasonic waves, and an electronic system uses the ultrasonic waves which are sent and reflected upon coming across an obstacle to calculate the distance between the front/rear of vehicle and the obstacle. If the front or rear of the vehicle approaches an obstacle, the system will send out intermittent audible alarms to the driver. The closer the front or rear of the vehicle is to the obstacle, the shorter the alarm sound will be; when the front or rear of the vehicle is very close to the obstacle, the system will send out continuous alarm sounds. If, by this time, the vehicle continues approaching the barrier, the system will be unable to detect the barrier behind the vehicle any more. Except alarm sound, the audio system display will also show the dynamic icons of radar detection.

Activation and deactivation

When the complete vehicle power supply is at "ON" position, release the parking brake and shift the gearshift lever to "R". When the vehicle speed is less than 10 km/h, the parking sensor system starts working.

When the forward speed of the vehicle is less than 10 km/h, the front ultrasonic sensor starts to work; when the forward speed of the vehicle is greater than 15 km/h, the front ultrasonic sensor stops working; when the forward speed of the vehicle drops from above 15 km/h to below 10 km/h, the front ultrasonic sensor starts to work again.

When the vehicle speed is greater than 15km/h, the front and rear ultrasonic sensors are out of service; turn the gearshift lever out of gear "R", apply parking brake, turn the vehicle power out of "ON", and the parking sensor system is out of service.

Image and sound feedback

When the vehicle is in forward gear, and the vehicle speed is greater than 15km/h, the radar is disabled; when the vehicle speed drops to 10km/h, the radar is enabled again, when an object is in the radar monitoring range, feedback information will be provided on the touch screen to remind you whether to detect objects close to the corresponding rear or front bumper. At the same time, the interior buzzer will sound, and the frequency response of the buzzer changes according to the distance of the object. The closer the distance is, the higher the frequency is.

- General warning range: When the horizontal distance from the rear or front area of the vehicle to the outer end of the vehicle is 1-1.5m, the buzzer gives a warning at an intermittent frequency of 2Hz.
- Main warning range: When the horizontal distance from the rear or front area of the vehicle to the outer end of the vehicle is 0.4-1m, the buzzer gives a warning at an intermittent frequency of 4Hz.
- Imminent collision range: When the horizontal distance from the rear or front area of the vehicle to the outer end of the vehicle is 0-0.4 m, the buzzer will give a continuous alarm sound.

Restriction and false alarm

Under the following circumstances, the parking sensor may not function properly:

- One or more parking sensors are damaged, dirty or covered (such as mud, ice or snow).
- The position of the object is less than about 20 cm.
- Weather factors (heavy rain, snow or fog) interfere with the operation of the sensor.
- Objects are too thin (such as tag plates).
- It's out of the sensor detection range.
- Objects are sound-absorbing or soft (such as powdery snow).
- Objects are inclined (such as sloping dikes).
- The vehicle is parked or running at extremely hot or cold temperatures.
- The sensor is affected by other electrical equipment or devices that generate ultrasonic waves.
- Objects are too close to the bumper.
- The bumper is not aligned or damaged.

- Objects (such as bicycle frames or bumper stickers) mounted on the vehicle that interfere with or obstruct sensors.

Overview of reversing rearview system (for certain models)

Working principle

The reversing rearview system adopts high-definition rearview camera to display a wide range of rearview video on the audio system screen to help the driver see the complex road conditions behind the vehicle, enhancing the reversing safety.

Activation and deactivation

When the start switch is in "ON", and the gearshift lever is in gear "R", the reversing rearview system work is put in service automatically, and the audio system screen will display the rear shot images. Switching the gearshift lever from the "R" position can make the reversing rearview system exit automatically, and the audio system will stop displaying reversing image.

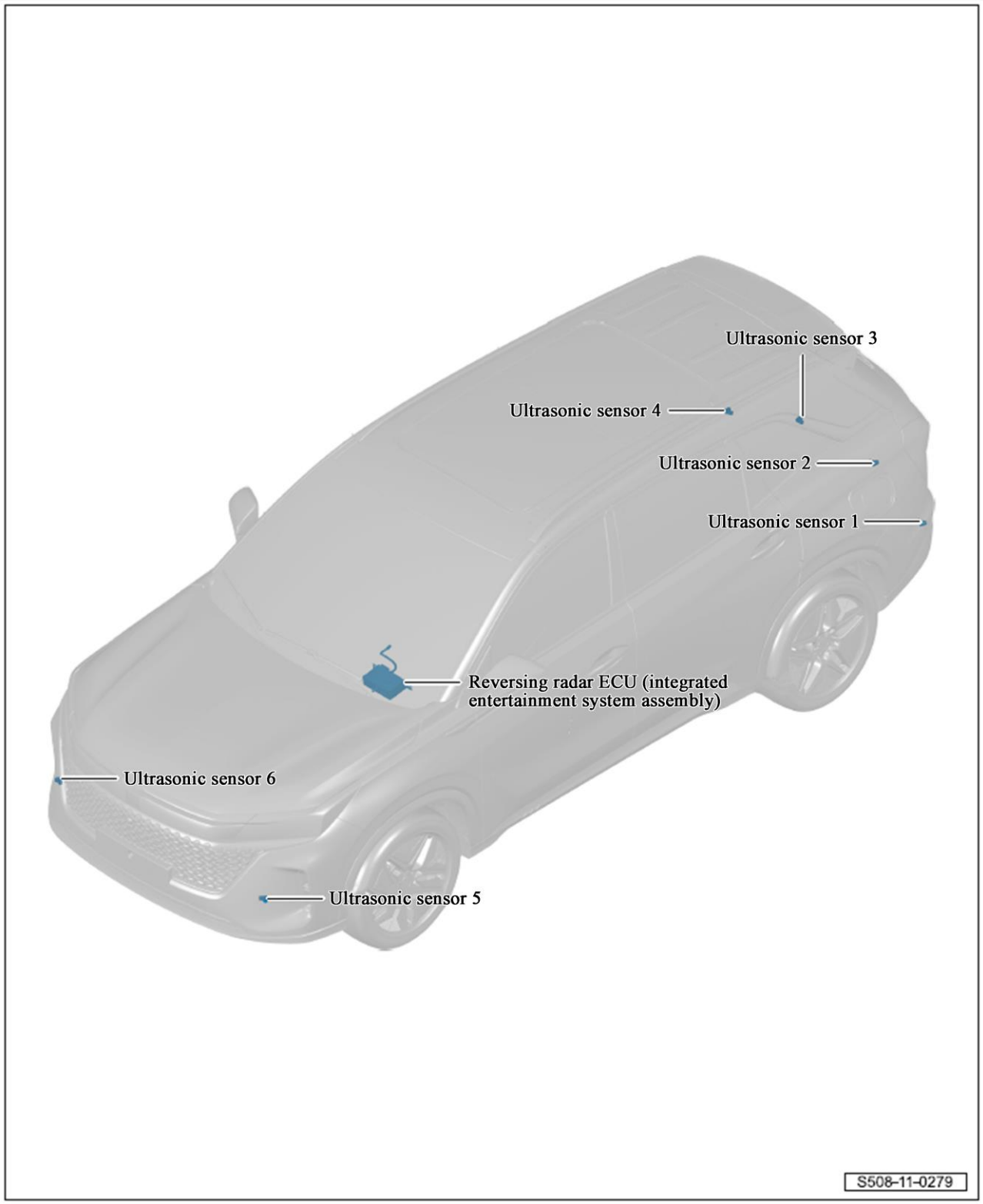
Notes

- The reversing rear-view system does not take the place of the driver's observation to the surrounding environment, so the driver shall focus attention on reversing safely parking position according to actual conditions.
- The above distance is measured on flat ground and is only taken as a reference value of view distance. If there is a slope, the above distance may be deviated.
- The longitudinal lines on both sides of the distance reference line can be used as reference lines to judge the required parking space size during reversing.
- The distance reference line will be continuously adjusted as the steering wheel rotates.
- Blind spots exist in the detecting scope of the rearview camera, because the camera may be unable to detect children or small animals. Pay special attention to children or small animals around when reversing.
- Upright objects in high positions, such as wall flanges, may also not be recognized by the rearview camera.
- Always keep the rearview camera surface clean. When cleaning the rear-view camera, use soft wet cloth to avoid scratching.
- Do not use a high-pressure washer to wash the rearview camera for a long time, and keep at least 30 cm away from the camera during cleaning.
- Do not cover the rearview camera.

8.20.2 Component position

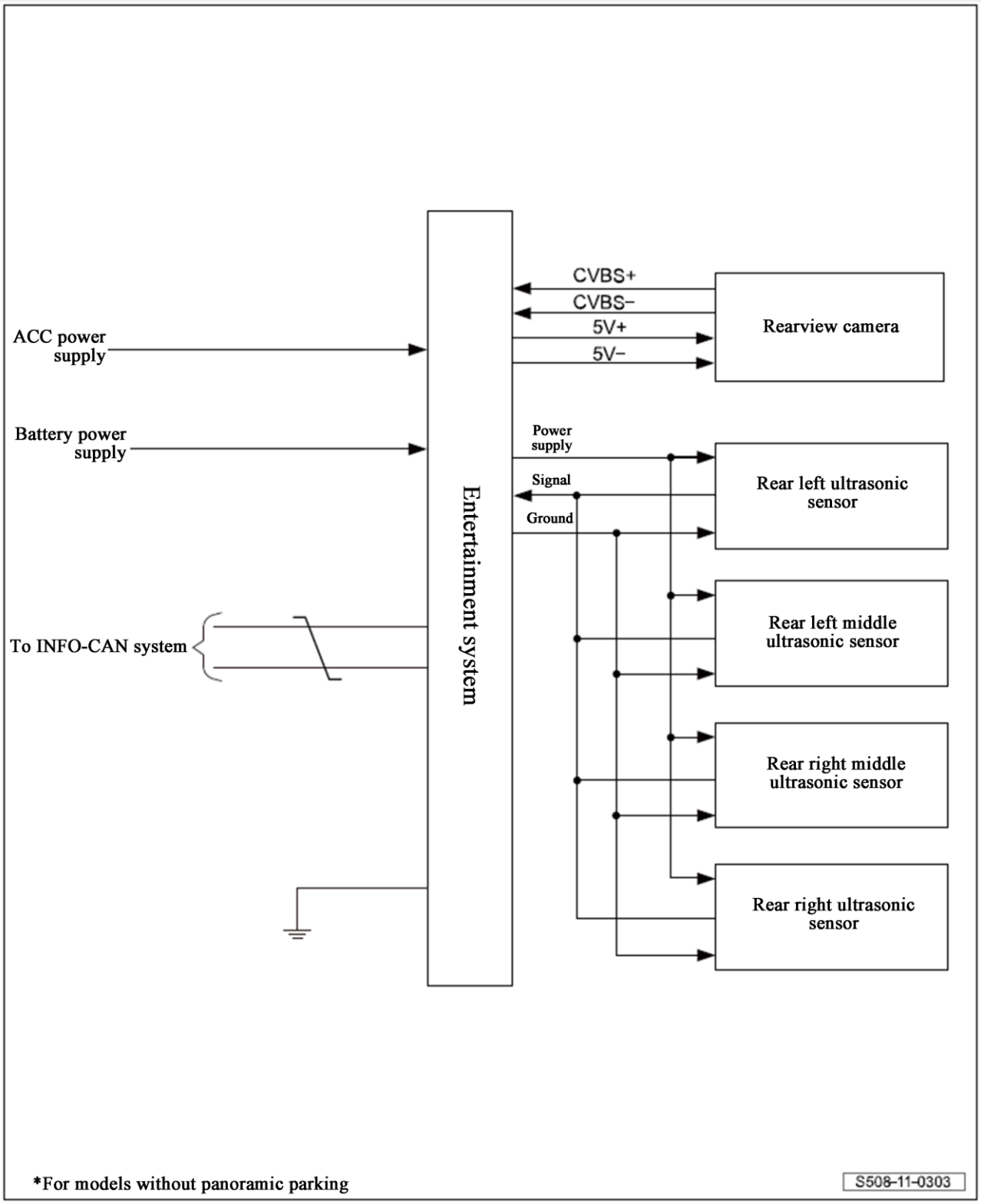
8.20.2.1 Component position

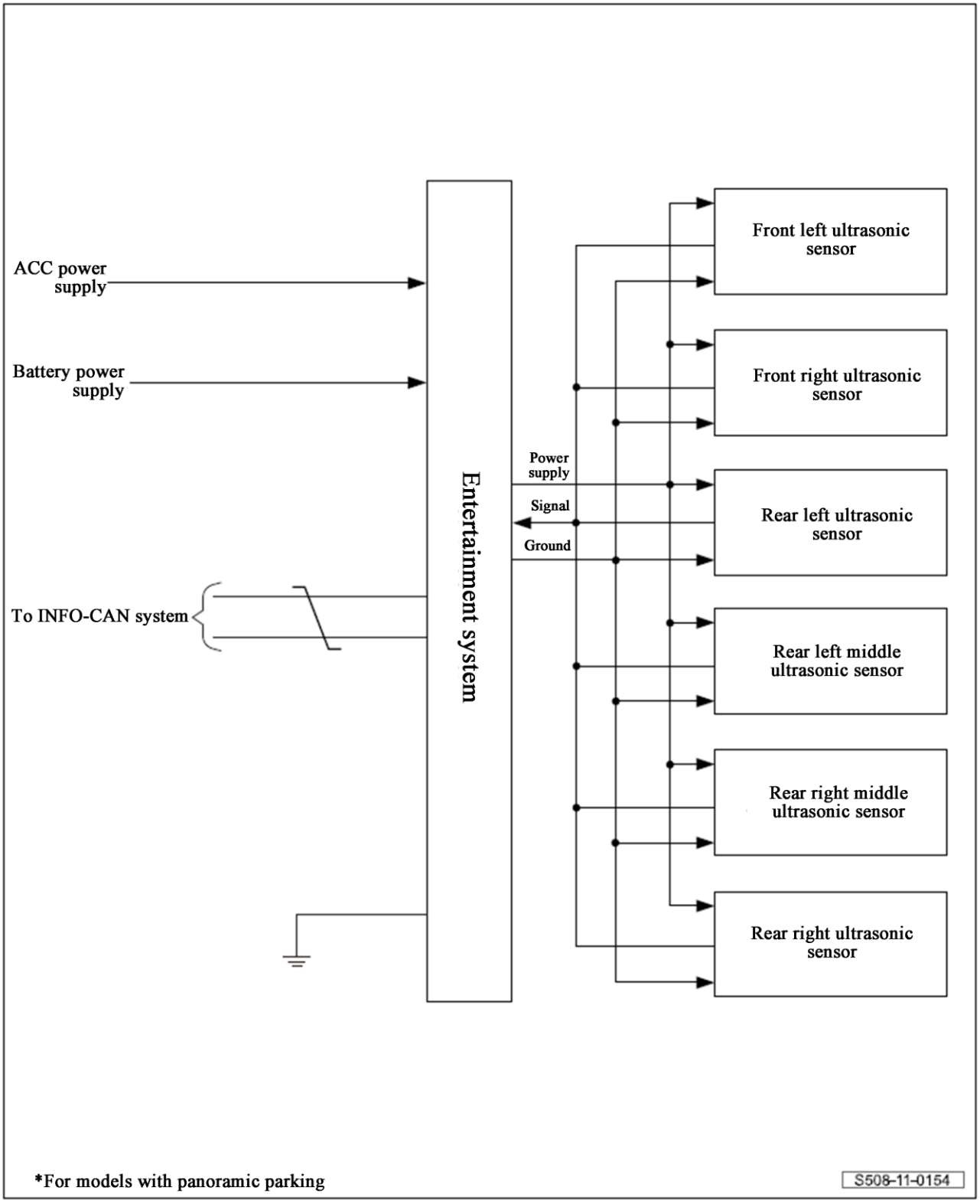
Component position



8.20.3 Electrical schematic diagram

8.20.3.1 Electrical schematic diagram




ACC power supply
Battery power supply
To INFO-CAN system
Entertainment system
Power supply
Signal
Ground
Front left ultrasonic sensor
Front right ultrasonic sensor
Rear left ultrasonic sensor
Rear left middle ultrasonic sensor
Rear right middle ultrasonic sensor
Rear right ultrasonic sensor
*For models with panoramic parking
S508-11-0154

8.20.4 Removal and installation

8.20.4.1 Removal and installation of parking sensor ECU (integrated entertainment system assembly)

Disassembly procedures

Tip:

The parking sensor ECU is integrated with the entertainment system assembly.

1 Remove the parking sensor ECU.

a. Remove the parking sensor ECU. Refer to 8.2.6.1 Removal and installation of entertainment system assembly

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, match the entertainment system assembly. Refer to 1.4.2.6 After-sales matching operation after module replacement

8.20.4.2 Removal and installation of ultrasonic sensor (rear bumper side)

Disassembly procedures

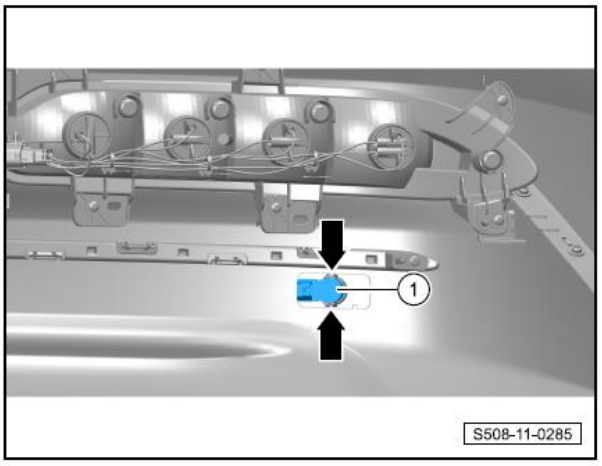
Tip:

The removal and installation procedures are only for the ultrasonic sensor on the left side of the rear bumper, which can be basically referred to for the other three rear bumper ultrasonic sensors.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

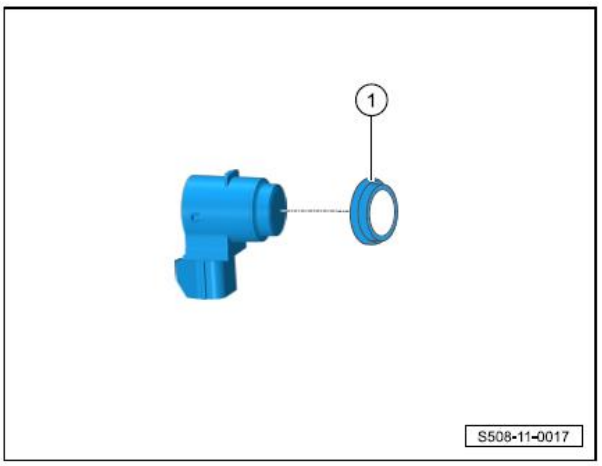
3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



4 Remove the ultrasonic sensor (rear bumper side)

b. Disengage the fixing clip (see arrow B), and take out the ultrasonic sensor ①.

Installation procedures



Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- During installation, take care not to miss the sealing ring ① and make sure that it is installed in place.

8.20.4.3 Removal and installation of ultrasonic sensor (front bumper side)

Disassembly procedures

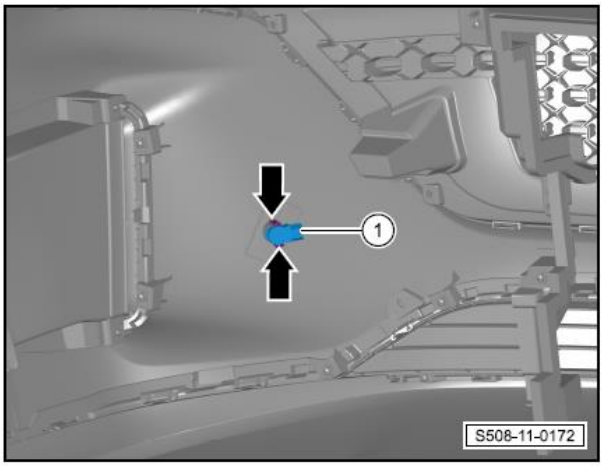
Tip:

The removal and installation procedures are only for the ultrasonic sensor on the left side of the front bumper, which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

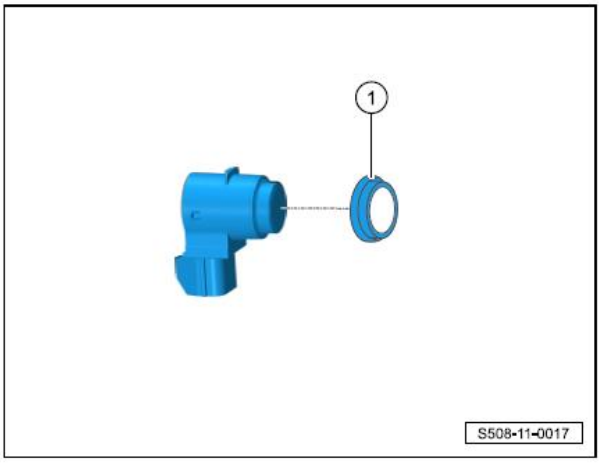
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the ultrasonic sensor (front bumper side)

a. Disengage the fixing clip (see arrow B), and take out the ultrasonic sensor ①.



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- During installation, take care not to miss the sealing ring ① and make sure that it is installed in place.

8.21 Panoramic parking system

8.21.1 Specification

8.21.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between front-view camera and grille body	Cross recessed pan head self-tapping screw	2±1
Connection between rear-view camera and mounting bracket of rear license plate light	Cross recessed pan head self-tapping screw	2±1

8.21.2 Description and operation

8.21.2.1 System description

Working principle

The panoramic parking system is composed of an entertainment system host and four 180º cameras. The control host module captures images at front, rear, left and right sides of the car and merges them into a 360° aerial view, which is displayed via audio system display, through processing algorithm. The panorama parking system can provide the information of environment around the vehicle to the driver through real-time image, reduce the blind spots of driving, and forecast the movement track of the vehicle in combination with steering wheel angle and vehicle dimensions and other related parameters; adding such information into the panoramic image can make the driver fully understand the traveling direction of the vehicle and judge whether the reversing is safe.

Activation and deactivation

1 The panoramic parking system can be enabled and disabled through the gearshift lever. When the vehicle power is in "ON":

- Placing the gearshift lever at the “R” position can make the panoramic parking system automatically start.
- If the gear is switched out of the "R" position and no relevant operation is performed by the driver, the system will automatically exit after 30s.

2 The panoramic parking system can be enabled and disabled through the panoramic parking button. When the vehicle power is in "ON":

- Short press the panoramic parking button, and the button light will be on and the panoramic parking system will be enabled.
- Short press the panoramic parking button again, and the button light will be off and the panoramic parking system will be disabled.

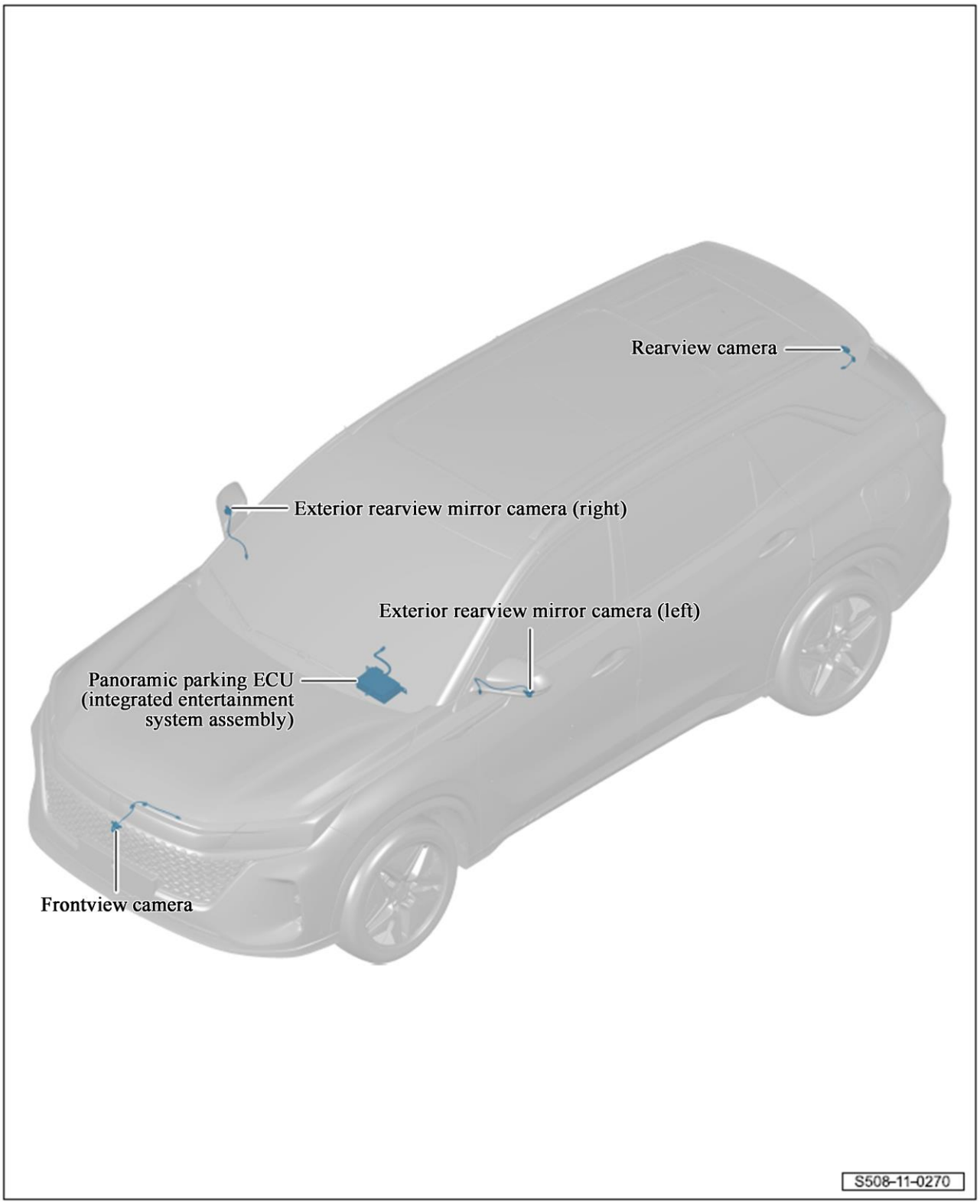
Notes

- When reversing, do not rely on the rearview camera to determine whether there are obstacles or pedestrians in the rear area. The camera may sometimes fail to detect objects or obstacles that can cause vehicle damage or personal injury. In addition, some external factors can reduce the performance of the camera, including contaminated or blocked lenses. Therefore, judging whether the vehicle is close to the obstacle according to the rearview camera may cause damage to the vehicle or the object, and may lead to serious personal injury. Please be sure to observe these areas by your own eyes. When reversing, turn around, look back and use all rearview mirrors. The camera is for reference only and cannot substitute direct visual inspection. Please drive carefully.
- Clean the camera to make sure it produces a clear image, and keep the camera clean and unobstructed. Always use a soft damp cloth to wipe the camera lens to remove accumulated dirt.
- Do not use a high-pressure washer to wash the camera for a long time, and keep at least 30 cm away from the camera during cleaning.
- Please do not use chemical or abrasive cleaning agent, which may scratch the surface of the camera lens.

8.21.3 Component position

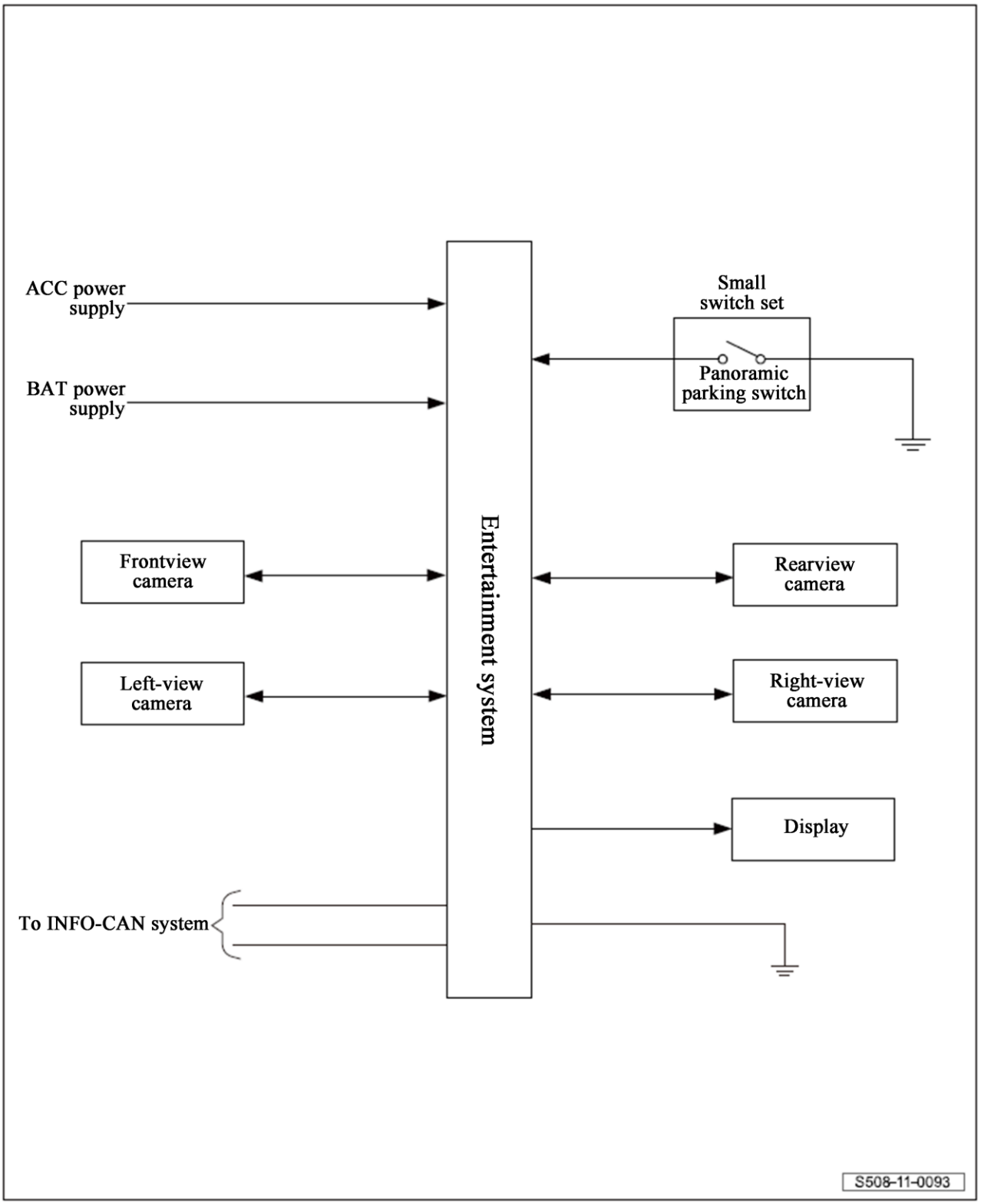
8.21.3.1 Component position

Component position



8.21.4 Electrical schematic diagram

8.21.4.1 Electrical schematic diagram



8.21.5 Removal and installation

8.21.5.1 Removal and installation of panoramic parking ECU

Disassembly procedures

Tip:

The panoramic parking ECU is integrated with the entertainment system assembly.

1 Remove the panoramic parking ECU

a. Remove the panoramic parking ECU. Refer to 8.2.6.1 Removal and installation of entertainment system assembly

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, match the panoramic parking ECU. Refer to 1.4.2.6 After-sales matching operation after module replacement

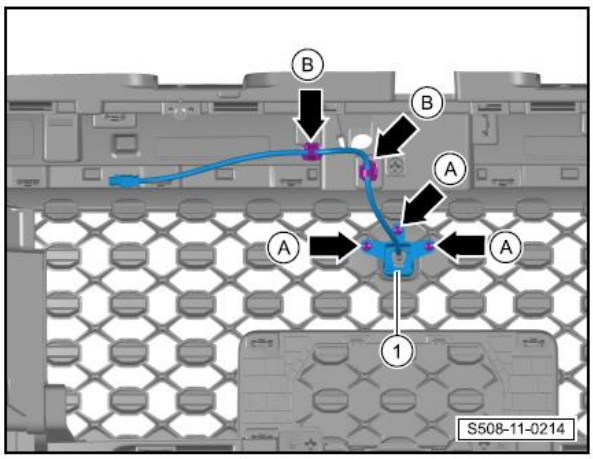
8.21.5.2 Removal and installation of frontview camera

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the front-view camera

a. Unscrew the fixing screws (see arrow A) of front-view camera ①.

b. Disengage the fixing clips (see arrow B) of the front-view camera ① harness and take out the front-view camera ①.

- Tightening torque of screw: **2±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, check whether the frontview camera functions normally.

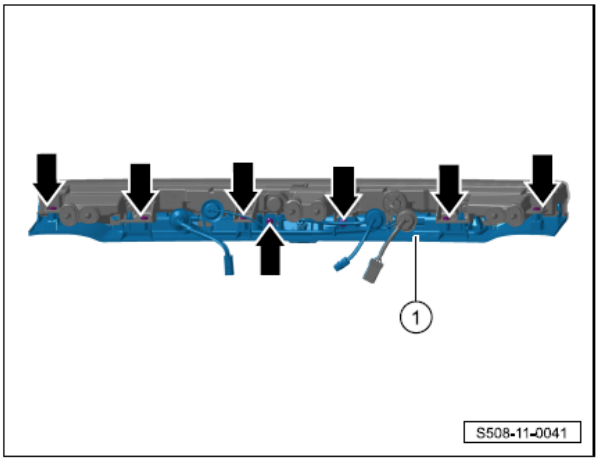
8.21.5.3 Removal and installation of rearview camera

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

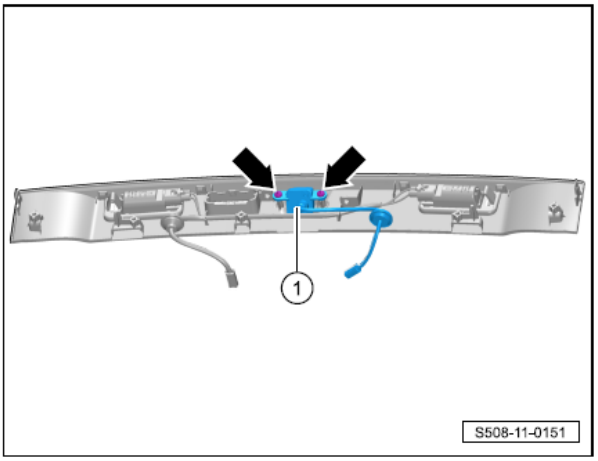
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the lift gate light assembly. Refer to 8.3.5.5 Removal and installation of lift gate light assembly



4 Remove the rear-view camera

a. Unscrew the fixing screws (see the arrow), and remove the rear license light mounting bracket assembly ①.



b. Unscrew the fixing screws (see the arrows) and take out the rearview camera ①.

- Tightening torque of screw: **2±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, check whether the rearview camera functions normally.

8.22 ETC System

8.22.1 System description

8.22.1.2 System description

Working principle

ETC is an electronic non-stop toll collection system, which adopts electronic toll collection mode. The ETC system carries out wireless communication and information exchange with antenna installed on the lane of the toll station through the onboard device installed on the vehicle. The ETC system is mainly composed of automatic vehicle identification system, central management system and other auxiliary facilities.

ETC use

After the vehicle is installed with the license plate, the ETC_OBU needs to be activated before use. After the ETC_OBU is activated, drive the vehicle to the ETC lane, and the ETC_OBU makes a "drip" sound, indicating that the transaction is successful, the railing is lifted automatically, and the vehicle can pass through the ETC lane without stop, realizing non-stop toll collection.

ETC state

Status	Sub-state	Buzzer	Indicator
Self-inspection	Normal	No sound	No indication
	Abnormal	Sound for 1s	Red LED on for 1s
Transaction	Transaction in process	No sound	No indication
	Transaction succeeded	Short "drip" sound	Green LED indicator on for 50ms
	Abnormal transaction	Short "drip" sound	Red LED indicator on for 600ms
Dormant	Dormant	No sound	No indication
The short sound of the buzzer is about 50ms, the long sound is about 1s, and the interval between the two sounds is about 180ms			

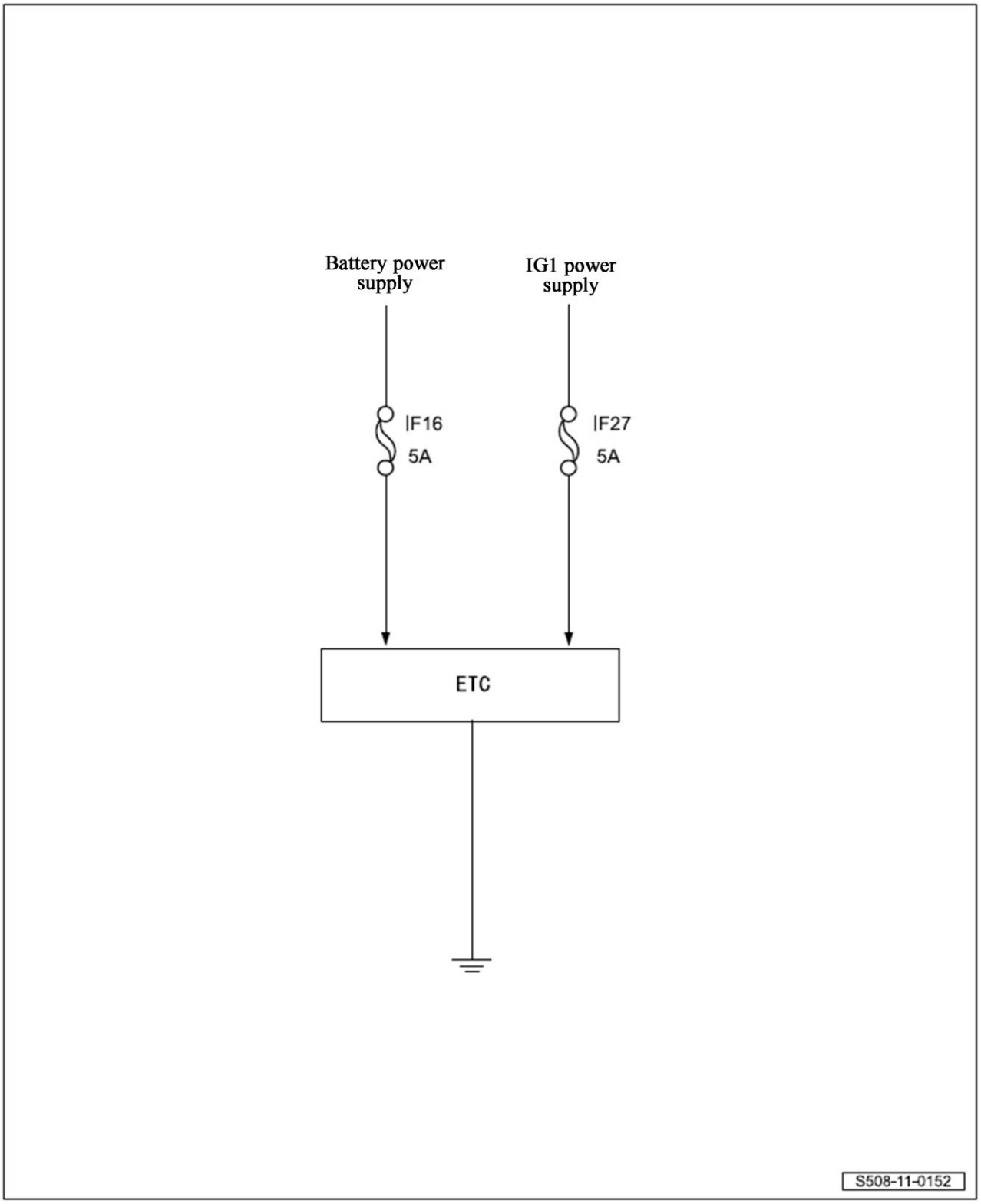
8.22.3 Component position

8.22.3.1 Component position

Component position

8.22.4 Electrical schematic diagram

8.22.4.1 Electrical schematic diagram



8.22.5 Removal and installation

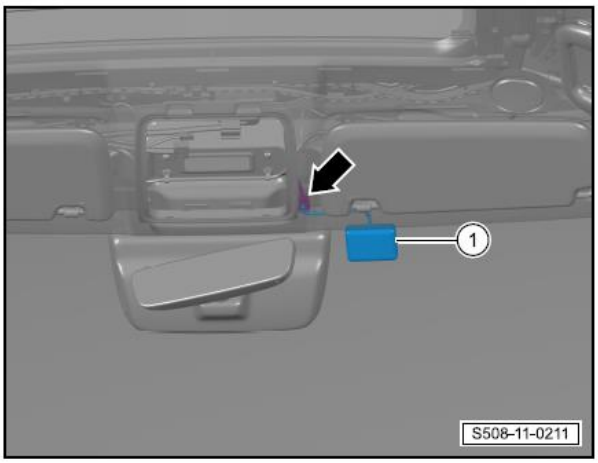
8.22.5.1 Removal and installation of ETC assembly

Disassembly procedures

Notes

Remove the ETC assembly carefully to avoid damage to the front windshield.

1 Remove the front reading light assembly. Refer to 8.4.5.1 Removal and installation of front reading light assembly



2 Remove the ETC assembly

a. Disconnect the connector (see the arrow) of ETC ① and remove the ETC assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.23 Driving recorder

8.23.1 System description

8.23.1.1 System description

Function Overview

The driving recorder is composed of a standard definition camera and a control module mounted in the multi-function sensor cover behind the interior rearview mirror. The system will completely record images, sound and vehicle conditions during driving, and the image data can be used quickly, truly and accurately to help the traffic police to deal with traffic accidents fairly, justly and reasonably, and protect the rights and interests of drivers from being infringed. The information recorded by the driving recorder through the high-definition camera is saved in the memory card, and the real-time image is transmitted to the IVI screen through the data cable to check the front image of the recorder at any time. On the main interface displayed on the IVI screen, touch [Driving Recorder] to preview the image in real time.

Notes

- When using, please clean the windshield first to ensure the quality of records.
- When the visibility is relatively low in severe weather (such as rain, snow, fog, smoke, dust, haze and frost), the image quality of the driving recorder may deteriorate.
- Do not operate the driving recorder or watch videos when the vehicle is running, so as to avoid affecting driving safety.
- Do not use the driving recorder for a long time when the vehicle is not started, so as to avoid insufficient battery power and affect the normal start of the vehicle.
- Do not plug or unplug the memory card with power on; otherwise, the last few seconds of video will be lost and even the memory card may be damaged.
- When there is too much data in the memory card with small available capacity, the card writing rate may be decreased. So it is recommended to format it through IVI after backing up the data.
- It is recommended that the memory card be dedicated to the driving recorder. If there is too much user data (not used by the vehicle traveling data recorder) in the memory card and the remaining memory is less than 2G, the driving recorder may not recognize the card.
- The use, transmission and disclosure of data information recorded by the driving data recorder shall strictly comply with relevant requirements for information security management.

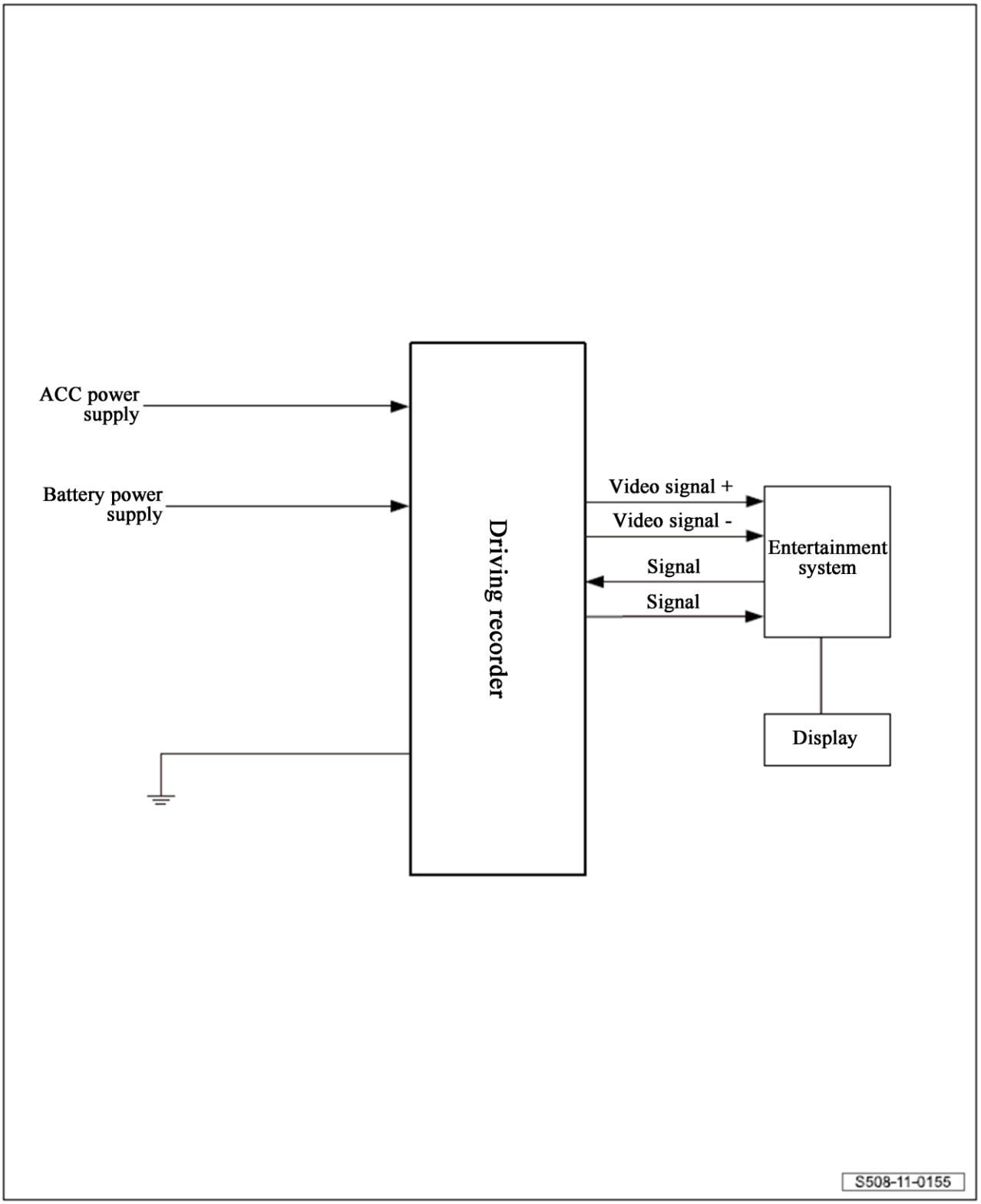
8.23.2 Component position

8.23.2.1 Component position

Component position

8.23.3 Electrical schematic diagram

8.23.3.1 Electrical schematic diagram



8.23.4 Removal and installation

8.23.4.1 Installation and removal of driving recorder assembly

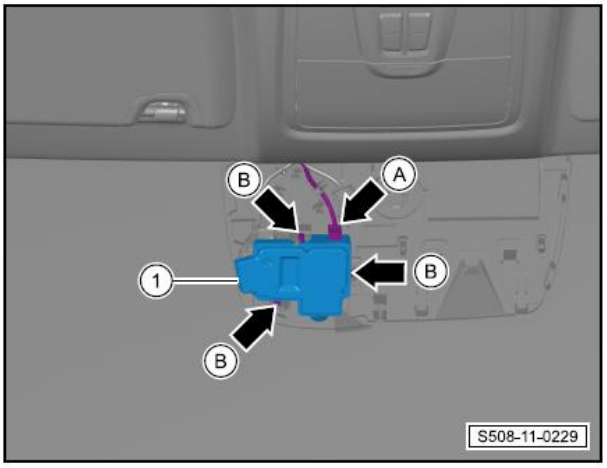
Disassembly procedures

Notes

Be sure to remove and install the vehicle traveling recorder carefully to prevent damage to the front windshield.

1 Remove the front windshield mirror base trim cover I. Refer to 9.14.2.1 Removal and installation of front windshield mirror base trim cover I

2 Remove the front windshield mirror base trim cover II. Refer to 9.14.2.2 Removal and installation of front windshield mirror base trim cover II



3 Remove the vehicle traveling recorder assembly.

a. Disconnect the connector (see arrow A) of driving recorder assembly ①.

b. Disengage the fixing clip (see arrow B), and remove the driving recorder assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.24 Side assist system (SSS)

8.24.1 Specification

8.24.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between millimeter-wave radar bracket assembly and vehicle body	Nut	10±1
Connection of millimeter-wave radar and millimeter-wave radar bracket assembly	Cross recessed hexagon head bolt M6×18	10±1

8.24.2 System description

8.24.2.1 Description of blind spot detection (BSD) system

Working principle

Through the millimeter wave radar installed in the rear corner of the vehicle, the BSD function is used to monitor the blind spot behind the vehicle and the vehicles behind the adjacent lanes during driving, so as to remind the driver to prevent the danger. The light on the rearview mirror will be on when a vehicle is approaching in the alarm area of the vehicle blind spot. If the driver continues to turn on the turn signal at this time, the alarm light on the rearview mirror of the corresponding side car blinks and drives the buzzer to sound the alarm to remind the driver of the danger of collision.

Enabling and disabling

On the central control screen, click Vehicle Setting > ADAS Assistance > "(BSD/LCA)", if the button is on, it indicates that the function has been enabled; if the button is off, it indicates that the function has been disabled.

Notes

- The system does not relieve from the personal responsibility to correctly assess visibility and traffic situations. Adjust the driving style to the traffic conditions. Watch traffic closely and actively interfere in the respective situations.

Alarm

- Level-I alarm: It is detected that there is a target vehicle behind the side of the vehicle, which belongs to level-I alarm. The exterior rearview mirror LED alarm light on the side of the target vehicle will be turned on by the system.
- - Level-II alarm: If it is detected that there is a target vehicle behind the vehicle and the driver turns on the turn signal on the corresponding side, which belongs to level-II alarm, the exterior alarm light on the rearview mirror of the corresponding side blinks and drives the buzzer to sound an alarm at the same time.

False alarm

Note: False alarms are temporary and can be corrected automatically.

The system may also send an alarm when there are no vehicles in the blind spot.

Situations of possible false alarm:

- Road fence.
- Concrete walls of expressway.
- Construction area.
- Sharp turn around a building.
- Shrubs and trees.

8.24.2.2 Description of rear cross traffic alert system

Working principle

RCTA function uses the rear corner millimeter wave radar installed at the rear of the vehicle to monitor the side and rear areas within the radar coverage when the vehicle speed is ≤10km/h and the gear is in R. When a vehicle approaches the vehicle from the side rear area, the in-car infotainment system shows the direction indication of the target vehicle and the alarm light on the corresponding side rearview mirror flashes to alert the driver to avoid a collision.

Enabling and disabling

After the vehicle is powered on, the RCTA function is enabled by default, and users may disable the function in the onboard infotainment system.

On the central control screen, click Vehicle Setting > ADAS Assistance > "Rear Cross Traffic Alert (AEB)", if the button is on, it indicates that the function has been enabled; if the button is off, it indicates that the function has been disabled.

Notes

- The system does not relieve from the personal responsibility to correctly assess visibility and traffic situations. These functions may also fail to achieve the expected results for many other reasons, and it is the driver's responsibility to remain vigilant and pay attention to the area around the vehicle to predict whether early measures are needed to avoid collision.

Alarm

When the RCTA is in service, and it is detected that there is a target vehicle behind the side of the vehicle, and the alarm conditions are met, then the onboard infotainment system displays the direction of the target vehicle and the corresponding side rearview mirror flashes to send an alert.

Working conditions

The system does not always detect vehicles, bicycles and pedestrians, and unnecessary, inaccurate or invalid warnings or omissions can occur for a variety of reasons. Especially under the following circumstances:

- There is a sharp turn in the road.
- Poor visibility (due to rain, snow, fog, etc.).
- The radar sensor is blocked (due to dirt or coverage, etc.).

False alarm

Note: False alarms are temporary and can be corrected automatically.

The system may also send an alarm when there are no vehicles in the detection area.

Situations of possible false alarm:

- Road fence.
- Concrete walls of expressway.
- Construction area.
- Sharp turn around a building.
- Shrubs and trees.
- Being too close to the vehicle behind when parking.
- Indoor parking lot.

8.24.2.3 Description of door open warning system

Working principle

The door open warning (DOW) function is realized by the millimeter wave radar installed at the rear corner of the vehicle to detect the adjacent lanes when the vehicle is parked. The DOW system monitors the state that may endanger safety in the alarm range of vehicle blind spot, and alarms the interior personnel through sound and image to avoid possible safety accidents. When the vehicle is at a low speed (0 to 5km/h), and a vehicle (bicycle, motorcycle, car, etc.) approaches the car from behind and enters the alarm area, if all four doors are closed, the alarm light on the exterior rearview mirror will be on to remind the driver; if the driver or passenger is opening the door on the corresponding side, the alarm light on the exterior rearview mirror of the corresponding side car will blink, and the loudspeaker will sound an alarm to remind the driver or passenger of the danger of collision.

Enabling and disabling

On the touch screen, click Vehicle Setting > ADAS Assistance > "Door Open Warning (DOW)", if the button is on, it indicates that the function has been enabled; if the button is off, it indicates that the function has been disabled.

Alarm

- Level-I alarm: It is detected that there is a target vehicle behind the side of the vehicle approaching and entering the alarm area, which belongs to level-I alarm. The exterior rearview mirror LED alarm light on the side of the target vehicle will be turned on by the system.
- - Level-II alarm: It is detected that there is a target vehicle behind the side of the vehicle and any door is opened, which belongs to level-II alarm. The LED alarm light on the exterior rearview mirror on the side of the target vehicle detected will blink, and the loudspeaker will sound an alarm.

Notes

- The DOW function is only an auxiliary function and cannot substitute the driver to monitor the traffic state. The driver shall always be vigilant on the surrounding environment.
- The system can’t detect the objects behind through other vehicles or obstacles.
- In some cases, the function may be triggered incorrectly.
- In some cases, the function may not send an alarm in time.

False alarm

Note: False alarms are temporary and can be corrected automatically.

The system may also send an alarm when there are no vehicles in the detection area.

Situations of possible false alarm:

- Road fence.
- Concrete walls of expressway.
- Construction area.
- Shrubs and trees.
- Being too close to the left and right vehicles when parking.
- There is a larger vehicle behind the vehicle.

8.24.2.4 Description of rear collision warning system

Working principle

The rear collision warning function monitors the target directly behind the vehicle in real time through the millimeter wave radar installed at the rear corner of the vehicle. When the rear collision warning system (RCW) detects that the rear vehicle is too close to the vehicle and there is a collision risk, it will warn through sound on the instrument to remind the driver, and the hazard alarm indicator of the vehicle will blink to warn the rear vehicle. These warning messages are intended to provide the driver with sufficient reaction time to avoid or eliminate potential collisions.

Enabling and disabling

On the central control screen, click Vehicle Setting > ADAS Assistance > "Rear Collision Warning (RCW)", if the button is on, it indicates that the function has been enabled; if the button is off, it indicates that the function has been disabled.

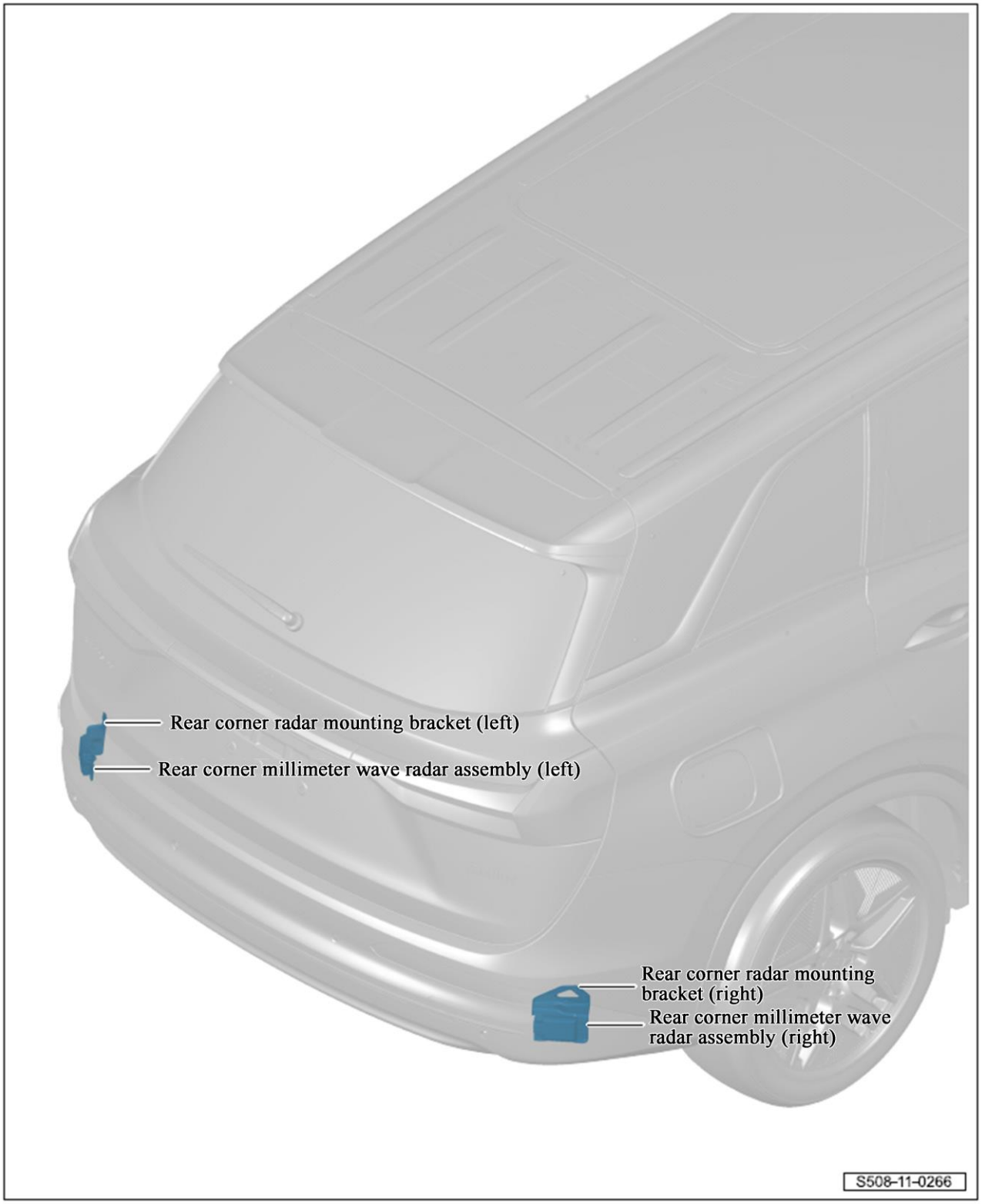
Notes

- The system does not relieve from the personal responsibility to correctly assess visibility and traffic situations. These functions may also fail to achieve the expected results for many other reasons, and it is the driver's responsibility to remain vigilant and pay attention to the area around the vehicle to predict whether early measures are needed to avoid collision.

8.24.3 Component position

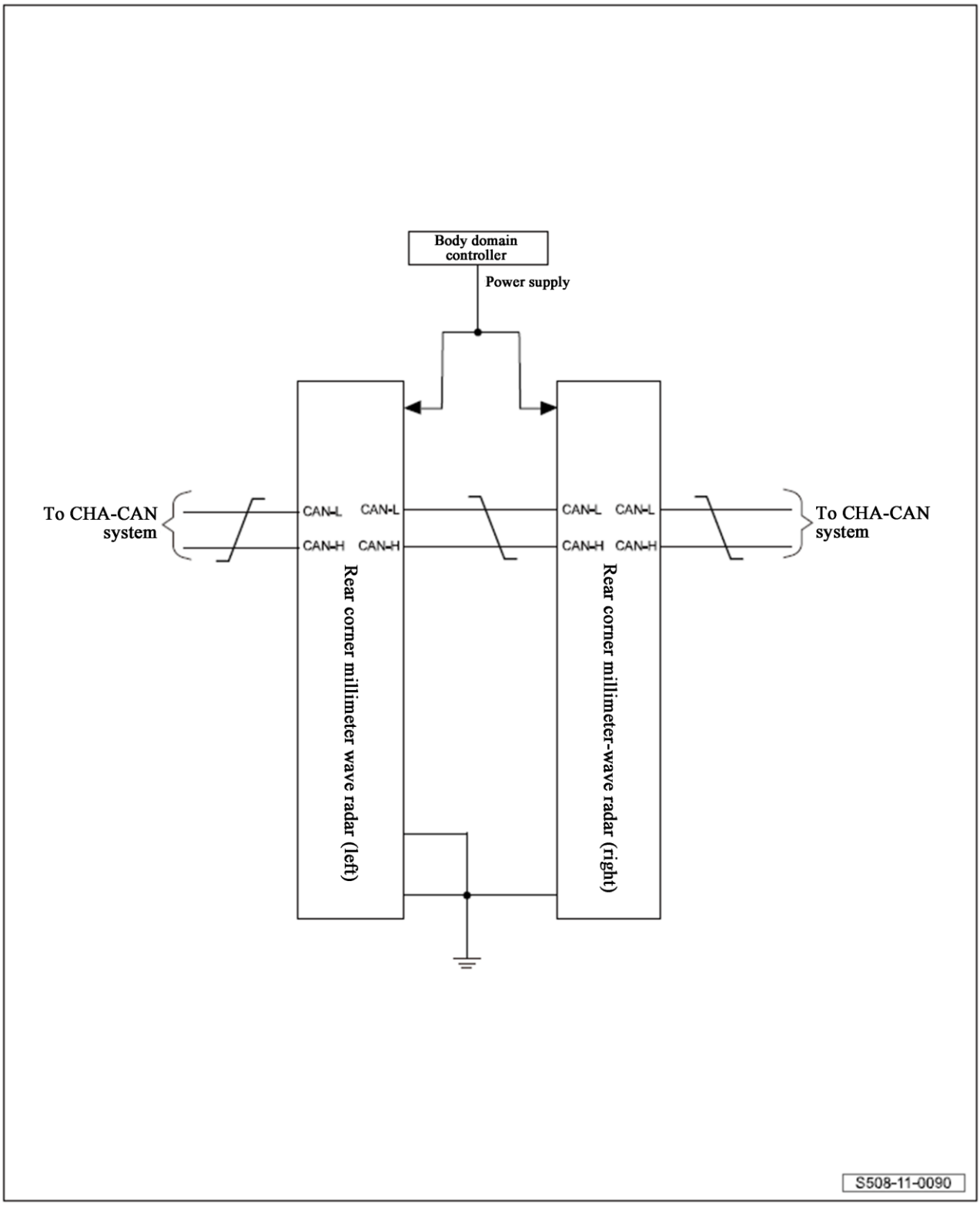
8.24.3.1 Component position

Component position



8.24.4 Electrical schematic diagram

8.24.4.1 Electrical schematic diagram



8.24.5 Diagnosis information and steps

8.24.5.1 Diagnostic instructions

With a diagnostic scanner, default code can be read through the OBD diagnosis interface of the vehicle. By comparing the data sheet provided by SRR with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

8.24.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.

- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

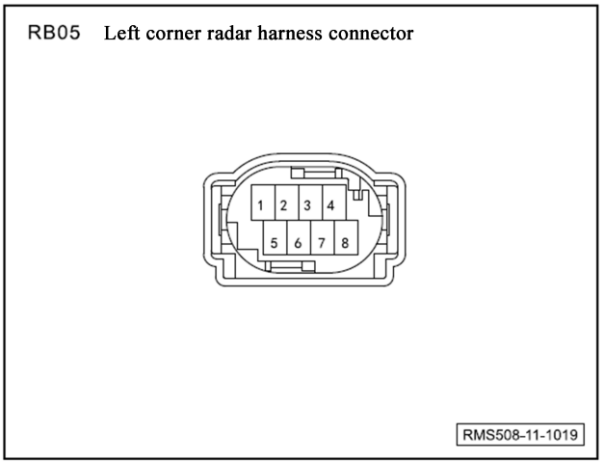
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

8.24.5.3 ECU terminals

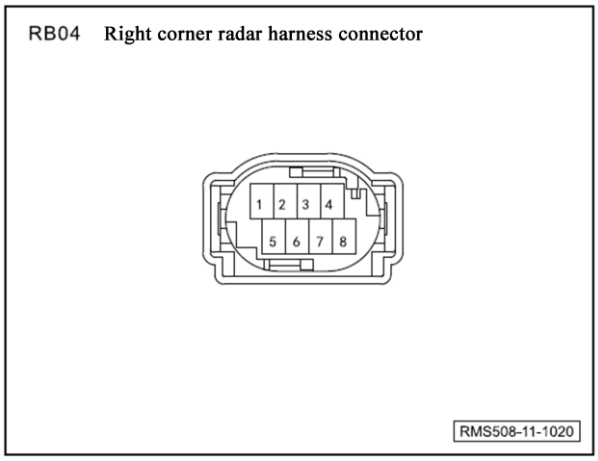
Left corner radar harness connector (RB05)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/black	Sensor ground	—	0V
2	0.35/Light green	CHA CAN H	—	—
3	0.35/Light green and white	CHA CAN L	—	—
5	0.35/purple	Private CAN H	—	—
6	0.35/Purple and white	Private CAN L	—	—

7	0.35/black	Ground	—	0V
8	0.35/gray-red	Radar power 12V	—	Battery voltage

Right corner radar harness connector (RB04)



Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/black	Sensor ground	—	0V
2	0.35/Light green	CHA CAN H	—	—
3	0.35/Light green and white	CHA CAN L	—	—
5	0.35/purple	Private CAN H	—	—
6	0.35/Purple and white	Private CAN L	—	—
8	0.35/gray-red	Radar power 12V	—	Battery voltage

8.24.5.4 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F187	Part No	-	-	-	-
F18A	Supplier code	-	-	-	-
F197	ECU name	-	-	-	-
F189	Software version No	-	-	-	-
F089	Hardware version No	-	-	-	-
F193	Supplier hardware version No	-	-	-	-
F195	Supplier software version No	-	-	-	-
F18C	Part batch No.	-	-	-	-
F180	Version No	-	-	-	-
F190	VIN	-	-	-	-
F010	Logoff configuration	-	-	-	-
F184	Flash fingerprint information	Tool supplier identification	0	255	-
		Year of programming	0	255	-
		Month of programming	1	12	-

		Date of programming	1	31	-
		Equipment No.	-	-	-

A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-

8.24.5.5 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
B111716	Battery voltage is too low	1. Below 9V, ECU not transmitting radio frequency 2. Below 8V, CAN communication turned off	1. Body battery feed 2. Abnormal internal detection circuit of ECU	1. Check battery voltage 2. Replace ECU
B111717	Battery voltage is too high	1. Above 16.5V, ECU not transmitting radio frequency 2. Above 18V, CAN communication turned off	1. Abnormal body battery 2. Abnormal internal detection circuit of ECU	1. Check battery voltage 2. Replace ECU
U007488	CANBUSoff	ECU cannot send a message to bus	1. CAN bus has physical fault 2. Bus is interfered 3. Internal fault of control unit	1. Check CAN bus communication 2. CAN bus is interfered by wireless signal 3. Replace ECU
U010187	Lost communication with TCU	Part of function suppressed, or the whole system function suppressed	1. TCU node fault 2. CAN bus is interfered	1. Check TCU node 2. Check CAN bus
U010186	Invalid communication with TCU	Part of function suppressed, or the whole system function suppressed	1. TCU node fault 2. CAN bus is interfered	1. Check TCU node 2. Check CAN bus
U010189	Error of TCU communication with gear message 0x132/0x126 Rolling counter	Part of function suppressed, or the whole system function suppressed	1. TCU node fault 2. CAN bus is interfered	1. Check TCU node 2. Check CAN bus
U010183	Error of TCU communication with gear message 0x132/0x126 checksum	Part of function suppressed, or the whole system function suppressed	1. TCU node fault 2. CAN bus is interfered	1. Check TCU node 2. Check CAN bus
U012287	Lost communication with ESP	Part of function suppressed, or the whole system function suppressed	1. ESC node fault 2. CAN bus is interfered	1. Check ESC node 2. Check CAN bus
U012286	Invalid communication with ESP	Part of function suppressed, or the whole system	1. ESP node fault 2. CAN bus is interfered	1. Check ESP node 2. Check CAN bus

		function suppressed		
U012289	Error of ESP communication with deviation rate message 0x1fb Rollingcounter	Part of function suppressed, or the whole system function suppressed	1. ESP node fault 2. CAN bus is interfered	1. Check ESP node 2. Check CAN bus
U012283	Error of ESP communication with deviation rate message 0x1f bchecksum	Part of function suppressed, or the whole system function suppressed	1. ESP node fault 2. CAN bus is interfered	1. Check ESP node 2. Check CAN bus
U010389	Error of ESP communication with vehicle speed message 0x1f8 Rollingcounter	Part of function suppressed, or the whole system function suppressed	1. ESP node fault 2. CAN bus is interfered	1. Check ESP node 2. Check CAN bus
U010383	Error of ESP communication with vehicle speed message 0x1f8 checksum	Part of function suppressed, or the whole system function suppressed	1. ESP node fault 2. CAN bus is interfered	1. Check ESP node 2. Check CAN bus

B111716	Battery voltage is too low	1. Below 9V, ECU not transmitting radio frequency 2. Below 8V, CAN communication turned off	1. Body battery feed 2. Abnormal internal detection circuit of ECU	1. Check battery voltage 2. Replace ECU
U013187	Lost communication with EPS	Part of function suppressed, or the whole system function suppressed	1. EPS node fault 2. CAN bus is interfered	1. Check EPS node 2. Check CAN bus
U014087	Lost communication with BCM	Part of function suppressed, or the whole system function suppressed	1. BCM node fault 2. CAN bus is interfered	1. Check BCM node 2. Check CAN bus
U018687	Lost communication with IVI	Part of function suppressed, or the whole system function suppressed	1. IVI node fault 2. CAN bus is interfered	1. Check IVI node 2. Check CAN bus
U01068A	Communication fault between radars	Part of function suppressed, or the whole system function suppressed	1. Internal CAN bus is interfered 2. Physical fault of internal CAN bus 3. Internal fault of the ECU	1. Check CAN bus communication 2. CAN bus is interfered by wireless signal 3. Replace ECU
C040144	Internal Flash error	The function of the whole system is suppressed	Flash is damaged	Replace the ECU
C040297	Bumper covered by foreign matters	The function of the whole system is attenuated or suppressed	Inside/outside of the bumper blocked by foreign matters	1. Check the foreign matters inside and outside the bumper 2. Replace ECU
C040396	Offline electrical inspection angle calibration failed - internal fault	The function of the whole system is suppressed	Internal fault of the ECU	Replace the ECU
C040378	Offline electrical inspection angle calibration failed - environmental interference	Failure to carry out angle calibration, part of function suppressed, or the whole system function suppressed	Calibration site is interfered	1. Check the electrical environment of the calibration site 2. Replace ECU
C04037C	Offline electrical inspection angle calibration failed - triangular cone out of range	Failure to carry out angle calibration, part of function suppressed, or the whole system function suppressed	Triangular cone out of range	1. Check whether the triangle cone is within the range 2. Inspect the installation angle 3. Replace ECU
C040395	Excessive deviation of radar installation angle	The function of the whole system is attenuated or suppressed, false reporting, reporting	Deviation of radar installation angle	1. Check whether the screw is loose and whether the bracket is normal

		omission		2. Replace ECU

8.24.5.6 DTC: B111716, B111717

DTC	Description
B111716	Battery voltage is too low
B111717	Battery voltage is too high

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.
Standard voltage value: **11~14V**
B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the fuses IF19, IF01 and IF23 of the body controller.

A Check whether fuses IF19, IF01 and IF23 are blown.

No → Go to Step 5.

Yes

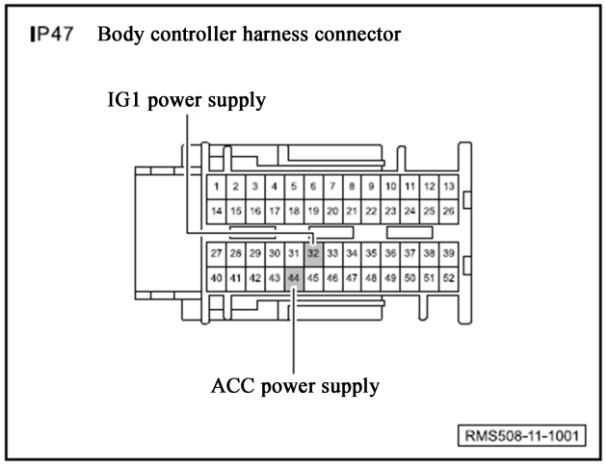
Step 4	Check and repair the circuits of fuses IF19, IF01 and IF23.

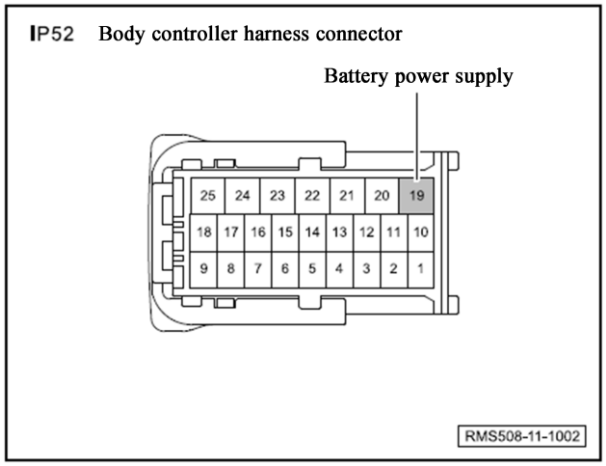
A Check whether the fuses IF19, IF01 and IF23 are short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
The rated values of the fuses are **IF195A, IF235A,** and **IF0120A**
D Confirm whether the body controller works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the body controller.



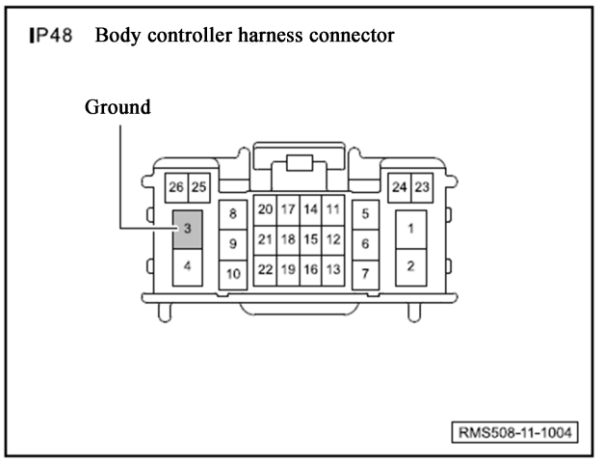


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connectors IP47 and IP52.
C Put the Start switch to “ON” position.
D Measure the voltage of the circuit between terminal 32/44 of the body controller harness connector IP47 and the body ground.
E Measure the voltage of the circuit between terminal 19 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **11~14V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

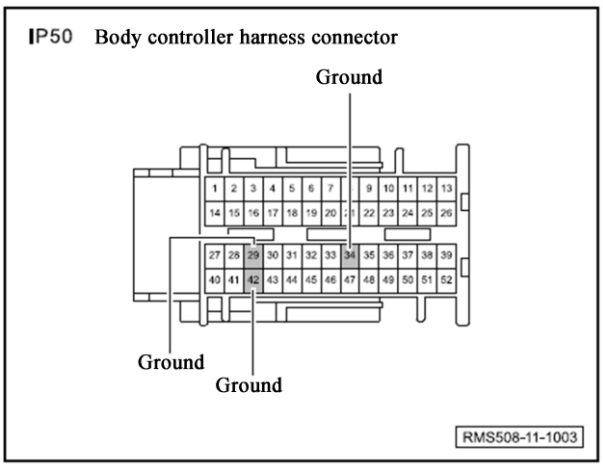
Yes

Step 6	Check the ground circuit of the body controller.



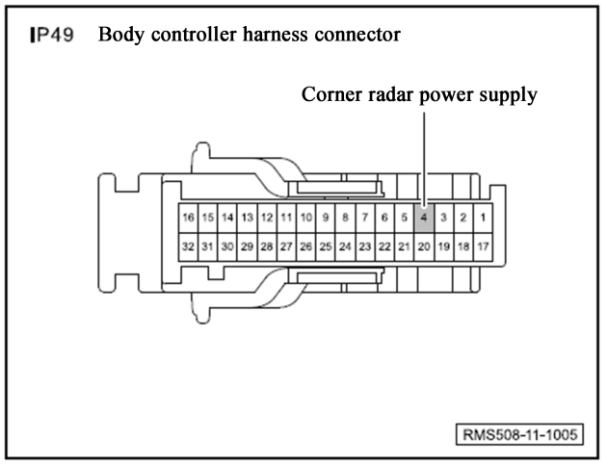
A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connectors IP48 and IP50.
C Measure the resistance of circuit between terminal 3 of the body controller harness connector IP48 and body ground.
D Measure the resistance of circuit between terminal 29/34/42 of the body controller harness connector IP50 and body ground.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

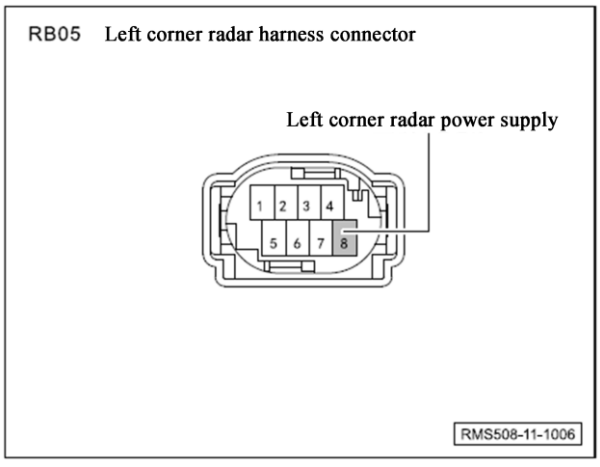
No → Repair or replace the harness.



Yes

Step 7	Check whether the power circuit of the corner radar is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP49.

C Disconnect the left corner radar harness connector RB05.

D Disconnect the right corner radar harness connector RB04.

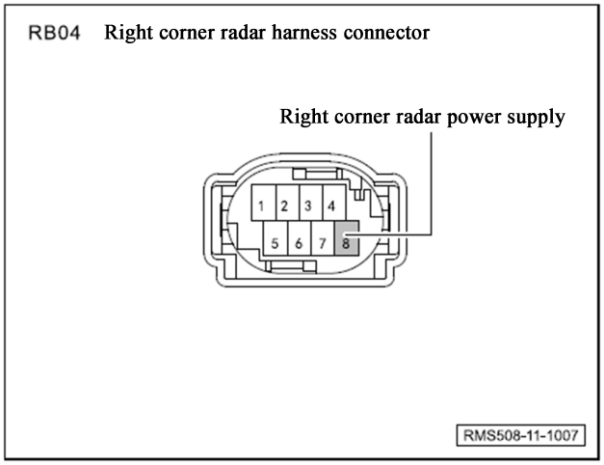
E Measure the resistance of circuit between terminal 4 of the body controller harness connector IP49 and terminal 8 of the left corner radar harness connector RB05

F Measure the resistance of circuit between terminal 4 of the body controller harness connector IP49 and terminal 8 of the right corner radar harness connector RB04.

Standard resistance value: **<1Ω**

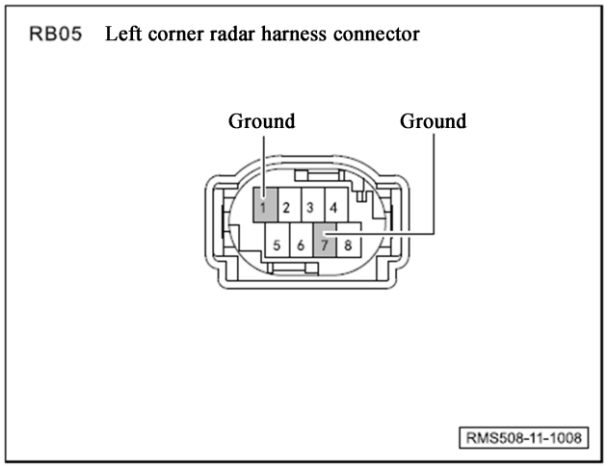
G Confirm whether the resistance conforms to the standard.

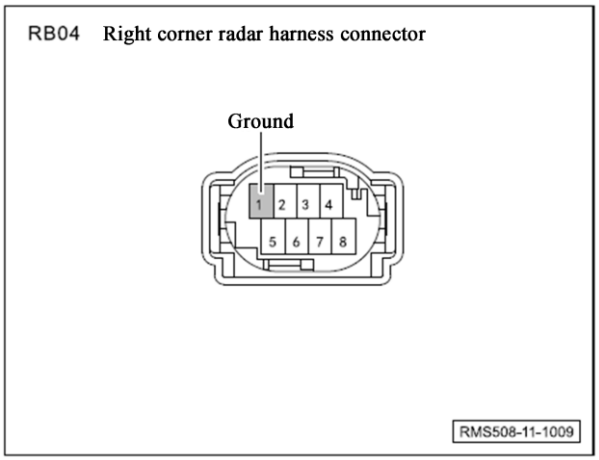
No → Repair or replace the harness.



Yes

Step 8	Check the ground circuit of the corner radar.





A Turn the start switch to "OFF" position.

B Disconnect the left corner radar harness connector RB05.

C Disconnect the right corner radar harness connector RB04.

D Measure the resistance of circuit between terminal 7/1 of the left corner radar harness connector RB05 and the body ground.

E Measure the resistance of circuit between terminal 1 of the right corner radar harness connector RB04 and the body ground.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No — Repair or replace the harness.

Yes

Step 9	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 10	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

8.24.5.7 DTC: U007488

DTC	Description
U007488	CANBUSoff

1. Diagnosis steps

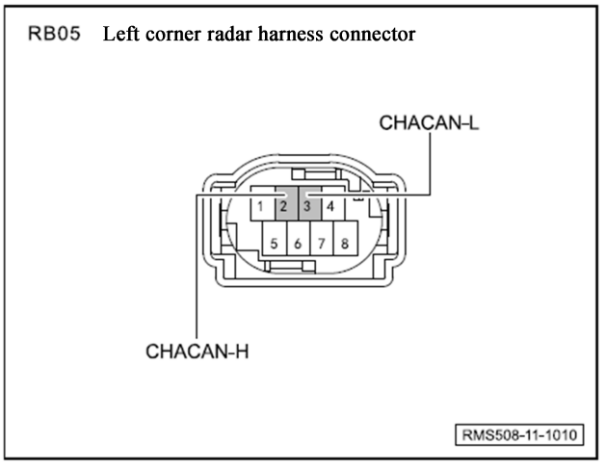
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN communication circuit of the left corner radar.

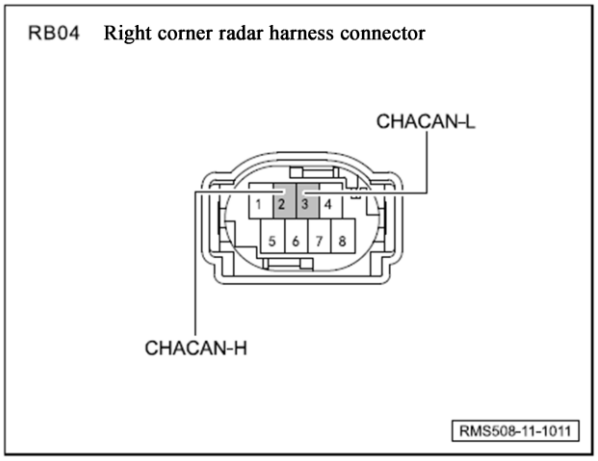


A Turn the start switch to "OFF" position.
B Disconnect the left corner radar harness connector RB05.
C Measure the resistance of circuit between terminals 2 and 3 of the left corner radar harness connector RB05.
Standard resistance value: about **120Ω**
D Confirm whether the resistance conforms to the standard.

No → Check whether the CAN circuit is open-circuited or short-circuited; repair or replace the harness or connector

Yes

Step 3	Check the CAN communication circuit of the right corner radar.



A Turn the start switch to "OFF" position.
B Disconnect the right corner radar harness connector RB04.
C Measure the resistance of circuit between terminals 2 and 3 of the right corner radar harness connector RB04.
Standard resistance value: about **120Ω**
D Confirm whether the resistance conforms to the standard.

No → Check whether the CAN circuit is open-circuited or short-circuited; repair or replace the harness or connector

Yes

Step 4	Check the power supply and ground wires of the left and right corner radars.

A Check whether the power supply and ground wires of the left and right corner radars are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the left and right corner radars.

A Replace the left and right corner radars.
B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.24.5.8 DTC: U012287, U012286.....

DTC	DTC definition
U012287	Lost communication with ESP
U012286	Invalid communication with ESP
U012289	Error of ESP communication with deviation rate message 0x1fbRolling counter
U012283	Error of ESP communication with deviation rate message 0x1fb checksum
U010389	Error of ESP communication with vehicle speed message 0x1f8 Rollingcounter
U010383	Error of ESP communication with vehicle speed message 0x1f8 checksum

1. Diagnosis steps

Step 1	Check the DTCs.

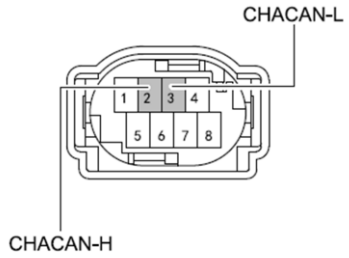
A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

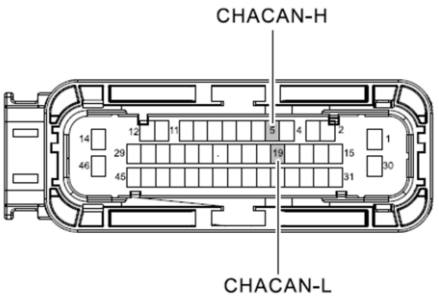
Yes

Step 2	Check the CAN data communication wire between the brake safety control system and the left corner radar.

RB05 Left corner radar harness connector



FB57 Brake safety control system harness connector

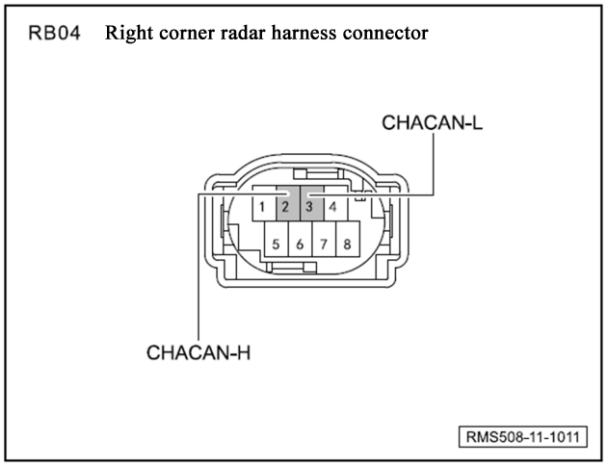


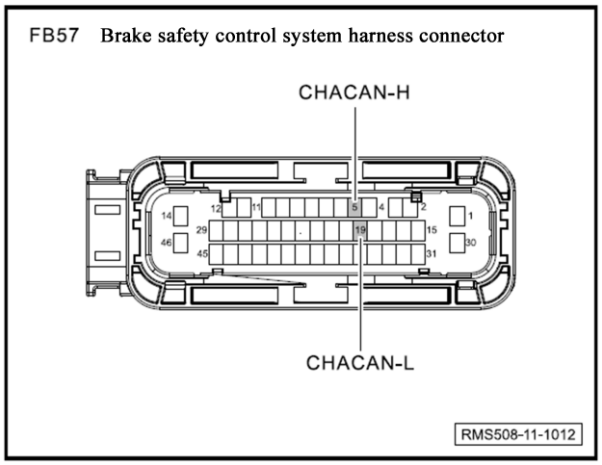
A Turn the start switch to "OFF" position.
B Disconnect the brake safety control system harness connector FB57.
C Disconnect the left corner radar harness connector RB05.
D Measure the resistance between terminal 5 of the brake safety control system's controller harness connector FB57 and terminal 2 of the left corner radar harness connector RB05.
E Measure the resistance between terminal 19 of the brake safety control system's controller harness connector FB57 and terminal 3 of the left corner radar harness connector RB05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the brake safety control system and the right corner radar.





A Turn the start switch to "OFF" position.
B Disconnect the brake safety control system harness connector FB57.
C Disconnect the right corner radar harness connector RB04.
D Measure the resistance between terminal 5 of the brake safety control system's controller harness connector FB57 and terminal 2 of the right corner radar harness connector RB04.
E Measure the resistance between terminal 19 of the brake safety control system's controller harness connector FB57 and terminal 3 of the right corner radar harness connector RB04.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the brake safety control system.

A Replace the brake safety control system.
B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 6	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.24.5.9 DTC: U013187

DTC	DTC definition
U013187	Lost communication with EPS

1. Diagnosis steps

Step 1	Check the DTCs.

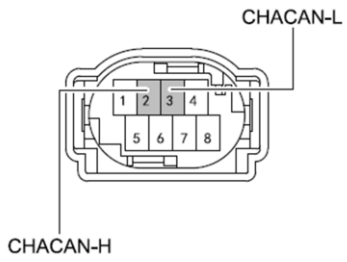
A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

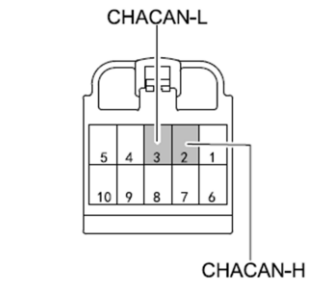
Yes

Step 2	Check the CAN data communication wire between the EPS controller and the left corner radar.

RB05 Left corner radar harness connector



IP06 EPS controller harness connector



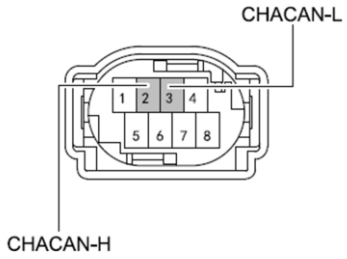
A Turn the start switch to "OFF" position.
B Disconnect the EPS controller harness connector IP06.
C Disconnect the left corner radar harness connector RB05.
D Measure the resistance between terminal 2 of the EPS controller harness connector IP06 and terminal 2 of the left corner radar harness connector RB05.
E Measure the resistance between terminal 3 of the EPS controller harness connector FB06 and terminal 3 of the left corner radar harness connector RB05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

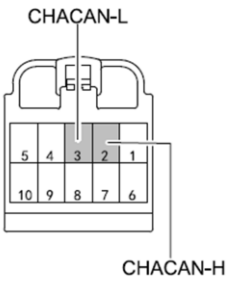
Step 3	Check the CAN data communication wire between the EPS controller and the right corner radar.

RB04 Right corner radar harness connector



RMS508-11-1011

IP06 EPS controller harness connector



RMS508-11-1013

A Turn the start switch to "OFF" position.

B Disconnect the EPS controller harness connector IP06.

C Disconnect the right corner radar harness connector RB04.

D Measure the resistance between terminal 2 of the EPS controller harness connector IP06 and terminal 2 of the right corner radar harness connector RB04.

E Measure the resistance between terminal 3 of the EPS controller harness connector IP06 and terminal 3 of the right corner radar harness connector RB04.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the EPS controller.

A Check whether the power supply and ground wires of the EPS controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

No

Step 6	Replace the left and right corner radars.

A Replace the left and right corner radars.
B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.24.5.10 DTC: U014087

DTC	DTC definition
U014087	Lost communication with BCM

1. Diagnosis steps

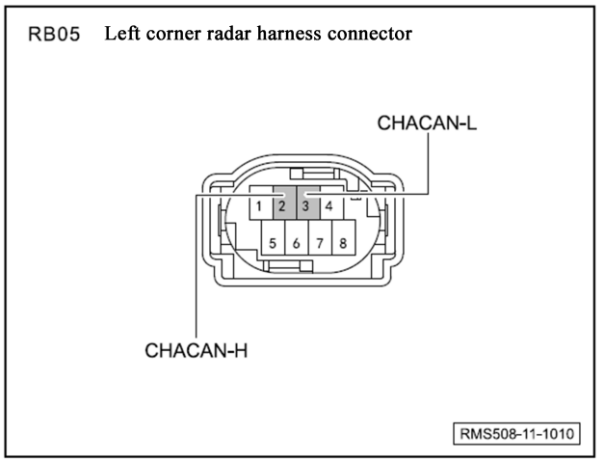
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

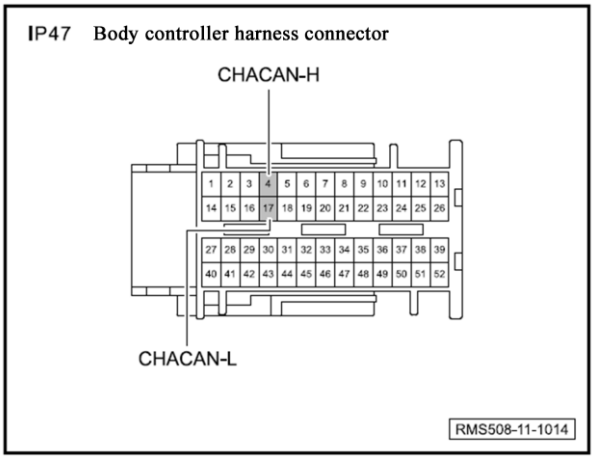
Yes

Step 2	Check the CAN data communication wire between the body controller and the left corner radar.



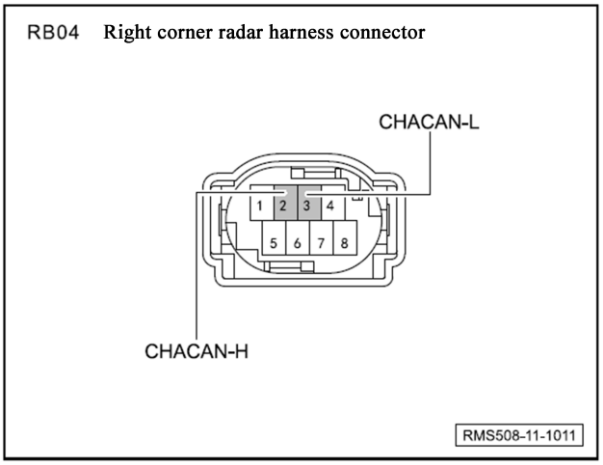
A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the left corner radar harness connector RB05.
D Measure the resistance of circuit between terminal 4 of the body controller harness connector IP47 and terminal 2 of the left corner radar harness connector RB05.
E Measure the resistance of circuit between terminal 17 of the body controller harness connector IP47 and terminal 3 of the left corner radar harness connector RB05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

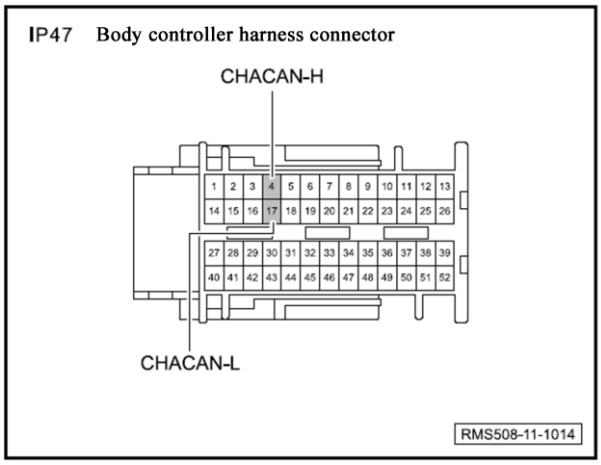
No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the CAN data communication wire between the body controller and the right corner radar.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the right corner radar harness connector RB04.

D Measure the resistance of circuit between terminal 4 of the body controller harness connector IP47 and terminal 2 of the right corner radar harness connector RB04.

E Measure the resistance of circuit between terminal 17 of the body controller harness connector IP47 and terminal 3 of the right corner radar harness connector RB04.
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 6	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.24.5.11 DTC: U018687

DTC	DTC definition
U018687	Lost communication with IVI

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

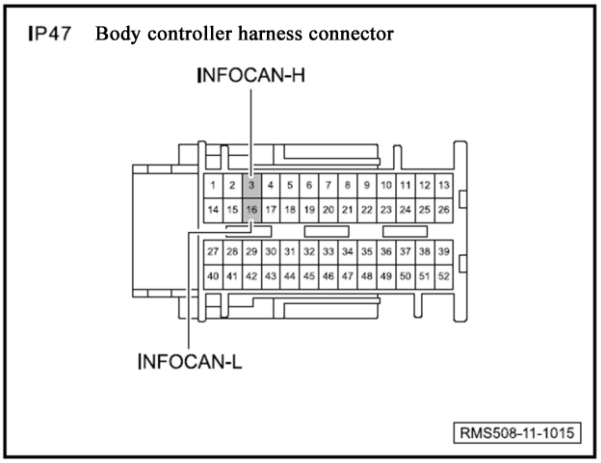
D Read the DTC again.

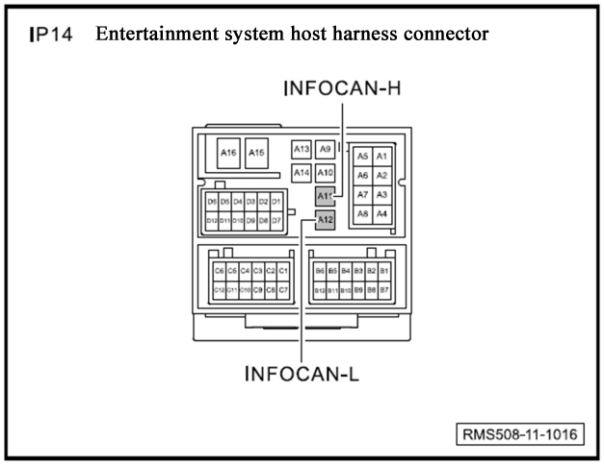
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the entertainment system host and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the entertainment system host harness connector IP14.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal A12 of the entertainment system host harness connector IP14 and terminal 16 of the body controller harness connector IP47.

E Measure the resistance between terminal A11 of the entertainment system host harness connector IP14 and terminal 3 of the body controller harness connector IP47.

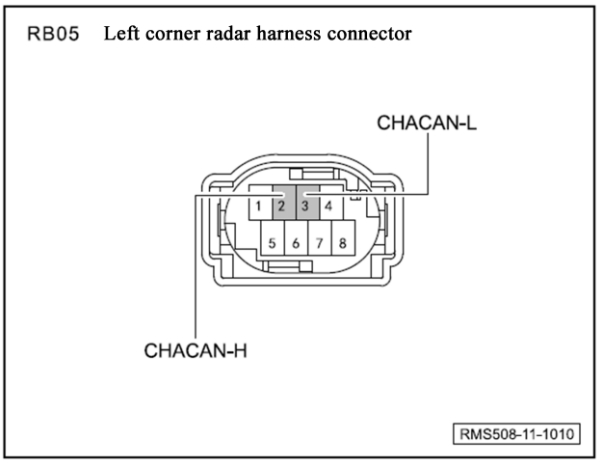
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the CAN data communication wire between the left corner radar and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the left corner radar harness connector RB05.

C Disconnect body controller harness connector IP47

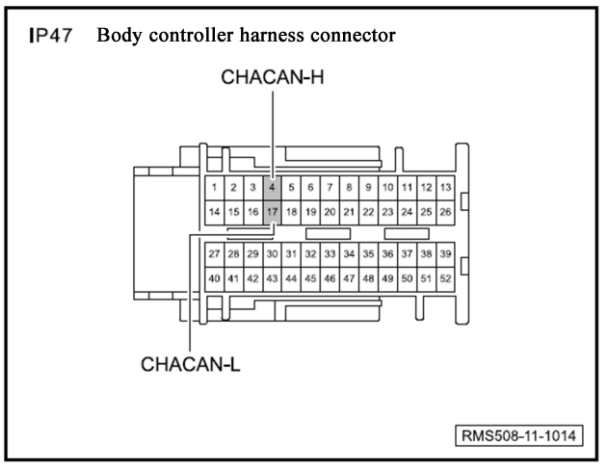
D Measure the resistance between terminal 2 of the left corner radar harness connector RB05 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 3 of the left corner radar harness connector RB05 and terminal 17 of the body controller harness connector IP47.

Standard resistance value: **<1Ω**

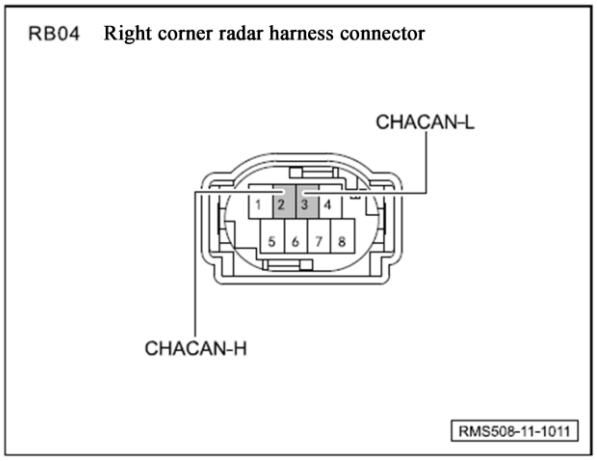
F Confirm whether the resistance conforms to the standard.

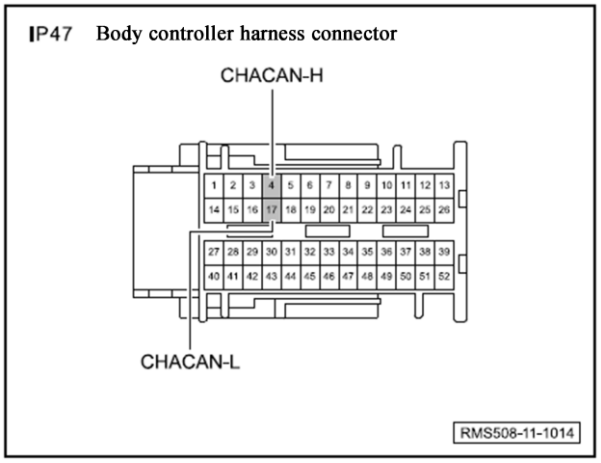
No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the CAN data communication wire between the right corner radar and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the right corner radar harness connector RB04.

C Disconnect body controller harness connector IP47

D Measure the resistance between terminal 2 of the right corner radar harness connector RB04 and terminal 4 of the body controller harness connector IP47.

E Measure the resistance between terminal 3 of the right corner radar harness connector RB04 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 5	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 6	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 8	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.24.5.12 DTC: U01068A

DTC	DTC definition
U01068A	Communication fault between radars

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

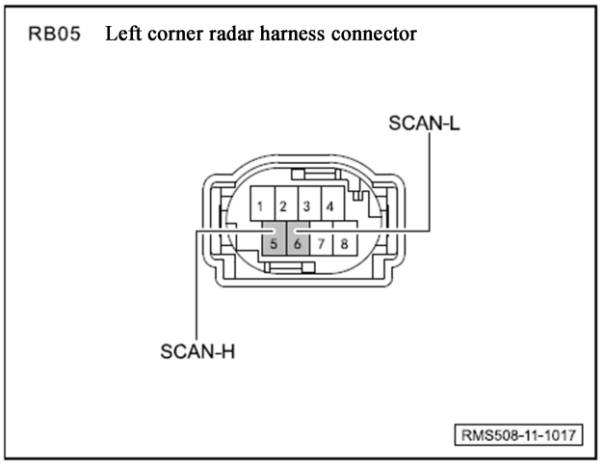
D Read the DTC again.

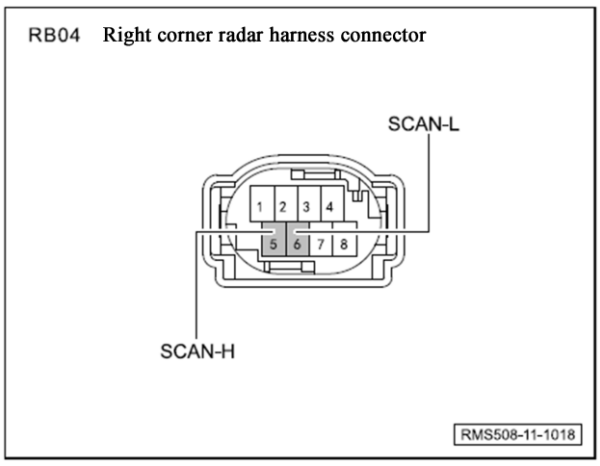
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the left and right corner radars.





A Turn the start switch to "OFF" position.

B Disconnect the left corner radar harness connector RB05.

C Disconnect the right corner radar harness connector RB04.

D Measure the resistance between terminal 5 of the left corner radar harness connector RB05 and terminal 5 of the right corner radar harness connector RB04.

E Measure the resistance between terminal 6 of the left corner radar harness connector RB05 and terminal 6 of the right corner radar harness connector RB04.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the left and right corner radar sensors.

A Check whether the power supply and ground wires of the left and right corner radar sensors are normal.

No → Repair or replace the harness or connector.

Yes

Step 4	Replace the left and right corner radars.

A Replace the left and right corner radars.
B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.24.5.13 DTC: C040144

DTC	Description
C040144	Internal Flash error

1. Diagnosis steps

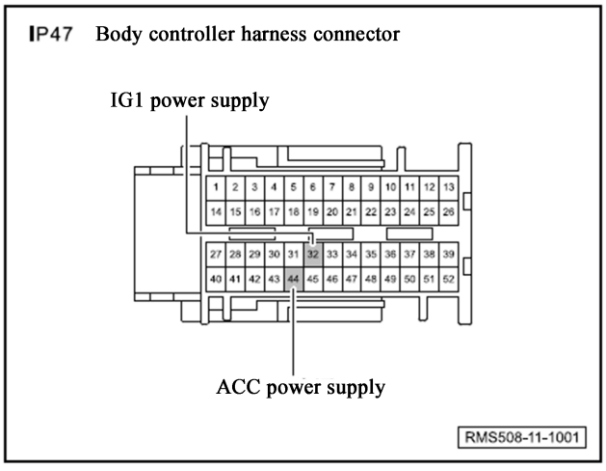
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

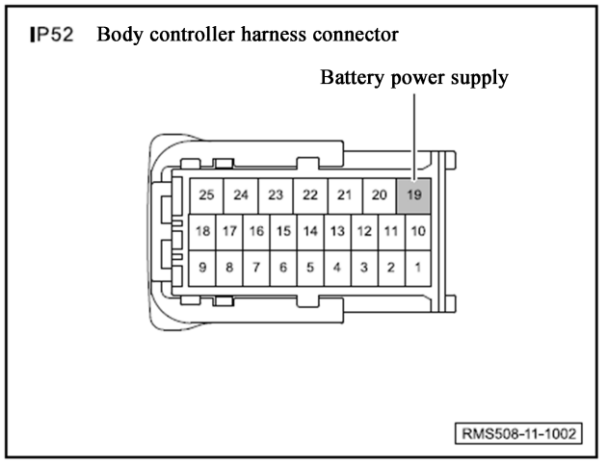
Yes

Step 2	Check the power circuit of the body controller.



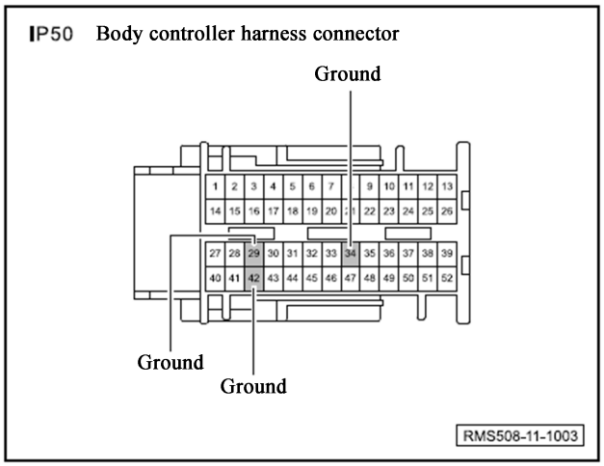
A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connectors IP47 and IP52.
C Put the Start switch to “ON” position.
D Measure the voltage of the circuit between terminal 32/44 of the body controller harness connector IP47 and the body ground.
E Measure the voltage of the circuit between terminal 19 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **11~14V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.



Yes

Step 3	Check the ground circuit of the body controller.



A Turn the start switch to "OFF" position.

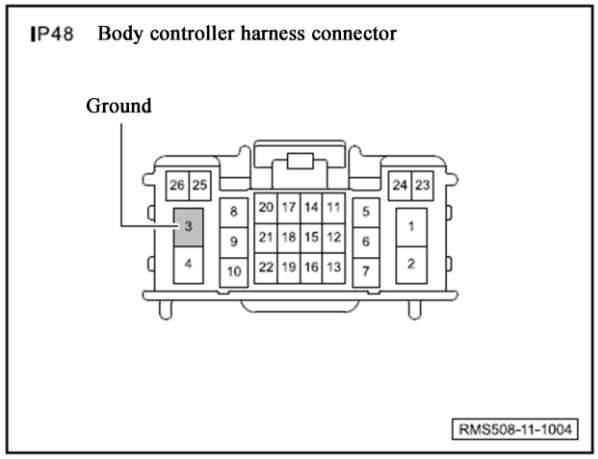
B Disconnect the body controller harness connectors IP48 and IP50.

C Measure the resistance of circuit between terminal 29/34/42 of the body controller harness connector IP50 and body ground.

D Measure the resistance of circuit between terminal 3 of the body controller harness connector IP48 and body ground.

Standard resistance value: **<1Ω**

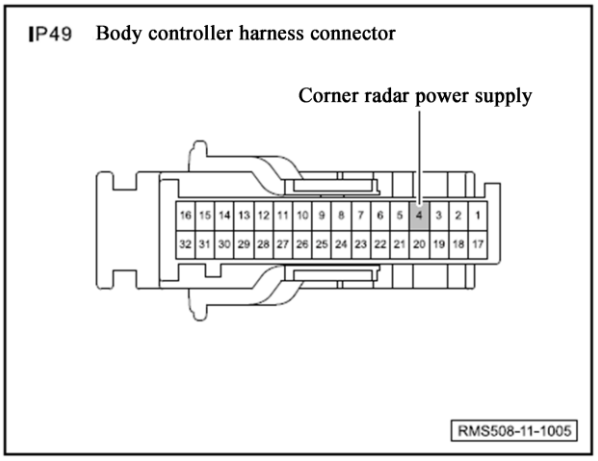
E Confirm whether the resistance conforms to the standard.

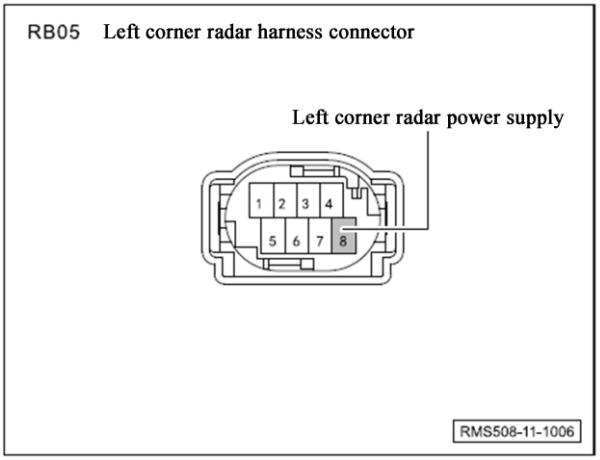


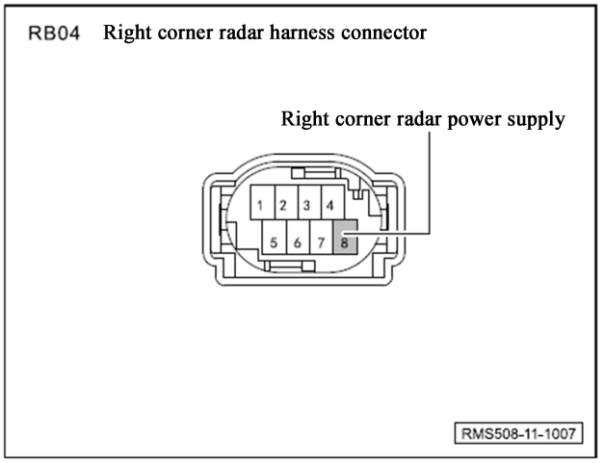
No — Repair or replace the harness.

Yes

Step 4	Check whether the power circuit of the corner radar is open-circuited.







A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP49.

C Disconnect the left corner radar harness connector RB05.

D Disconnect the right corner radar harness connector RB04.

E Measure the resistance of circuit between terminal 4 of the body controller harness connector IP49 and terminal 8 of the left corner radar harness connector RB05

F Measure the resistance of circuit between terminal 4 of the body controller harness connector IP49 and terminal 8 of the right corner radar harness connector RB04.

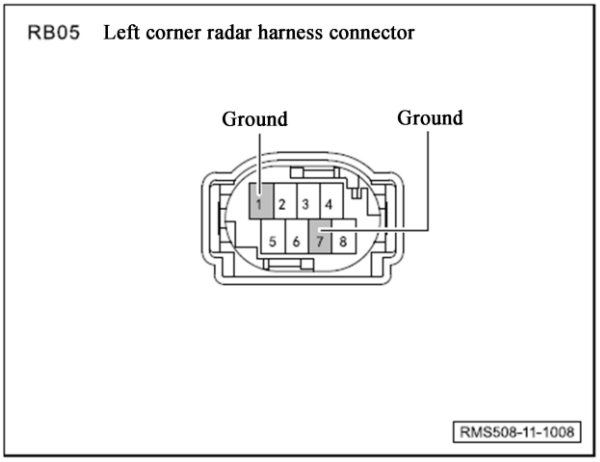
Standard resistance value: **<1Ω**

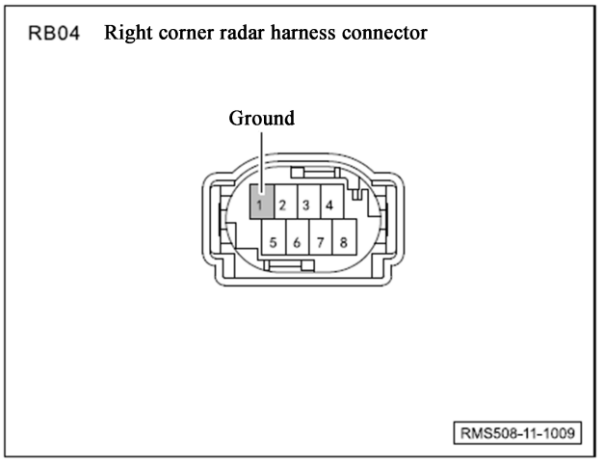
G Confirm whether the resistance conforms to the standard.

No	Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the corner radar.





A Turn the start switch to "OFF" position.
B Disconnect the left corner radar harness connector RB05.
C Disconnect the right corner radar harness connector RB04.
D Measure the resistance of circuit between terminal 7/1 of the left corner radar harness connector RB05 and the body ground.
E Measure the resistance of circuit between terminal 1 of the right corner radar harness connector RB04 and the body ground.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

No

Step 7	Replace the left and right corner radars.

A Replace the left and right corner radars.
B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.24.5.14 DTC: C040297

DTC	Description
C040297	Bumper covered by foreign matters

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

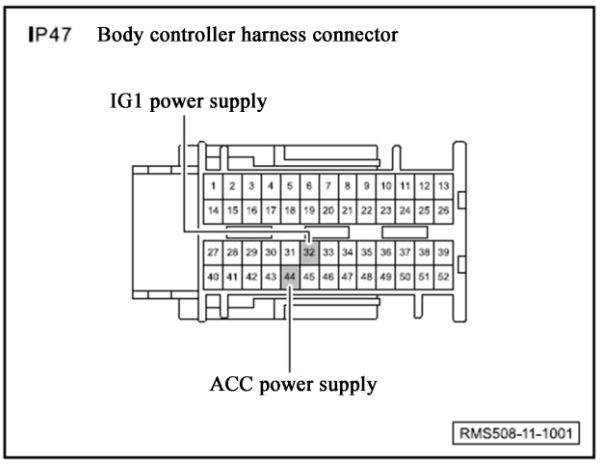
Step 2	Check the radar sensor.

A Check whether the radar sensor is covered with ice, rain, snow or other foreign matters.

Yes → Remove foreign matters.

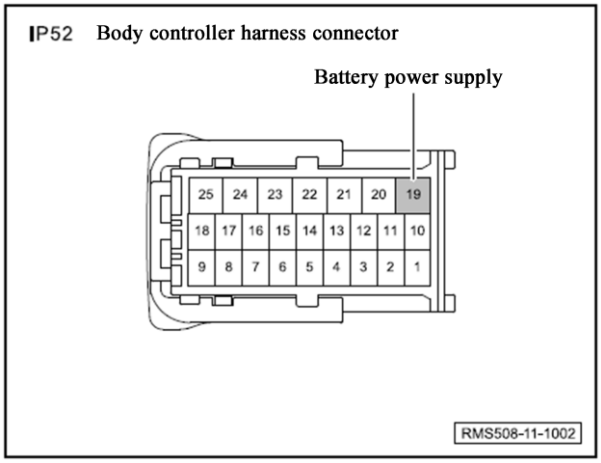
No

Step 3	Check the power circuit of the body controller.



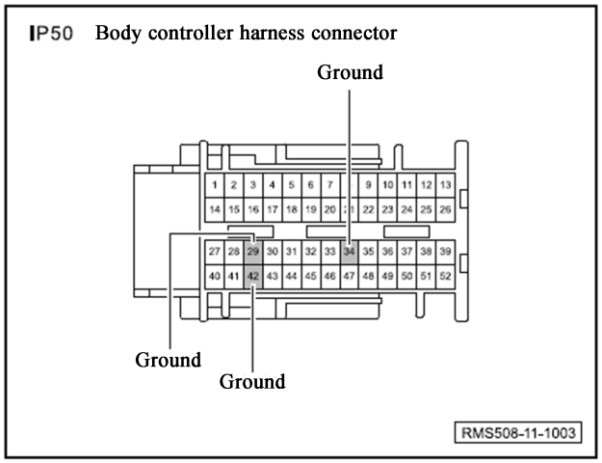
A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connectors IP47 and IP52.
C Put the Start switch to “ON” position.
D Measure the voltage of the circuit between terminal 32/44 of the body controller harness connector IP47 and the body ground.
E Measure the voltage of the circuit between terminal 19 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **11~14V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.



Yes

Step 4	Check the ground circuit of the body controller.



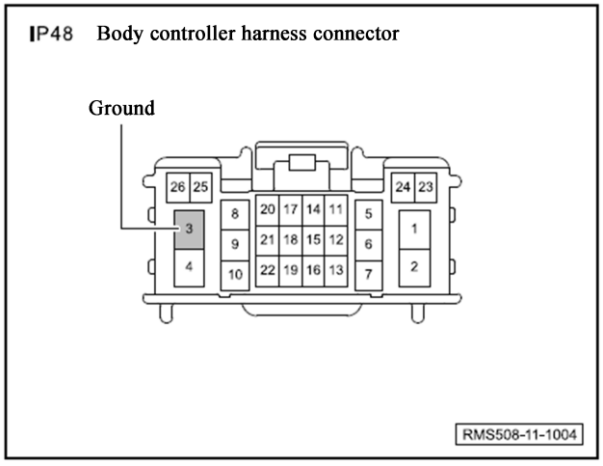
A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connectors IP50 and IP48.

C Measure the resistance of circuit between terminal 29/34/42 of the body controller harness connector IP50 and body ground.

D Measure the resistance of circuit between terminal 3 of the body controller harness connector IP48 and body ground.
Standard resistance value: **<1Ω**

E Confirm whether the resistance conforms to the standard.



No — Repair or replace the harness.

Yes

Step 5	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.24.5.15 DTC: C040396, C040378 ...

DTC	Description
C040396	Offline electrical inspection angle calibration failed - internal fault
C040378	Offline electrical inspection angle calibration failed - environmental interference
C04037C	Offline electrical inspection angle calibration failed - triangular cone out of range
C040395	Excessive deviation of radar installation angle

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again. E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

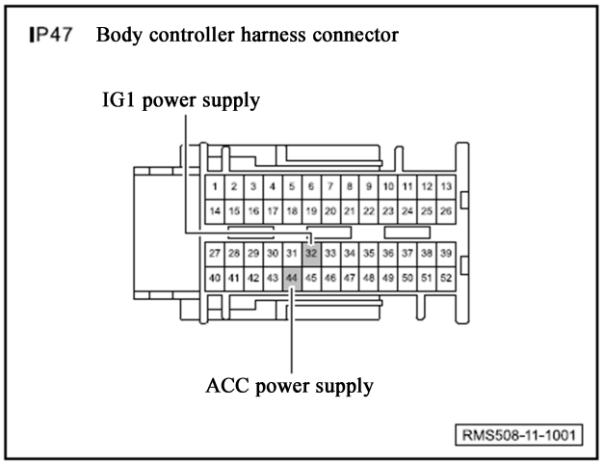
Step 2	Perform radar sensor calibration procedure.

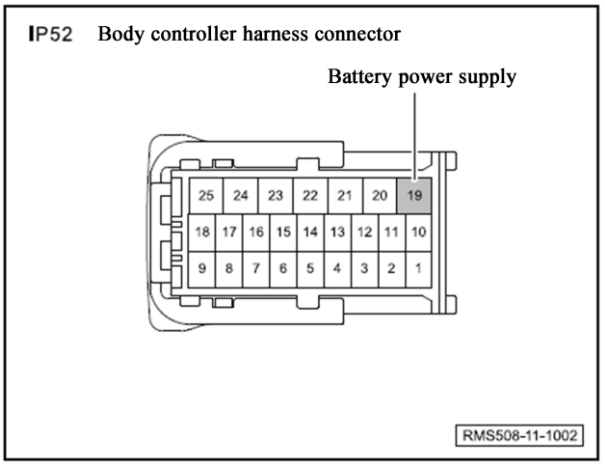
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to ON, and perform the radar sensor calibration procedure according to the prompts of the diagnostic scanner.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Check the power circuit of the body controller.



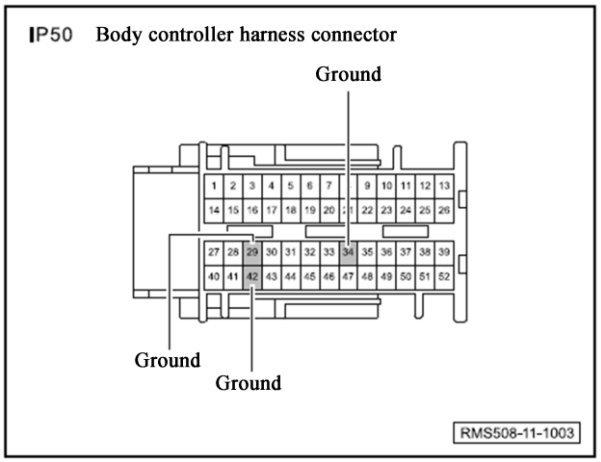


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connectors IP47 and IP52.
C Put the Start switch to “ON” position.
D Measure the voltage of the circuit between terminal 32/44 of the body controller harness connector IP47 and the body ground.
E Measure the voltage of the circuit between terminal 19 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **11~14V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

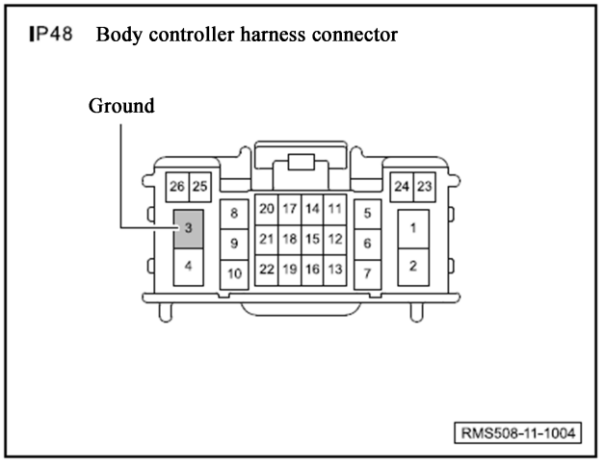
Yes

Step 4	Check the ground circuit of the body controller.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connectors IP50 and IP48.
C Measure the resistance of circuit between terminal 29/34/42 of the body controller harness connector IP50 and body ground.
D Measure the resistance of circuit between terminal 3 of the body controller harness connector IP48 and body ground.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 5	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.24.6 Removal and installation

8.24.6.1 Removal and installation of rear corner millimeter wave radar assembly

Disassembly procedures

Tip:

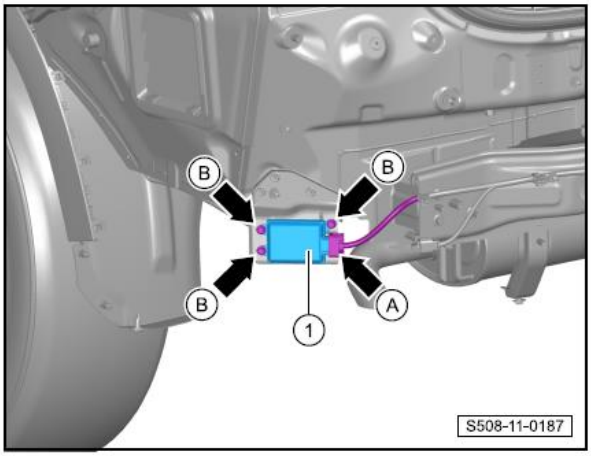
The removal and installation procedures are only for the left rear corner millimeter wave radar assembly, which can be basically referred to for the right one.

Notes

Remove and install the rear corner millimeter wave radar assembly with care to avoid collision and moisture.

During removal and installation, do not touch connector pins with your hands or forcefully remove the housing. Otherwise, the internal electric elements can be damaged.

1 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



2 Remove the rear corner millimeter wave radar assembly

a. Disconnect the connector (see arrow A) of rear corner millimeter-wave radar assembly.

b. Unscrew the fixing bolt (see arrow B) and remove the rear corner millimeter wave radar assembly ①.

- Tightening torque of bolt (see arrow **B**): **10±1 N·m**

Installation procedures

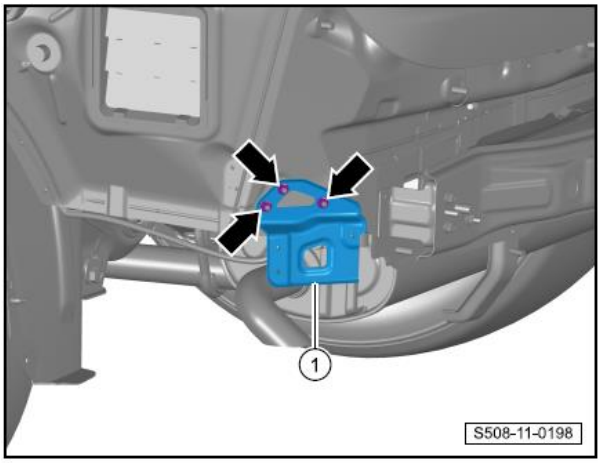
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, match the rear corner millimeter-wave radar. Refer to 1.4.2.6 After-sales matching operation after module replacement.

8.24.6.2 Removal and installation of rear corner millimeter wave radar assembly bracket

Disassembly procedures

1 Remove the rear corner millimeter wave radar assembly. Refer to 8.24.6.1 Removal and installation of rear corner millimeter wave radar assembly.



2 Removal of rear corner millimeter wave radar assembly bracket

a. Unscrew the fixing nut (see the arrow) and take out the rear corner millimeter wave radar assembly bracket ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

8.25 Bluetooth key

8.25.1 System description

8.25.1.1 System Overview

Bluetooth key controller can be connected with cell phone by Bluetooth after customers download the cell phone APP (MyFengon) and perform vehicle binding and real name authentication, so as to control the door lock and start the vehicle as well as some remote control operations, increasing the convenience of using the vehicle.

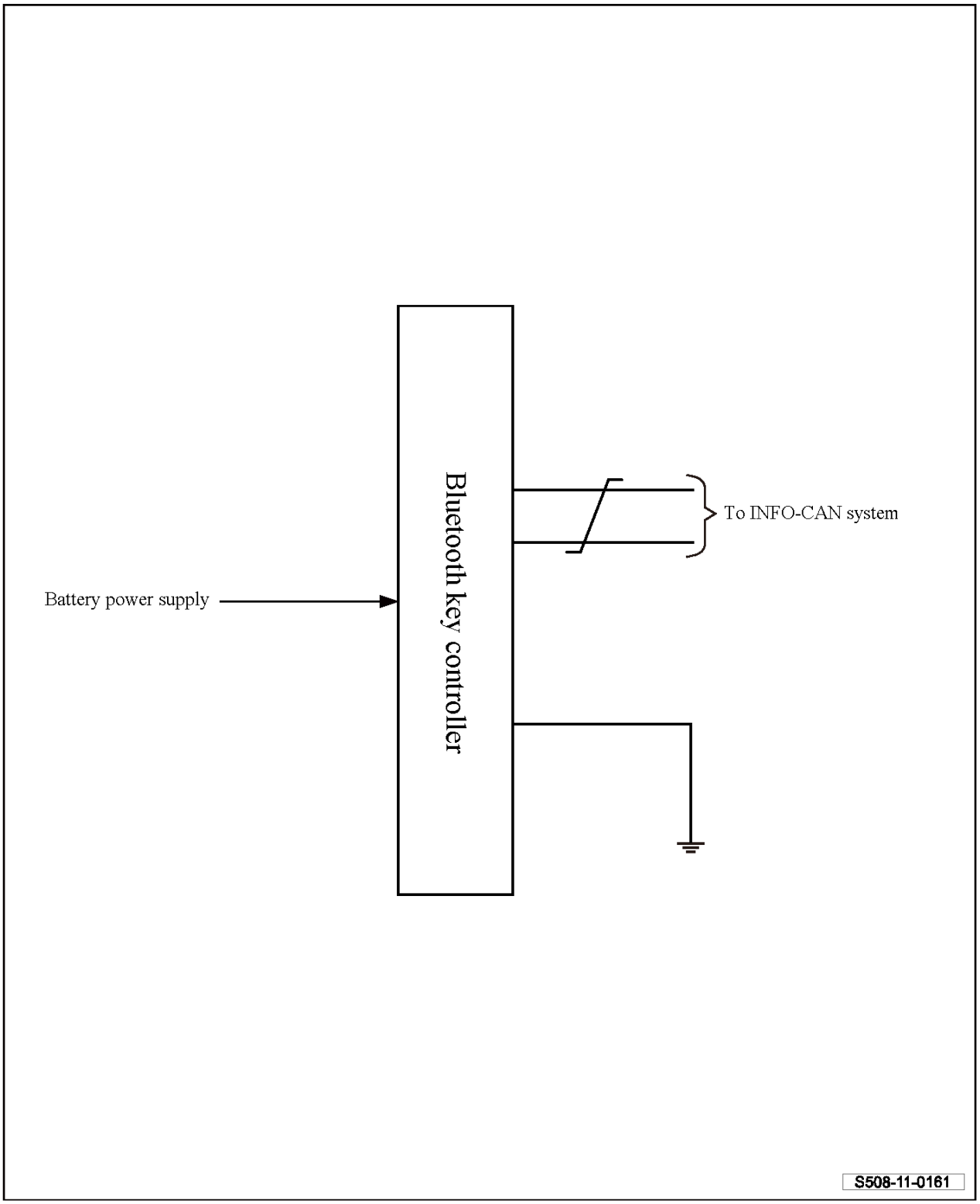
8.25.2 Component position

8.25.2.1 Component position

Component position

8.25.3 Electrical schematic diagram

8.25.3.1 Electrical schematic diagram

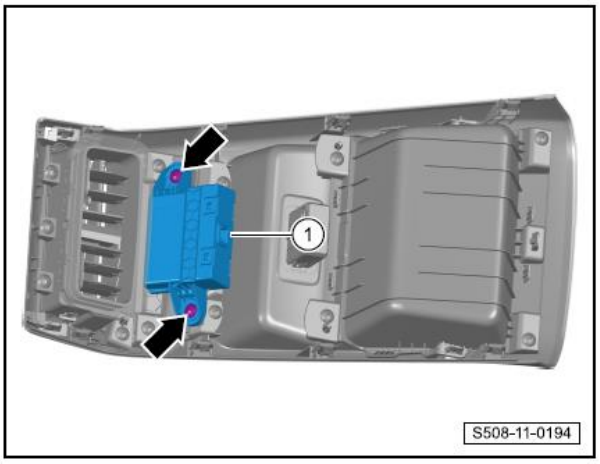


8.25.4 Removal and installation

8.25.4.1 Removal and installation of Bluetooth key controller

Disassembly procedures

1 Remove the control box rear cover assembly. Refer to 9.9.3.4 Removal and installation of control box rear cover assembly



2 Remove the Bluetooth key controller

a. Unscrew the fixing screws (see arrows) and take out the Bluetooth key controller ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the Bluetooth key.

8.26 LSPM

8.26.1 Fastener specifications

8.26.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
LSPM loudspeaker assembly	Cross hexagon head flange bolt M6×1.0×12	8±1

8.26.2 System description

8.26.2.1 System description

Overview

The LSPM loudspeaker emits a warning sound for pedestrians approaching the vehicle when driving at low speed (speed ≤ 30km/h) and when reversing, to remind pedestrians to pay attention to safety. LSPM loudspeaker provides on and off function.

Function description

On and Off

Sound alert system is on by default every time the vehicle is started (can be turned on and off via touch screen).

Notes

The pause switch of the LSPM can work only when there is no other road user in a short distance and no warning is necessary based on surroundings!

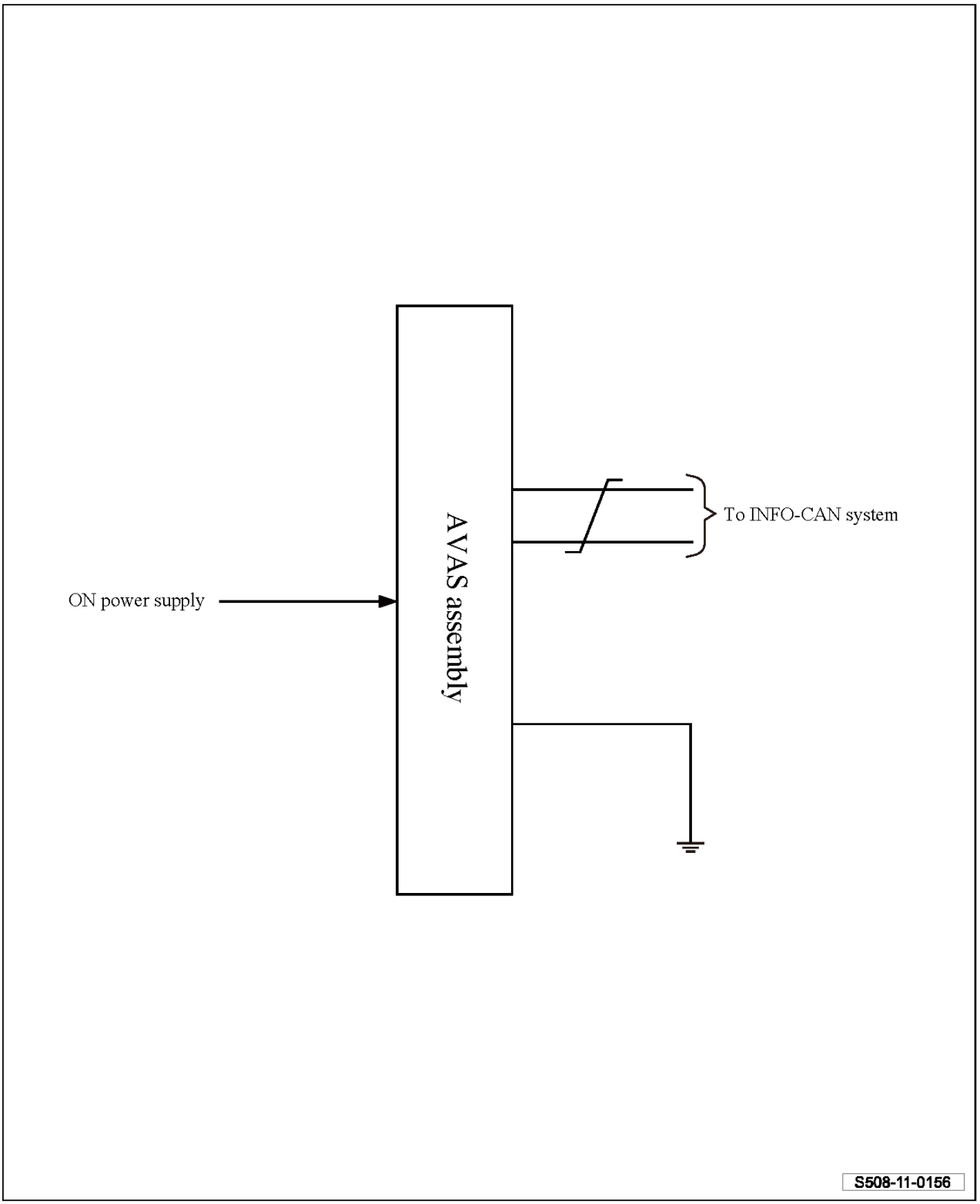
If pedestrians cannot hear the tip tone of the system, they will not notice that there is a vehicle approaching, which may cause traffic accidents and result in pedestrian injuries.

8.26.3 Component position

8.26.3.1 Component position

8.26.4 Electrical schematic diagram

8.26.4.1 Electrical schematic diagram



8.26.5 Removal and installation

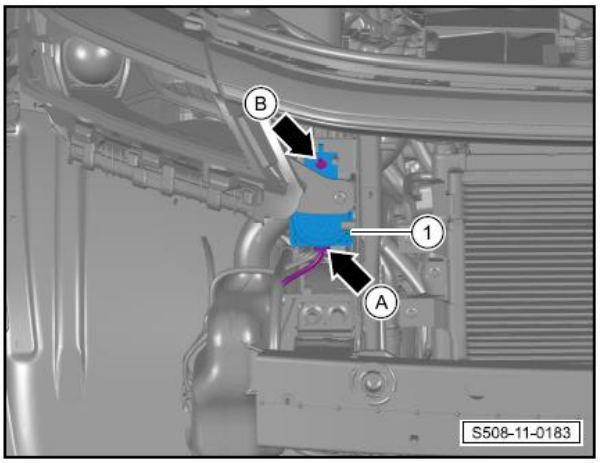
8.26.5.1 Removal and installation of LSPM loudspeaker assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the LSPM loudspeaker assembly

a. Disconnect the connector (see arrow A) of LSPM loudspeaker assembly ①.

b. Unscrew the fixing bolt (see arrow B) and remove the LSPM loudspeaker assembly ①.

- Tightening torque of bolt (see arrow B): 8±1 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the LSPM loudspeaker assembly.

8.27 Data communication system

8.27.1 System description

8.27.1.1 System description

1. Description of CAN communication system

The data communication system includes CAN bus and LIN bus.

CAN (Controller Area Network) is a real-time serial communication channel. It is a vehicle-mounted multi-path communication channel with high communication rate and high fault-tolerant capability. There are multiple controllers on the vehicle to mutually share information. Each controller is connected by 2 communication lines (CAN-H and CAN-L). Each controller can send or receive data, but only receive required data optionally.

2. Overview of CAN communication signal

CAN communication system is connected into a circuit by two terminal resistors. When the CAN signal is sent, the current flows to the CAN-H from the transmitting terminal of the controller, and to the CAN-L via the terminal resistor,then it returns to the receiving end of the controller.

The current flows through CAN-H and CAN-L respectively, and generates voltage drop via the terminal resistor, and forms potential difference between CAN-H and CAN-L.

3. CAN network of the vehicle

The vehicle has four-way CAN communication, and CAN information is forwarded by the body domain controller as the route.

- CHA-CAN includes: Electric power steering (EPS), EPB, BSC, short-range millimeter wave radar (left), short-range millimeter wave radar (right), airbag module (ABM), gear shift module (GSM) and complete vehicle control unit (VCU).
- BD-CAN includes DC conversion system (charger) (DCDC), generator control unit (GCU), motor controller (MCUFO), engine controller (EMS), battery management system (BMS) and high pressure fuel tank controller (PCM).
- INFO-CAN includes: instrument (IC), infotainment system (IVI), wireless charging (WCM), power lift gate controller (PLG), seat controller (DSM), low speed pedestrian alarm (LSPM) and telecommunication unit (TBOX).
- PT-CAN includes: A/C compressor (CCU) and heating controller (PTC).

4. Description of LIN bus system

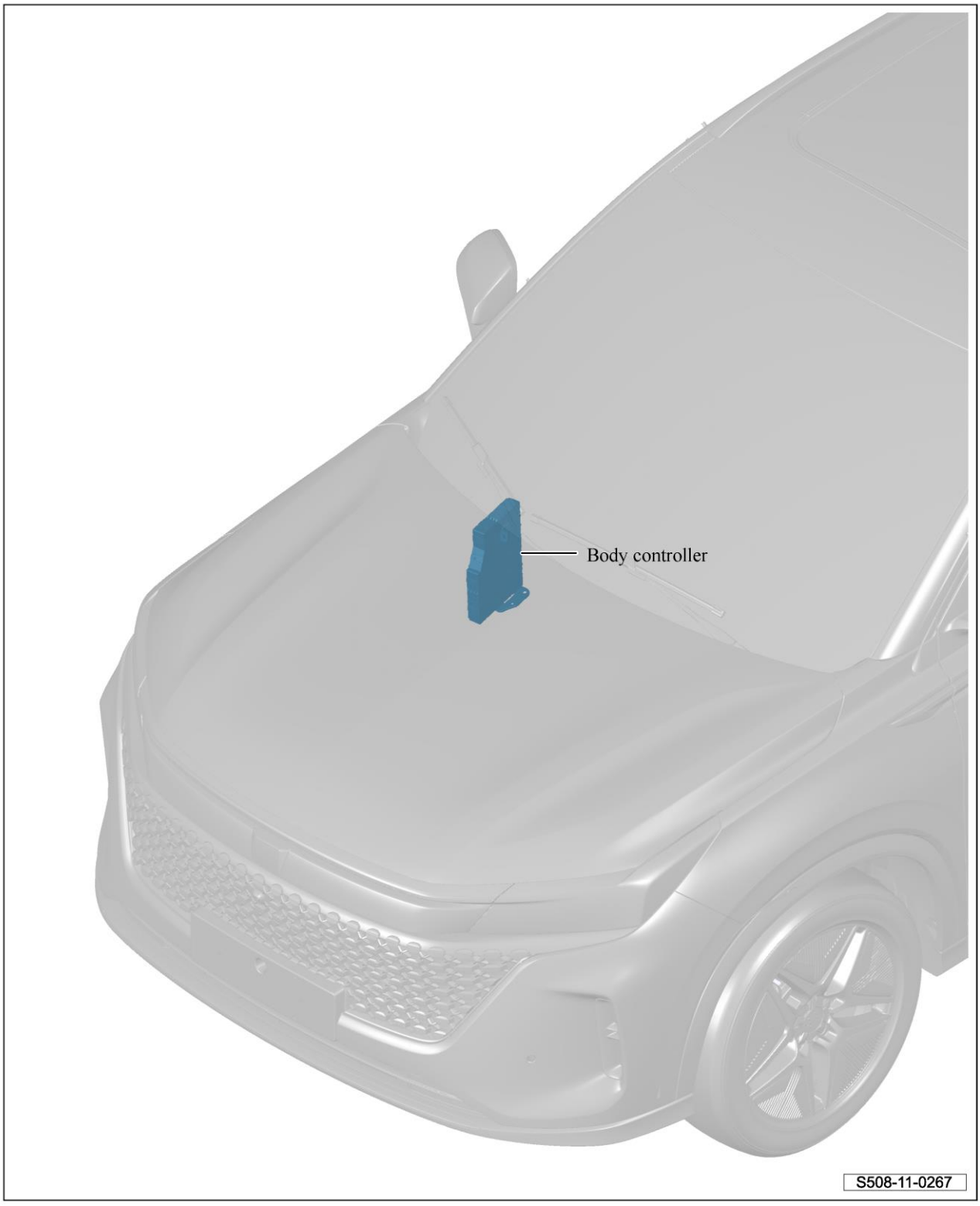
LIN bus is a low-cost serial communication system used in distributed electronic control systems of automobiles, mainly for serial communication between intelligent sensors and actuators.

Characteristics of LIN bus: based on the data format of UART, single-master and multi-slave structure, single-line transmission: 0~12V, communication rate: 19.2kbps.

8.27.2 Component position

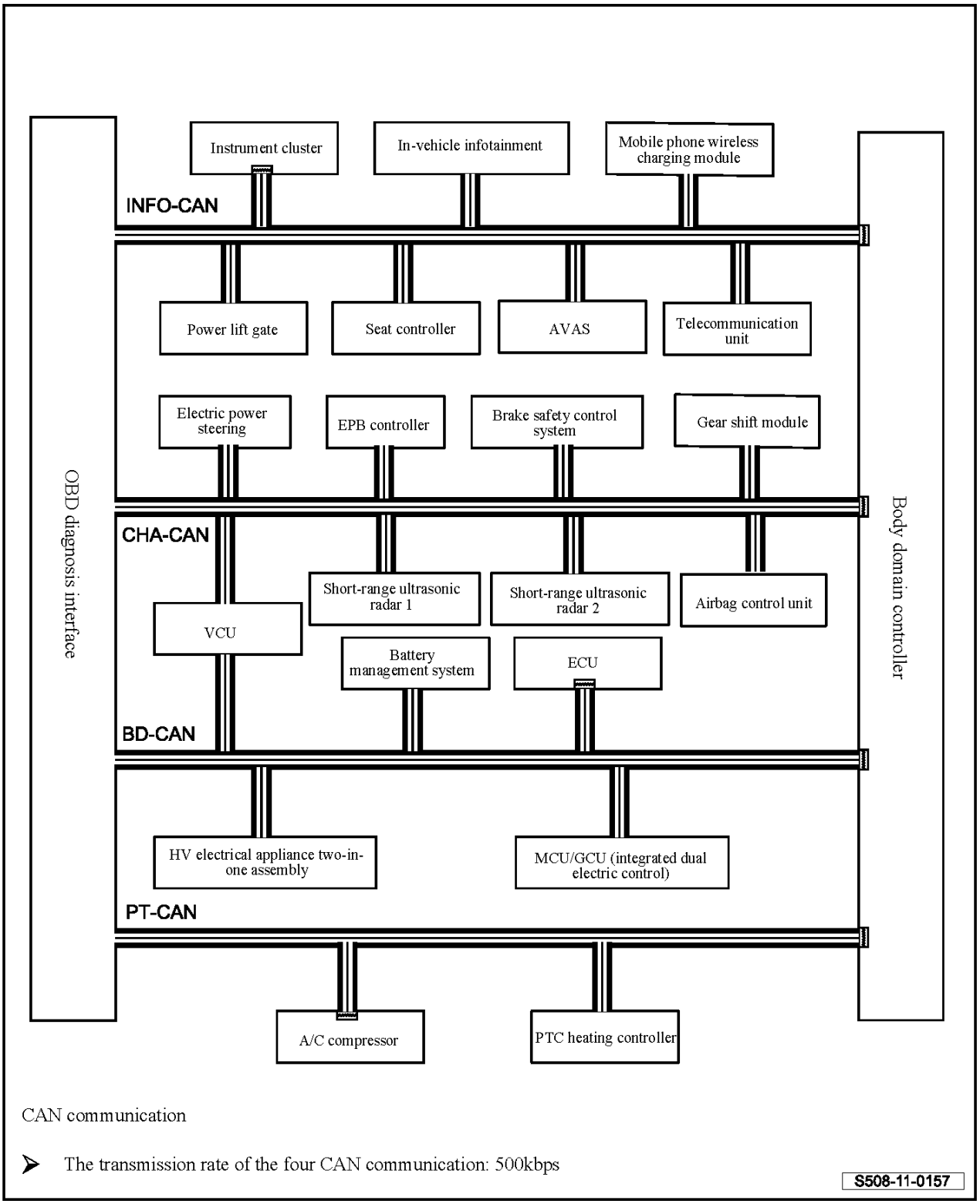
8.27.2.1 Component position

Component position

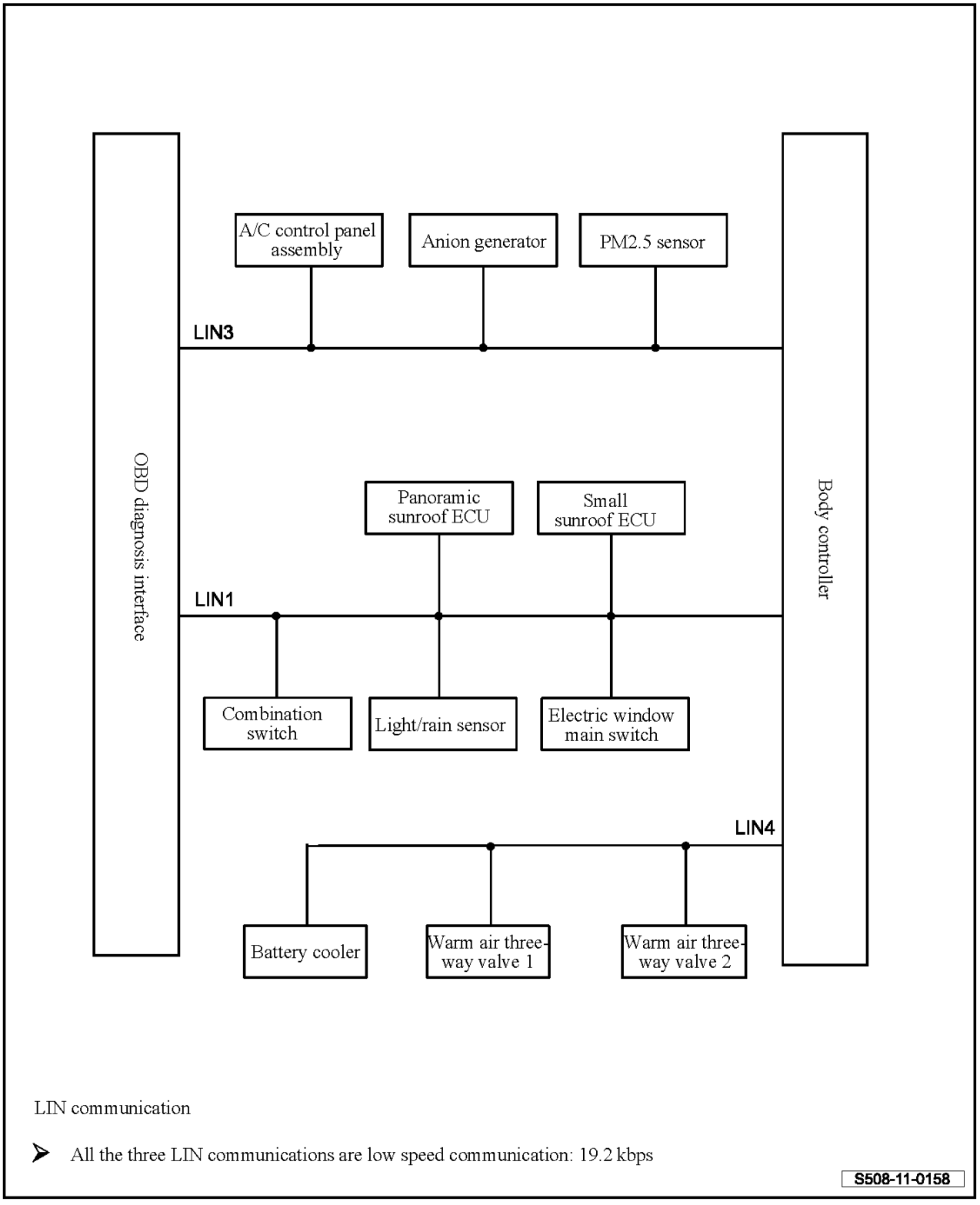


8.27.3 Electrical schematic diagram

8.27.3.1 CAN topology



8.27.3.2 Schematic Diagram of LIN Communication



8.27.4 Removal and installation

8.27.4.1 Removal and installation of gateway controller (integrated body controller)

Disassembly procedures

Tip:

The gateway controller is integrated with the body controller.

1 Remove the gateway controller. Refer to the installation procedures in 8.28.6.1 Removal and installation of the body controller.

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, match the body controller. Refer to 1.4.2.6 After-sales matching operation after module replacement.

8.28 Intelligent body control system

8.28.1 Specification

8.28.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between body domain controller and steering support member assembly	Cross recessed hexagon head flange bolt	6±1
Connection between IMMO antenna and control box cup holder	Cross recessed pan head tapping screw c/w big plain washer cluster screw	2±1
Connection between PS antenna (rear side wall side) and rear wheelhouse inner panel reinforcement	Hexagon flange nut M6	6±1
Connection of PS antenna (rear bumper side) and rear bumper upper moulding	Cross recessed pan head tapping screw c/w big plain washer cluster	3±1

8.28.2 Operation and description

8.28.2.1 Overview of body control system functions

As one of the most important control units in the onboard network, the body control unit (integrated in the body domain controller) connects to the complete vehicle network through the CAN bus to participate in the information exchange. It also uses the local data bus LIN1 to receive and decode the radio frequency module to analyze the received wireless signal, and sends the current tire pressure and temperature information to the instrument for display through the bus. It uses the local data bus LIN to coordinate the panoramic sunroof and the rain/light sensor to work together.

The body domain controller is the main control unit for the following functions:

- Power mode
- Cleaning of wiper
- Window control
- Exterior headlight control
- Turn signal
- Interior light
- Door lock unlocking/locking
- Rear defrosting and rearview mirror heating
- Rearview mirror folding
- Horn control
- Vehicle anti-theft
- Trunk lock control
- PEPS
- Tire pressure monitoring
- Panoramic parking
- Parking assist
- Automatic A/C

8.28.2.2 Function description of PEPS system

Remote control key and emergency mechanical key

The remote control key can intelligently enter, start the engine, search the car, lock or unlock all the doors and open the trunk through the wireless remote control function.

Release the locking mechanism to remove the emergency mechanical key, which can lock or unlock the driver's door, but cannot start the engine.

The mechanical key is used in case of emergency. If the remote control key does not work, the mechanical key can be used to open the driver's door.

Remote control function

Open the windows: With the vehicle powered off, press the key to unlock, and then press and hold the remote key unlock button. The vehicle will lower the four-door windows after unlocking.

Close the windows: With the vehicle powered off, press the remote control key lock, then press and hold the remote control key lock button. The vehicle will raise the four-door windows to the top after the vehicle is locked.

Open/Close the power lift gate: Press the remote key lift gate button twice to open (when the lift gate is completely closed) or close (when the back door is open) the power lift gate. Press the remote key lift gate button once to stop the movement of the lift gate during opening/closing.

Open/Close the sunroof: Set the sunroof on the central control screen to open and close synchronously with the key; press and hold the lock button, and the sunroof is closed; release the button, and the sunroof stops movement; press and hold the unlock button, the sunroof is opened; release the button, and the sunroof stops movement.

Notes

- When the start switch is in the "ACC" or "ON" position, relevant operations cannot be carried out with the remote control key. When operating the remote control key, press the button slowly and firmly.

The remote control transmitter and battery are integrated into the key. The wireless receiver is installed on board. When the battery power is sufficient, the remote control key will function within several meters from the vehicle. But the service range of the remote control key will be reduced when there is any obstacle between the key and the vehicle, when the weather is bad or when the battery power is low.

Remote control key

There is an electric loop inside the smart key to trigger Immobilizer system. If this loop is damaged, the key is unable to start the engine.

- Protect the key against direct sunlight, high temperature or high humidity.
- Avoid dropping the key from high places or placing heavy objects on the key.
- Avoid exposing the key to liquid. Wipe it with a soft cloth immediately if soaked.

Do not disassemble the key unless the battery is replaced. If the circuit in the key is damaged, the engine may not be started and the remote control key may not work.

Immobilizer system

The immobilizer start lock system is used to prevent the vehicle from being stolen. If an improperly-coded key (or other tool) is used to start the engine, the fuel system of the engine will not work.

Low signal intensity of remote control key

When locking/unlocking doors, opening the trunk or starting the engine, the vehicle emits radio waves to determine the position of the remote control key. In the following cases, locking and unlocking doors, opening the trunk or starting the engine may be obstructed or operated unsteadily:

- The equipment nearby is emitting strong radio waves.
- The remote key is carried together with telecommunication equipment, a laptop, a mobile phone or a wireless signal transmitter.
- Any metal object contacts or covers the remote control key.

Description of remote control key battery power consumption

The communication between the remote control key and the vehicle may consume the battery power of the key.

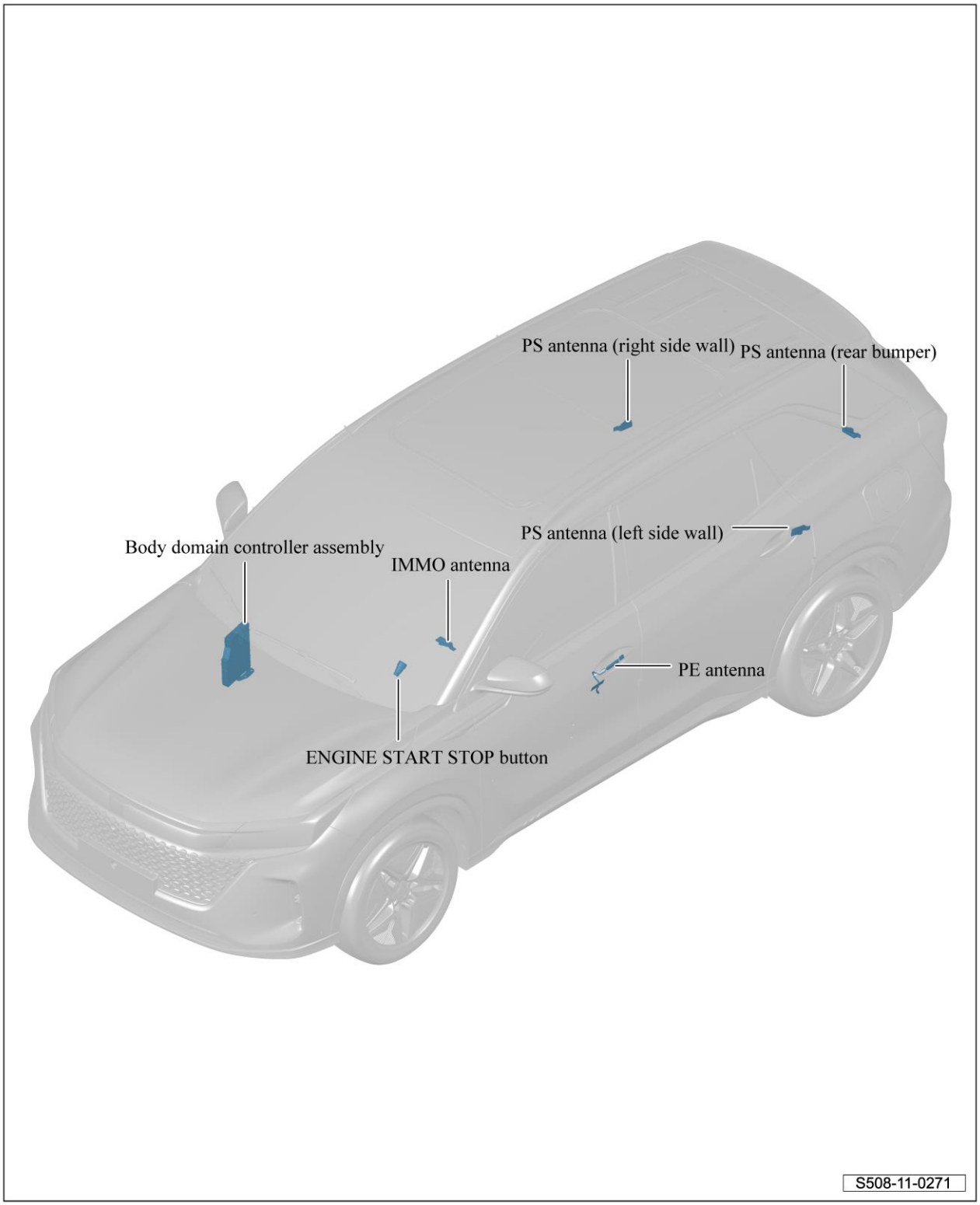
The battery life is about 1 year, depending on the frequency of daily use.

Strong radio waves will affect the consumption of battery power, so please avoid placing the battery near TV sets and personal computers.

8.28.3 Component position

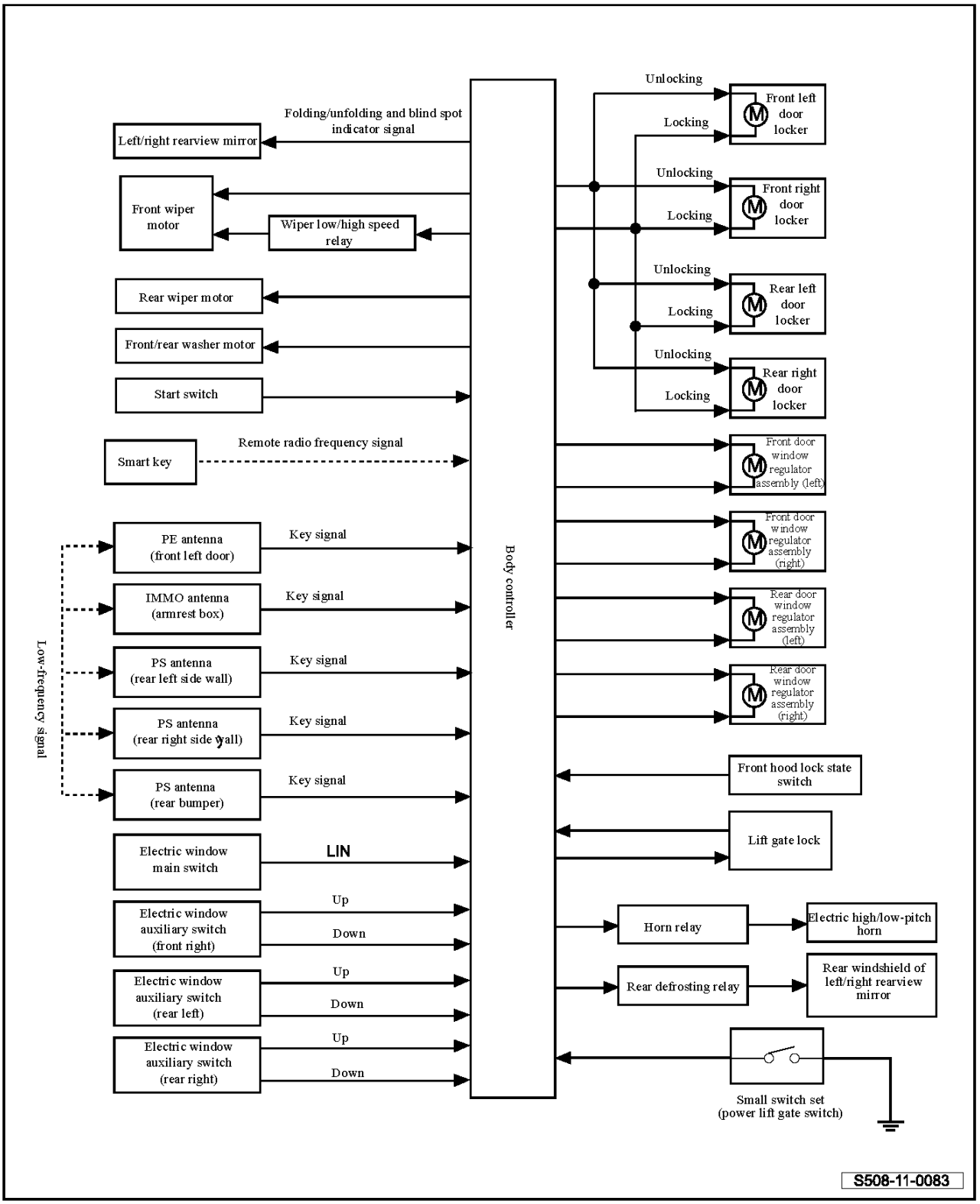
8.28.3.1 Component position

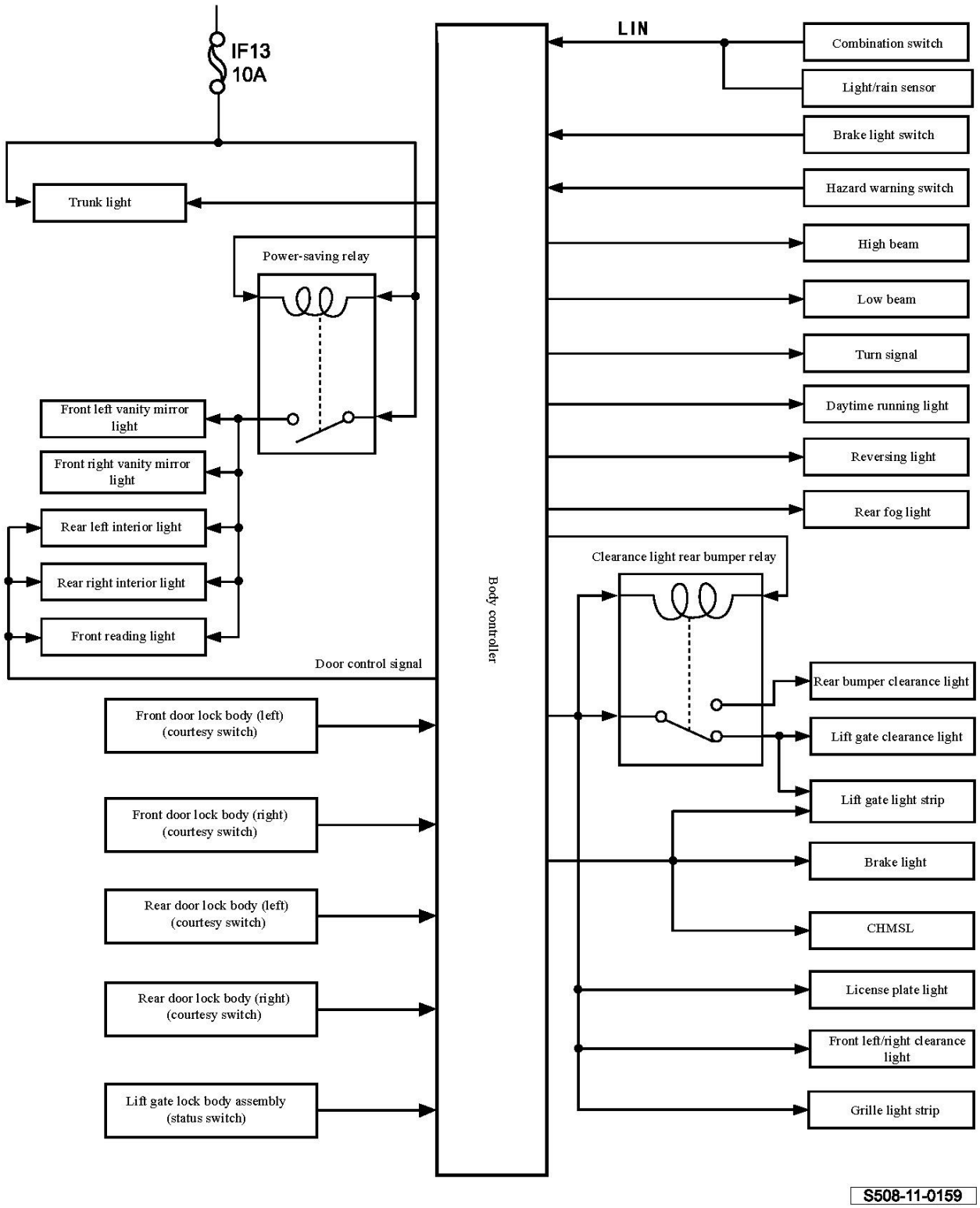
Component position



8.28.4 Electrical schematic diagram

8.28.4.1 Electrical schematic diagram




IF13
10A
Trunk light
Power-saving relay
Front left vanity mirror light
Front right vanity mirror light
Rear left interior light
Rear right interior light
Front reading light
Door control signal
Front door lock body (left) (courtesy switch)
Front door lock body (right) (courtesy switch)
Rear door lock body (left) (courtesy switch)
Rear door lock body (right) (courtesy switch)
Lift gate lock body assembly (status switch)
Body controller
LIN
Combination switch
Light/rain sensor
Brake light switch
Hazard warning switch
High beam
Low beam
Turn signal
Daytime running light
Reversing light
Rear fog light
Clearance light rear bumper relay
Rear bumper clearance light
Lift gate clearance light
Lift gate light strip
Brake light
CHMSL
License plate light
Front left/right clearance light
Grille light strip
S508-11-0159

8.28.5 Diagnosis information and steps

8.28.5.1 Diagnostic instructions

With a diagnostic scanner, fault code can be read through the OBD diagnosis interface of the vehicle. By comparing the data sheet provided by BDC with that displayed by the diagnostic scanner, it is possible to check whether the function of reading switch and sensor values is normal without removing any parts. Reading the data sheet can quickly locate the basic location of faults and is also one of the methods to reduce diagnosis time.

8.28.5.2 Visual inspection

- Confirmation of fault symptom

  The most difficult case of troubleshooting is that there is no symptom. In this case, the fault described by the user must be analyzed in depth. Then the same or similar conditions and environment in case of a fault of customer's vehicle should be simulated. No matter how experienced and skilled the maintenance personnel are, if troubleshooting is conducted without confirmation of fault symptom, something important will be ignored during repairing, and wrong prediction will be made in some aspects. As a result, the troubleshooting cannot be proceeded.
- Check easily accessible or visible system components for obvious damage or conditions that may cause faults.
- The connector joint and vibrating fulcrum are the main parts that should be thoroughly checked. If the fault may be caused by vibration, it is suggested to adopt vibration method.

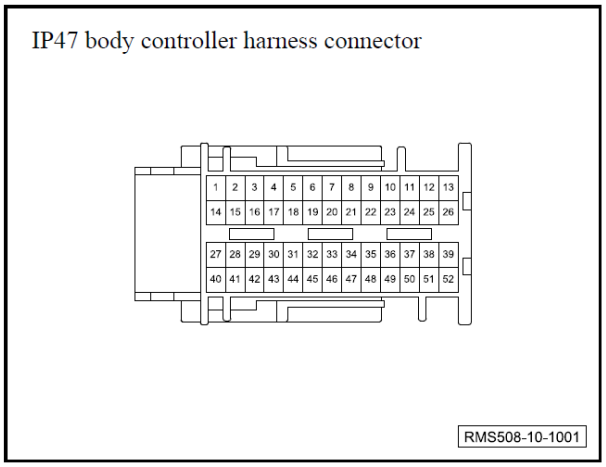
a Gently vibrate the sensor part that may be faulty with a finger, and inspect whether fault occurs.

b Gently shake the connector in the vertical and horizontal directions.

c Gently shake the harness in the vertical and horizontal directions.

8.28.5.3 ECU terminals

Body controller harness connector (IP47)



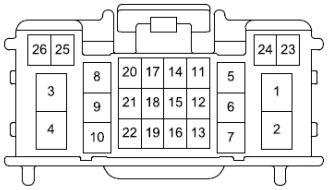
Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/gray-green	Pressure signal	—	—
3	0.35/Orange	Entertainment (Info)CAN-H	—	—
4	0.35/Light green	Chassis (CH)CAN-H	—	—
5	0.35/gray	Diagnosis CAN-H	—	—
6	0.35/brown	Body (Body)CAN-H	—	—
7	0.35/pink	Power (PT)CAN-H	—	—
8	0.35/gray-brown	LIN4(CHILLER)	—	—

9	0.35/yellow-brown	Wireless charging module disabled	—	—
10	0.35/white-blue	Mode damper position feedback signal	—	—
12	0.35/yellow-green	Right temperature damper position feedback signal	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
13	0.35/yellow-white	Internal/external circulation position feedback signal	—	—
15	0.35/brown-red	Temperature signal	—	—
16	0.35/Orange and white	Entertainment (Info)CAN-L	—	—
17	0.35/Light green and white	Chassis (CH)CAN-L	—	—
18	0.35/gray-white	Diagnosis CAN-L	—	—
19	0.35/brown-white	Body (Body)CAN-L	—	—
20	0.35/pink-white	Power (PT) CAN-L	—	—
21	0.35/light green-black	LIN5 (A/C system)	—	—
24	0.35/white-gray	PTC water pump relay control	—	—
26	0.35/gray-blue	Electric horn switch	—	—
28	0.35/white-orange	Evaporator temperature sensor signal	—	—
29	0.35/brown-orange	Room temperature sensor signal	—	—
31	0.35/white-blue	Motor circulating water pump signal output	—	—
32	0.35/red-yellow	Relay feedback (IGN1)	—	—
33	0.35 black-gray	Battery circulating water pump signal output	—	—
34	0.35/white-purple	PTC circulating water pump signal output	—	—
39	0.35/brown-yellow	LIN2 (switch and controller)	—	—
40	0.35/purple	Front blower feedback signal	—	—
41	0.35/orange-green	Battery coolant inlet temperature	—	—
42	0.35/gray-yellow	A/C pressure sensor signal	—	—
44	0.35/red-gray	Relay feedback (ACC)	—	—
50	0.35/green-purple	Start/stop switch 1	—	—
51	0.35/blue-purple	Start/stop switch 2	—	—

Body controller harness connector (IP48)

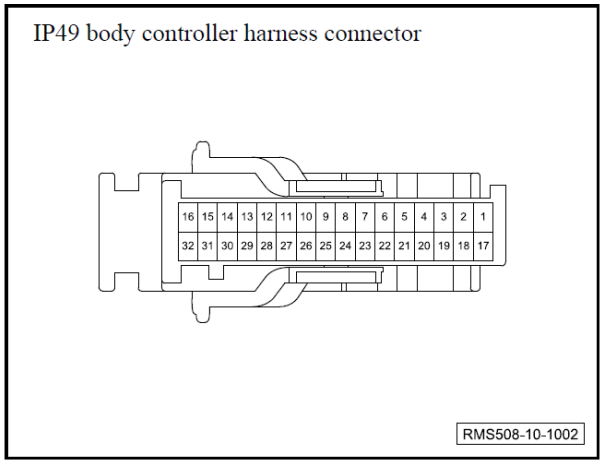
IP48 body controller harness connector



RMS508-10-1006

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	1.5/red-yellow	Light power supply 3	—	—
2	1.5/red-gray	Light power supply 4	—	—
3	1.5/black	Power ground 1	—	—
4	0.75/yellow	Left high beam output	—	—
5	0.5/black-red	Rear washer motor	—	—
6	0.5/white-black	Front washer motor	—	—
7	0.35/black-green	Front wiper reset signal	—	—
8	0.75/green-yellow	Right high beam output	—	—
9	0.75/white-yellow	Right low beam output	—	—
10	0.75/yellow-white	Left low beam output	—	—
12	0.35/green-white	Right daytime running light	—	—
13	0.35/green-orange	Front wiper (low-speed)	—	—
16	0.35/yellow-black	Horn relay control	—	—
19	0.35/orange-green	Front wiper (high-speed)	—	—
24	0.35/white-green	Left daytime running light	—	—
25	0.5/gray	Brake signal (NO)	—	—
26	0.35/blue-white	Environment temperature signal	—	—

Body controller harness connector (IP49)



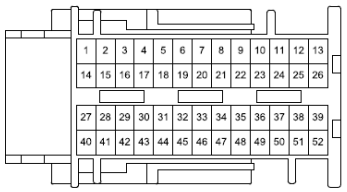
Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/gray-	IMMO-	—	—

	brown			
3	0.35/gray	Radiator fan PWM acquisition	—	—
4	0.5/gray-red	Radar power 12V	—	—
5	0.35/green-blue	Cruise switch +	—	—
6	0.35/orange-blue	Rear bumper clearance light switching relay	—	—
7	0.35/yellow-white	A/C signal ground 5V-	—	—
8	0.35/orange-green	Power lift gate central control switch	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
9	0.35/green-black	Hazard alarm indicator switch	—	—
10	0.35/gray-green	Driving mode signal	—	—
12	0.35/gray-yellow	Circulation drive +12V external circulation	—	—
13	0.35 green	Circulation drive +12V defrosting	—	—
14	0.35/white-gray	Mode drive +12V air-to-face	—	—
16	0.35/gray-white	Auxiliary relay control	—	—
17	0.35/brown-black	IMMO+	—	—
18	0.35 brown-blue	Front blower speed regulation signal	—	—
19	0.35/blue-green	Cruise switch -	—	—
20	0.35/black-pink	A/C sensor power supply 5V+	—	—
21	0.35/white	Front blower relay control	—	—
23	0.35/gray-black	Power indicator (ON)	—	—
24	0.35/Yellow	Power indicator (ACC)	—	—
26	0.35/brown-gray	Backlight (PWM)	—	—
29	0.35/pink-black	Slow-charging lock 2	—	—
30	0.35 / pink-red	Slow-charging lock 1	—	—
31	0.35/pink-green	Charging port cover unlocking motor +	—	—

Body controller harness connector (IP50)

IP50 body controller harness connector



RMS508-10-1005

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/light green-red	BSC activation enable	—	—
2	0.35/purple-	Left blind spot indicator	—	—

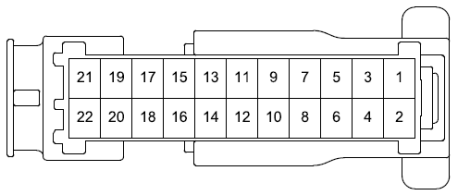
	yellow			
3	0.35/white-green	Lift gate left turn signal light output	—	—
4	0.35/green-white	Lift gate right turn signal output	—	—
5	0.35 white-yellow	Rear bumper left turn signal output	—	—
6	0.35/yellow-white	Rear bumper right turn signal output	—	—
7	0.35/Yellow and purple	Rear left hub antenna 1-	—	—

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
8	0.35/Yellow	Rear left hub antenna 1+	—	—
9	0.35/white-blue	Rear right hub antenna 2+	—	—
10	0.35/white-purple	Rear right hub antenna 2-	—	—
13	0.35/orange-green	Left exterior antenna 1 +	—	—
14	0.35/gray	Refrigerant stop valve +	—	—
15	0.35/purple-pink	Right blind spot indicator	—	—
16	0.35/white-brown	Battery circulating water pump relay control	—	—
17	0.35/white	Drive motor water pump relay control	—	—
18	0.35/green-orange	Front right window down input	—	—
19	0.35/Orange	Rear right window up input	—	—
20	0.35 green-red	Rear left window up input	—	—
21	0.35/white-black	Rear right window down input	—	—
24	0.35/brown-yellow	Lift gate/rear bumper antenna+	—	—
25	0.35/brown-purple	Lift gate/rear bumper antenna-	—	—
26	0.35 / orange-purple	Left exterior antenna 1 -	—	—
27	0.35/green-black	Rear left window down input	—	—
28	0.35/black-red	Rear wiper reset signal	—	—
29	0.5/black	Power ground 2	—	—
33	0.35/black-green	Rear left door state switch	—	—
34	0.35/black	Domain controller power 4	—	—
35	0.35/Yellow and red	Driver PE locking switch	—	—
36	0.35/purple-orange	Power-saving relay	—	—
40	0.35/yellow-brown	Front right window up input	—	—
41	0.35/gray-red	PWM speed regulation	—	—
42	0.5/black	Power ground 3	—	—
44	0.35 / light green-yellow	Slow charging locking status	—	—
45	0.35/blue-black	Lift gate unlock switch	—	—

46	0.35/gray-yellow	Folding button for exterior rearview mirrors	—	—
47	0.35/black-blue	Lift gate status switch	—	—
48	0.35/white	Rear right door state switch	—	—
49	0.35/black-white	Front left door state switch	—	—
50	0.35/green-yellow	Driver lock state feedback	—	—
51	0.35/black-yellow	Front right door state switch	—	—

Body controller harness connector (IP51)

IP51 body controller harness connector



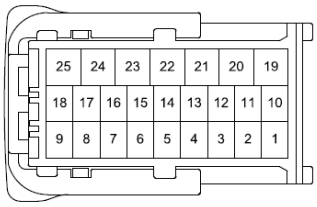
RMS508-10-1003

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.5/green-blue	Exterior rearview mirror unfolding drive	—	—
2	0.5/blue-green	Exterior rearview mirror folding drive	—	—
3	1.5/black	Front/rear left window ground	—	—
4	0.5/yellow-red	High-mounted lift gate brake light output	—	—
5	1.0 / green	Raise front right glass	—	—
6	0.5/blue-yellow	Reversing light	—	—
7	1.0 / green-black	Front right window down	—	—
8	0.5/yellow-green	Rear fog light output	—	—
9	1.0 / green-yellow	Rear right window up	—	—
10	0.5/yellow-brown	Rear bumper brake light output	—	—
11	1.0 / green-white	Rear right window down	—	—
12	0.5/gray-yellow	Front left turn signal output	—	—
13	1.5/black	Front/rear right window ground	—	—
14	0.5/yellow-blue	Front right turn signal light output	—	—
15	1.0 / white	Lift the rear left window	—	—
16	1.0 / black-white	Four-door (fuel tank cap) lock	—	—
17	1.0 / white-green	Rear left window down	—	—
18	1.0 / white-black	Four-door (fuel tank cap) unlock	—	—

19	1.0 / blue	Lift the front left window	—	—
20	0.75/purple-black	Rear wiper motor	—	—
21	1.0 / blue-black	Front left glass down	—	—
22	0.5/blue-white	Lift gate unlocking	—	—

Body controller harness connector (IP52)

IP52 body controller harness connector



RMS508-10-1004

Terminal No.	Wire diameter / wire color	Terminal definition	Conditions	Reference Value (Approximate Value)
1	0.35/brown-green	Right temperature drive +12V extremely warm	—	—
2	0.35/green-red	Logo light control	—	—
3	0.35/yellow-white	Rear defroster relay control	—	—
4	0.35/blue-green	Power relay control (IGN1)	—	—
5	0.5/light green-red	Background light/position light/lift gate rear bumper light	—	—
6	0.5/yellow-black	Interior light DOOR	—	—
7	0.35/white-black	Motor circulating water pump PWM speed regulation	—	—
8	0.35 white-orange	Battery circulating water pump PWM speed regulation	—	—
9	0.35/white-yellow	PTC circulating water pump PWM speed regulation	—	—
10	0.35/green-yellow	Right temperature drive +12V extremely cold	—	—
11	0.35/white-green	Circulation drive +12V internal circulation	—	—
12	1.5/red-blue	Reserved lighting power supply 0	—	—
14	0.35/green-blue	Power relay control (ACC)	—	—
19	1.5/red-green	System power supply	—	—
20	1.5/green-red	Light power supply 1	—	—
21	1.5/black-blue	Light power supply 2	—	—
22	1.5/red	Domain controller door lock / wiper	—	—
23	1.5/red	Domain controller door lock / wiper	—	—

24	1.5/red-white	Front right and rear right window power	—	—
25	1.5/white-gray	Front left and rear left window power	—	—

8.28.5.4 Active test

Overview:

To conduct an active test with a diagnostic scanner, you may operate the relay, actuator and other elements without removing any part. This can eliminate faults more effectively and quickly, greatly reducing the man-hours required for troubleshooting and improving the efficiency of fault diagnosis.

- Connect the intelligent tester to the vehicle.
- Turn the start switch to “ON” position.

- Perform the “active test” as displayed on the diagnostic scanner.

Note:

During the action test, do not operate for more than 3s; otherwise, ECU may be damaged. Repeated opening and closing within a period of time may damage parts.

S/N	Tester display items	
1	Light control	Rear fog light
3		Front fog light
4		High beam
5		Low beam
6		Rear bumper clearance light
7		Clearance light (front clearance light + license plate light)
8		Right blind spot indicator
9		Left blind spot indicator
10		Door light energy-saving output
11		Interior light
14		Logo projection light
15		Reversing light
16		Daytime running light
17		Brake light
18		Rear bumper brake light
19		High-mounted lift gate brake light
20		Front left turn signal
21		Front right turn signal
22		Lift gate left turn signal
23		Lift gate right turn signal
24		Rear bumper left turn signal
25		Rear right turn signal
26	Door lock control & wiper control	Charging port cover locker
27		Charging port cover unlocking
28		Charging port cover/charging gun lock
28		Charging port cover/charging gun unlock
30		Lift gate unlocking
31		Four-door locking
32		Four-door unlocking
33		Rear washer motor
34		Rear wiper motor
35		Front washer motor
36		Front wiper motor - low speed

S/N	Tester display items	
37		Front wiper motor at high speed (front wiper low speed needs to be turned on first)
38	Other controls	Horn
39		Rear defroster
40		Exterior rearview mirror folding drive
41		Exterior rearview mirror unfolding drive
42		Wireless charging module disabled
43	PEPS-related output	BackLight_LED
44		ACC_LED
45		IGN_LED
46		KL15_2_Relay
47		KL15_1_Relay
48		KL75_Relay
49	Cancel all controls	—
50	Output control	Left temperature motor position control
51		Right temperature motor position control
52		Mode motor position control
53		Blower output
54		Circulation motor position control

8.28.5.5 Data list

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
F18C	ECU serial number	Year	"1"	"X"	-
		Month	"1"	"C"	-
		Day	"1"	"Z"	-
		Supplier code	-	-	-
F184	Flash fingerprint information	Tool supplier identification	January 0, 1900	255	-
		Year of programming	January 0, 1900	255	-
		Month of programming	1	13	-
		Date of programming	2	32	-
		Equipment No.	-	-	-
A000	Flash attempt counter	-	0	65535	-
A001	Counter reloading succeeded	-	0	65535	-
F18B	ECU manufacturing date data identifier	Year	0	3000	-
		Month	0	12	-
		Day	0	31	-
202	SKstate immobilizer password matching state	-	-	-	-
203	SK immobilizer password	-	-	-	-
215	ANTValue antenna threshold	PKS-1 gain	1	63	-
		PKS-2 gain	1	63	-
		PKS-3 gain	1	63	-
		PKS-4 gain	1	63	-
		PKS-5 gain	1	63	-
		PKS-6 gain	1	63	-
		PKS-7 gain	1	63	-
		PKS-8 gain	1	63	-
		PKS-9 gain	1	63	-
		PKS-10 gain	1	63	-
		PKS-11 gain	1	63	-
		PKS-12 gain	1	63	-
		PKE_1 gain	1	63	-
		PKE_2 gain	1	63	-
		PKE_3 gain	1	63	-
		PKE_4 gain	1	63	-
		PKE_5 gain	1	63	-
		PKE_6 gain	1	63	-
		PKE_7 gain	1	63	-

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
		PKE_8 gain	1	63	-
		PKE_9 gain	1	63	-
		PKE_10 gain	1	63	-
		PKE_11 gain	1	63	-
		Active card search_1 gain	1	63	-
		Active card search_2 gain	1	63	-
		pks_1 threshold	1	63	-
		pks_2 threshold	1	63	-
		pke_1 threshold	1	63	-
		pke_2 threshold	1	63	-
		pke_3 threshold	1	63	-
		pke_4 threshold	1	63	-
		Active card search threshold	1	63	-
216	Battery voltage	Actual voltage	0	255	-
217	Ignition position	BCM ignition gear	0	255	-
		Anti-theft state	-	-	-
F133	Tire pressure sensor ID	TPMSID, front left	-	-	-
		TPMSID, rear left	-	-	-
		TPMSID, rear right	-	-	-
		TPMSID, front right	-	-	-
F10F	Number of key reading	-	0	255	-
1030	Causes to flash of turn signal light	0x00:IDLE	0	255	-
		0x01:Double flashing of immobilizer alarm	0	255	-
		0x02: Double flashing of collision alarm	0	255	-
		0x03: Double flashing of emergency brake	0	255	-
		0x04: Double flashing of alarm switch	0	255	-
		0x05: Turn signal ON	0	255	-
		0x06: Double flashing of RCW	0	255	-
		0x07: Double flashing of PLG on/off	0	255	-
		0x08: Double flashing of guest greeting	0	255	-
		0x09: Double flashing of reminder	0	255	-
		0x10:IDLE	0	255	-
		0x11: Double flashing of defense	0	255	-

		0x12: Double flashing of defense exit	0	255	-
		0x13: Double flashing of defense failure	0	255	-
		0x14: Double flashing of RKE unlocking	0	255	-

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
		0x15: Double flashing of RKE unlocking lift gate	0	255	-
		0x16: Double flashing of RKE vehicle locating	0	255	-
		0x17: Double flashing of remote vehicle locating	0	255	-
		0x18: Double flashing of RKE locking	0	255	-
		0x19: Door open when RKE is locked	0	255	-
		0x1A: The key is in the vehicle when PE is locked	0	255	-
		0x1C: Semi-defense to defense	0	255	-
		0x1D: Defines to semi-defense	0	255	-
		0x1E: Danger warning	0	255	-
		0x1F: Door closed and unlocked reminder	0	255	-
		0x20: The key is in the vehicle when the lift gate is locked	0	255	-
0710	Sources of start or power-off failure	0x3: For AT/MT vehicles, depress the pedal and press the start button to find the key in the vehicle and thus the vehicle is started	0	255	-
		0x4: AT/MT car, pedal not depressed, press the start button, low-frequency antenna finds the key and power on to ACC	0	255	-
		0x5: AT car, pedal not depressed, press the power up/off button, find the key, pass through ACC and power on to ON	0	255	-
		0x6: MT car, depress the pedal, press the start button, find the key and power on to	0	255	-
		0x9: AT/MT vehicle, speed less than 3km/h, at P gear, engine not running after the start	0	255	-

		button is pressed			
		0x0B: Engine running	0	255	-
		0x0D: For AT/MT vehicles, depress the brake pedal and shift to P/N position; for MT vehicles, depress the clutch pedal and press the start button. There is a key in the vehicle	0	255	-
		0x10: AT/MT car, ignition time more than 3s, not at gear P or N	0	255	-
		0x11: AT/MT vehicle, ignition time more than 5s, engine immobilizer authentication failed	0	255	-
		0x12: Timing 16s	0	255	-
		0x13: AT/MT car, press the start button	0	255	-
		0x14: AT vehicle brake not depressed, MT clutch not depressed	0	255	-

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
		0x15: AT/MT car, engine started successfully	0	255	-
		0x1A: AT/MT car, the speed is greater than 3km/h, or the speed is invalid, and the emergency braking sign changes from 0 to 1	0	255	-
		0x1B: For AT/MT vehicles, press the start button, the vehicle speed is greater than 5 km/h, and the gear position is P or R	0	255	-
		0x1C: AT/MT car, press the start button, and the vehicle speed is 0	0	255	-
711	Sources of lift gate unlock/lock	0x01: RKE unlocking	0	255	-
		0x02: PKE unlocking	0	255	-
		0x03: Driver's interior switch unlocked	0	255	-
		0x11: RKE unlocking/locking	0	255	-
		0x12: PKE unlocking/locking	0	255	-
		0x13: Kick unlocking	0	255	-
		0x14: Voice unlocking	0	255	-
		0x15: Remote unlocking	0	255	-
712	Sources of four-door unlock/lock	0x01: Collision unlocking	0	255	-
		0x02: Centre control unlocking	0	255	-
		0x03: Mechanical key unlocking	0	255	-
		0x04: Power-off unlocking	0	255	-
		0x11: RKE unlocking	0	255	-
		0x12: PKE unlocking	0	255	-
		0x13: Power-on unlocking	0	255	-
		0x15: Remote unlocking	0	255	-
		0x21: Centre control locking	0	255	-
		0x22: Mechanical key locking	0	255	-

		0x23: Over-speed blocking	0	255	-
		0x31: RKE locking	0	255	-
		0x32: PKE locking	0	255	-
		0x33: Secondary defense blocking	0	255	-
		0x34: Remote locking	0	255	-
F135	Tire pressure alarm threshold	High pressure alarm threshold 0x8A-0xFE (190kpa-350kpa); (0x8A=	-	-	-

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
		138;138*1.3725≈ 190Kpa) valid values;300kpa(default value)			
		Low pressure alarm threshold 0x5A-0xAE (125kpa-240kpa); (0x5A=90; 90*1.3725≈125Kpa) valid values; 175kpa (default value)	-	-V99	-
8000	BMS_InsResValue_InternalAC_ System_output	-	0	255	-
8001	Fan drive program Pwm task	0~100:0~100%101~0xff	0	255	-
8002	Mode motor	0~250:0V~5V251~0xff	0	255	V
8003	Internal/external circulation motor	0~250:0V~5V251~0xff	0	255	V
8004	Temperature motor	0~250:0V~5V251~0xff	0	255	V
8007	Structure	0~250:-50~200℃ 251~0xff	0	255	℃
		0: Sensor invalid 1: Sensor OK 2: Sensor short-circuited to ground 3: Sensor short-circuited to power supply 4~0xff	0	3	℃
8008	Internal_temperature	0~250:-50~200℃ 251~0xff	0	250	℃
		0: Sensor invalid 1: Sensor OK 2: Sensor short-circuited to ground 3: Sensor short-circuited to power supply 4~0xff	0	3	℃
8009	Evaluation_temperature	0~250:-50~200℃ 251~0xff	0	250	℃
		0: Sensor invalid 1: Sensor OK 2: Sensor short-circuited to ground 3: Sensor short-circuited to power supply 4~0xff	0	3	℃
072C	Sunlight sensor	0-255	0	255	-
		0-255	0	255	-
0721	Temperature of engine cooling water	Temperature of engine cooling water	0	255	℃

707	Signal input status	MP switch state	0	1	-
		Compressor on/off state	0	1	-
		Rear defrost control state	0	1	-
0x0709	Working voltage of blower	Blower working voltage	0	255	V
0x070D	Exterior PM2.5 concentration	Interior PM2.5 concentration	0	1024	ug/m3
0x070E	Interior PM2.5 concentration	Exterior PM2.5 concentration	0	1024	ug/m3
0x070F	Anion generator status	Anion generator status	0	1	-
110	BDC status data	Fog light on request	0	1	-

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
		Fog light off request	0	1	-
		High beam switch	0	1	-
		Overtaking light switch	0	1	-
		Automatic light switch	0	1	-
		Low beam switch	0	1	-
		Clearance light switch	0	1	-
		Brake switch	0	1	-
		Hazard alarm indicator switch	0	1	-
		Right turn signal light switch	0	1	-
		Left turn signal switch	0	1	-
		Front wiper INT mode	0	5	-
		Rear wiper reset signal	0	1	-
		Front wiper resetting signal	0	1	-
		Rear washer switch	0	1	-
		Rear wiper switch	0	1	-
		Front washer switch	0	1	-
		Front wiper intermittent/AUTO switch	0	1	-
		Front wiper high speed switch	0	1	-
		Front wiper low-speed switch	0	1	-
		Folding button for exterior rearview mirrors	0	1	-
		Cruise switch	0	5	-
		Fuel tank cap switch	0	1	-
		Hand brake switch	0	1	-
		Reverse switch	0	1	-
		Electric horn switch	0	1	-
		Driver door lock feedback	0	1	-
		Lift gate unlock switch (exterior switch of power lift gate)	0	1	-
		Lift gate state switch (central control unlock switch of power lift gate)	0	1	-
		Hood status switch	0	1	-
		Rear right door state	0	1	-

		switch			
		Rear left door state switch	0	1	-
		Front right door state switch	0	1	-
		Front left door state switch	0	1	-
		Central control lock switch of power lift gate	0	1	-

DID No.	DID description	Data name	Scope		Unit of measurement
			Minimum	Max. value	
		ESCL state	0	1	-
		Clutch low-level pedal switch	0	1	-
		Clutch high-level pedal switch	0	1	-
		Neutral gear switch	0	1	-
		KL15_2_relay feedback (IGN2)	0	1	-
		KL15_1_relay feedback (IGN1)	0	1	-
		KL75_relay feedback (ACC)	0	1	-
		Front passenger door handle unlock switch	0	1	-
		Front passenger door handle lock switch	0	1	-
		Driver door handle unlock switch (front passenger door handle switch)	0	1	-
		Driver door handle lock switch (driver door handle switch)	0	1	-
0x3702	Analog signal input	Evaporator temperature sensor input enabled	0	1	-
		Exterior temperature sensor input enabled	0	1	-
		Interior temperature sensor input enable	0	1	-
		Evaporator temperature sensor value	-	-	-
		Exterior temperature sensor value	-	-	-
		Interior temperature sensor value	-	-	-
0x3703	Button input	Rear defrost button control	0	1	-
		OFF button control	0	1	-
		Mode button control	0	1	-
		Front defrost button control	0	1	-
		AC button control	0	1	-
		Air volume increase button control	0	1	-
		Air volume decrease	0	1	-

		button control			
		Internal/external circulation button control	0	1	-
		Right temperature increase button control	0	1	-
		Right temperature decrease button control	0	1	-
		AUTO button control	0	1	-
		MAXA/C button	0	1	-

8.28.5.6 DTC list

DTC	DTC definition	Impact on the system	Fault cause	Recommendations for Maintenance
B111717	Too high battery voltage	Domain controller might be burnt	Battery voltage is too low	Check the power supply
B111716	Too low battery voltage	Domain controller-related main load system is out of service	Battery voltage is too low	Check the power supply
U007388	CAN bus off	Function failure of all PTCAN nodes	Bus fault (short circuit or open circuit)	Check CAN bus.
U007488	CAN bus off	Function failure of all CHCAN nodes	Bus fault (short circuit or open circuit)	Check CAN bus.
U007588	CAN bus off	Function failure of all BDCAN nodes	Bus fault (short circuit or open circuit)	Check CAN bus.
U007688	CAN bus off	Function failure of all InfoCAN nodes	Bus fault (short circuit or open circuit)	Check CAN bus.
U010387	Lost communication with GSM	GSM-related function failure	Lost communication with GSM module	Check the GSM node harness
U010087	Lost communication with EMS	EMS-related function failure	Lost communication with EMS module	Check the EMS node harness.
U013187	Lost communication with EPS	EPS-related function failure	Lost communication with EPS module	Check the EPS node harness
U015187	Lost communication with ABM	ABM-related function failure	Lost communication with ABM module	Check the ABM node harness
U012887	Lost communication with EPB	EPB-related function failure	Lost communication with EPB module	Check the EPB node harness
U023087	Lost communication with PLG	PLG-related function failure	Lost communication with PLG module	Check the PLG node harness
U015587	Lost communication with IC	IC does not display relevant alarm information	Lost communication with IC module	Check the IC node harness
U018687	Lost communication with IVI	IVI setting and control function failure	Lost communication with IVI module	Check the IVI node harness
U023287	Lost communication with SRR_1	SRR function failure	Lost communication with SRR_1 module	Check SRR_1 node harness
B102011	Front left turn signal short-circuited	Frequency doubling of left turn signal	Front left turn signal short-circuited	Check the front left turn signal circuit
B102013	Front left turn signal short-circuited	Frequency doubling of left turn signal	Front left turn signal short-circuited	Check the front left turn signal circuit
B102111	Front right turn signal short-circuited	Frequency doubling of right turn signal	Front right turn signal short-circuited	Check the front right turn signal circuit

B102113	Front right turn signal open-circuited	Frequency doubling of right turn signal	Front right turn signal open-circuited	Check the front right turn signal circuit
B103011	Lift gate left turn signal short-circuited	Frequency doubling of left turn signal	Lift gate left turn signal short-circuited	Check the lift gate left turn signal circuit
B103013	Lift gate left turn signal open-circuited	Frequency doubling of left turn signal	Lift gate left turn signal open-circuited	Check the lift gate left turn signal circuit
B103111	Lift gate right turn signal short-circuited	Frequency doubling of right turn signal	Lift gate right turn signal short-circuited	Check the lift gate right turn signal circuit
B103113	Lift gate right turn signal open-circuited	Frequency doubling of right turn signal	Lift gate right turn signal open-circuited	Check the lift gate right turn signal circuit
B103211	Rear bumper left turn signal short-circuited	Frequency doubling of left turn signal	Rear bumper left turn signal short-circuited	Check the rear bumper left turn signal circuit
B103213	Rear bumper left turn signal open-circuited	Frequency doubling of left turn signal	Rear bumper left turn signal open-circuited	Check the rear bumper left turn signal circuit
B103311	Rear bumper right turn signal short-circuited	Frequency doubling of right turn signal	Rear bumper right turn signal short-circuited	Check the rear bumper right turn signal circuit
B103313	Rear bumper right turn signal open-circuited	Frequency doubling of right turn signal	Rear bumper right turn signal open-circuited	Check the rear bumper right turn signal circuit
B102911	Left blind spot indicator short-circuited to the ground	Left blind spot indicator output fails, left blind spot indicator is off	Left blind spot indicator harness short-circuited	Check the harness of the left blind spot indicator

B111717	Too high battery voltage	Domain controller might be burnt	Battery voltage is too low	Check the power supply
B102A11	Right blind spot indicator short-circuited to the ground	Right blind spot indicator output fails, right blind spot indicator is off	Right blind spot indicator harness short-circuited	Check the harness of the right blind spot indicator
B103912	Front left fog light short-circuited to power supply	Rear left fog light output fails, rear left fog light is off	Front left fog light harness short-circuited to ground	Check the harness between BCM Port of front left fog light and relay
B103913	Front left fog light open-circuited	Rear left fog light output fails, rear left fog light is off	Front left fog light harness open-circuited	Check the harness between BCM Port of front left fog light and relay
B103E12	Front right fog light short-circuited to power supply	Front right fog light output fails, rear right fog light is off	Front right fog light harness short-circuited to ground	Check the harness between BCM Port of front right fog light and relay
B103E13	Front right fog light open-circuited	Front right fog light output fails, rear right fog light is off	Front right fog light harness open-circuited	Check the harness between BCM Port of front right fog light and relay
B104171	Front wiper motor stalled	Front wiper does not work	Wiper stuck or reset switch fault	Check the harness of the front wiper reset switch or whether the front wiper is stuck
B104271	Rear wiper motor stalled	Rear wiper does not work	Wiper stuck or reset switch fault	Check the harness of the rear wiper reset switch or whether the rear wiper is stuck
B101449	Internal fault of sunroof	Normal sunroof opening/closing	-	Check the sunroof
B101683	Sunroof LIN bus communication fails	Normal sunroof opening/closing	-	Check sunroof LIN bus
B103087	Sunshade LIN bus communication fails	Abnormal sunshade opening and closing	-	Check sunshade LIN bus
B103096	Internal fault of sunshade	Abnormal sunshade opening and closing	-	Check the sunshade
B101796	Front left window switch fault	Front left window rise/fall fails	-	Check the front left window switch
B101B96	LIN bus communication of driver's door window switch fails	Front left window rise/fall fails	-	Check the driver's door window switch LIN bus
B132596	Wiper switch fault	Abnormal relevant functions of wiper combination switch	Wiper switch fault	Check the wiper switch system
B132696	Light switch fault	Abnormal relevant functions of	Light switch fault	Check the light switch system

		lamplight combination switch		
B141096	LIN bus communication of light/rain sensor fails	Abnormal function of automatic light and automatic wiper	Internal fault of rain sensor	Check LIN bus of light/rain sensor
B151096	Kick sensor LIN bus communication failed	Abnormal function of kick lift gate	Kick sensor is internally faulty	Detect kick sensor LIN bus
B161096	LIN bus communication of combination switch	Abnormal relevant functions of wiper and lamplight combination switch	Internal fault of combination switch	Check the combination switch module
B10F087	Front left tire pressure signal lost	Instrument does not display front left tire pressure and sends alarm	Front left tire pressure signal lost	Check the front left tire pressure sensor
B10F187	Front right tire pressure signal lost	Instrument does not display front right tire pressure and sends alarm	Front right tire pressure signal lost	Check the front right tire pressure sensor

B111717	Too high battery voltage	Domain controller might be burnt	Battery voltage is too low	Check the power supply
B10F287	Rear left tire pressure signal lost	Instrument does not display rear left tire pressure and sends alarm	Rear left tire pressure signal lost	Check the rear left tire pressure sensor
B10F387	Rear right tire pressure signal lost	Instrument does not display rear right tire pressure and sends alarm	Rear right tire pressure signal lost	Check the rear right tire pressure sensor
B10F084	Battery Low of Front Left Tire Pressure Sensor	Instrument displays unstable front left tire pressure and sends alarm	Battery Low of Front Left Tire Pressure Sensor	Check the front left tire pressure sensor
B10F184	Battery Low of Front Right Tire Pressure Sensor	Instrument displays unstable front right tire pressure and sends alarm	Battery Low of Front Right Tire Pressure Sensor	Check the front right tire pressure sensor
B10F284	Battery Low of Rear Left Tire Pressure Sensor	Instrument displays unstable rear left tire pressure and sends alarm	Battery Low of Rear Left Tire Pressure Sensor	Check the rear left tire pressure sensor
B10F384	Battery Low of Rear Right Tire Pressure Sensor	Instrument displays unstable rear right tire pressure and sends alarm	Battery Low of Rear Right Tire Pressure Sensor	Check the rear right tire pressure sensor
B120000	ENGINE START/STOP button stuck	The vehicle cannot be powered on/off, started or shut down	ENGINE START/STOP button stuck	Please check ENGINE START/STOP button
B124696	ACC relay control output invalid	The instrument reports ACC relay fault	ACC relay terminal falls, or internal fault of relay	Check ACC relay and connecting terminal
B124796	IGN1 relay control output invalid	The instrument reports IGN1 relay fault	IG1 relay terminal falls, or internal fault of relay	Check IG1 relay and connecting terminal
B123113	Front right door handle antenna open-circuited	PE unlock/lock function fails	Front right door handle antenna open-circuited	Check the front right door handle antenna
B123013	Front left door handle antenna open-circuited	PE unlock/lock function fails	Front left door handle antenna open-circuited	Check the front left door handle antenna
B123413	Armrest box antenna open-circuited	PE unlock/lock function fails	Armrest box antenna open-circuited	Check armrest box antenna

B123613	Lift gate antenna open-circuited	PE unlock/lock, PE lift gate open function fails	Lift gate antenna open-circuited	Check lift gate antenna
B123213	Rear right seat antenna open-circuited	PE unlock/lock function fails	Rear right seat antenna open-circuited	Check rear right seat antenna
B123513	Rear left seat antenna open-circuited	PE unlock/lock function fails	Rear left seat antenna open-circuited	Check rear left seat antenna
C181011	Interior temperature sensor is short-circuited to ground	Abnormal automatic A/C function, inaccurate indoor temperature	Interior temperature sensor is short-circuited to ground	Check the interior temperature sensor
C181115	Interior temperature sensor short-circuited to power supply or open-circuited	Automatic A/C fails, inaccurate indoor temperature	Interior temperature sensor open-circuited or short-circuited to power supply	Check the interior temperature sensor
C182011	Exterior temperature sensor is short-circuited to ground	Abnormal automatic A/C function, inaccurate outdoor temperature	Exterior temperature sensor is short-circuited to ground	Check the exterior temperature sensor
C182115	Exterior temperature sensor short-circuited to power supply or open-circuited	Automatic A/C fails, inaccurate outdoor temperature	Exterior temperature sensor open-circuited or short-circuited to power supply	Check the exterior temperature sensor
C183011	Evaporator temperature sensor is short-circuited to ground	A/C does not cool	The sensor is short-circuited to ground	Check the evaporator sensor
C183115	Evaporator temperature sensor short-circuited to power supply or open-circuited	A/C does not cool	Sensor open-circuited, sensor short-circuited to power supply	Check the evaporator sensor
C184314	Mode control motor feedback end short-circuited to the ground or open-circuited	A/C air outlet mode cannot be adjusted	Motor feedback end short-circuited to the ground or open-circuited	Check feedback circuit of mode control motor

B111717	Too high battery voltage	Domain controller might be burnt	Battery voltage is too low	Check the power supply
C184412	Mode motor feedback short-circuited to power supply	A/C air outlet mode cannot be adjusted	Motor feedback end short-circuited to the power supply	Check feedback circuit of mode control motor
C184571	Mode motor stalling	A/C air outlet mode cannot be adjusted	Motor is stuck	Check the mode motor
C185D14	Circulation motor feedback end short-circuited to the ground or open-circuited	A/C circulation cannot be adjusted	Motor feedback end short-circuited to the ground or open-circuited	Check feedback circuit of mode control motor
C185E12	Circulation motor feedback short-circuited to power supply	A/C circulation cannot be adjusted	Motor feedback end short-circuited to the power supply	Check feedback circuit of mode control motor
C185F71	Circulation motor stalled	A/C circulation cannot be adjusted	Motor is stuck	Check the mode motor
C188314	Right temperature motor feedback end short-circuited to the ground or open-circuited	A/C right temperature cannot be adjusted	Motor feedback end short-circuited to the ground or open-circuited	Check feedback circuit of right temperature motor
C188412	Right temperature motor feedback end short-circuited to the power supply	A/C right temperature cannot be adjusted	Motor feedback end short-circuited to the power supply	Check feedback circuit of right temperature motor
C188571	Right temperature motor stalled	A/C right temperature cannot be adjusted	Motor is stuck	Check right temperature motor
C18B287	Fault of PM2.5 sensor	Abnormal one-button purification and intelligent purification function	Sensor fault	Replace the sensor
U1A4287	Lost communication with anion generator	Abnormal one-button purification and intelligent purification function	ION node not connected or faulty	Check whether the ION node can send messages normally
U1A4187	Lost communication with PM2.5 sensor	Abnormal one-button purification and intelligent purification function	PM2.5 node not connected or faulty	Check whether the PM2.5 node can send messages normally
U1A4487	Missing RAC (LIN)	Abnormal RAC-related functions	RAC node not connected or faulty	Check whether the RAC node can send messages normally
U02A687	Lost communication with BSC	Failure of BSC-related function	Lost communication with BSC module	Check the BSC node harness

U011187	Lost communication with BMS	Failure of BMS-related functions	Lost communication with BMS module	Check the BMS node harness
U011687	Lost communication with CCU	Failure of CCU-related functions	Lost communication with frequency converter module	Check the CCU node harness
U029887	Lost communication with DCDC	Failure of DCDC-related functions	Lost communication with DCDC module	Check the DCDC node harness
U029B87	Lost communication with GCU	EMS-related function failure	Lost communication with GCU module	Check the GCU node harness
U011087	Lost communication with MCUFO	Failure of MCU-related functions	Lost communication with MCU module	Check the MCU node harness
U016687	Lost communication with PTC	Failure of PTC-related functions	Lost communication with PTC module	Check the PTC node harness
U029387	Lost communication with VCU	Failure of VCU-related functions	Lost communication with VCU module	Check the VCU node harness
U060087	Lost communication with PCM	Failure of PCM-related functions	Lost communication with PCM module	Check the PCM node harness
P1B0007	Idling of battery circulating water pump	Abnormal power battery thermal management related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replacement of battery coolant pump

B111717	Too high battery voltage	Domain controller might be burnt	Battery voltage is too low	Check the power supply
P1B0009	Fault of battery circulating coolant pump	Abnormal power battery thermal management related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replacement of battery coolant pump
P1B0002	No speed regulation signal input of battery circulating water pump	Abnormal power battery thermal management related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replacement of battery coolant pump
P1B0107	Idling of PTC coolant pump	Abnormal heating-related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the PTC water pump
P1B0109	Fault of PTC coolant pump	Abnormal heating-related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the PTC water pump
P1B0102	No speed regulation signal input of PTC coolant pump	Abnormal heating-related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the PTC water pump
P1B0207	Motor water pump idling	Abnormal cooling function of motor	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the motor water pump
P1B0209	Motor water pump fault	Abnormal cooling function of motor	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the motor water pump
P1B0202	No speed regulation signal input of motor water pump	Abnormal cooling function of motor	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the motor water pump
P1B0309	CCU fault	Abnormal cooling-	The domain control	Replace the compressor

		related functions	cannot judge, and it only receives the fault information of thermal management components	
P1B0409	PTC general fault	Abnormal heating-related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the PTC
P1B0414	PTC internal short-circuit fault	PTC function failure	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the PTC
P1B0509	Electronic fan fault	Abnormal thermal management function	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the electronic fan
P1B0609	Cooler electronic valve fault	Abnormal power battery thermal management related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the water valve
P1B0709	HVAC three-way valve	Abnormal heating-related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the water valve

B111717	Too high battery voltage	Domain controller might be burnt	Battery voltage is too low	Check the power supply
P1B0809	Battery three-way valve	Abnormal heating-related functions	The domain control cannot judge, and it only receives the fault information of thermal management components	Replace the water valve
U019887	Lost communication with TBOX	TBOX related function failure	Communication with the TBOX module interrupted	Check CAN node harness

8.28.5.7 DTC:B111717,B111716

DTC	DTC definition
B111717	Too high battery voltage
B111716	Too low battery voltage

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the battery.

A Measure the battery voltage.
Standard voltage value: **11~14V**
B Make sure that the voltage conforms to the standard value.

No → Charge the battery or check the charging system.

Yes

Step 3	Check the fuses IF19, IF23 and IF01 of the body controller.

A Check if fuses IF19, IF23 and IF01 are blown.

No → Go to Step 5.

Yes

Step 4	Check and repair the circuits of fuses IF19, IF23 and IF01.

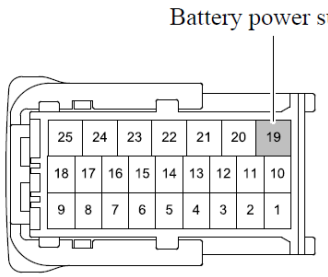
A Check whether the fuses IF19, IF23 and IF01 are short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
The rated values of the fuses are **IF195A, IF235A,** and **IF0120A**
D Confirm whether the body controller works normally.

Yes → The system works normally.

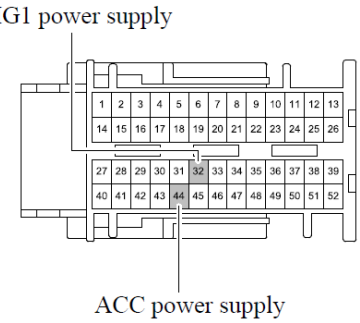
No

Step 5	Check the power circuit of the body controller.

IP52 body controller harness connector



IP47 body controller harness connector



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connectors IP47 and IP52.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 19 of the body controller harness connector IP52 and the body ground.

E Measure the voltage between terminals 32 and 44 of the body controller harness connector IP47 and the body ground.

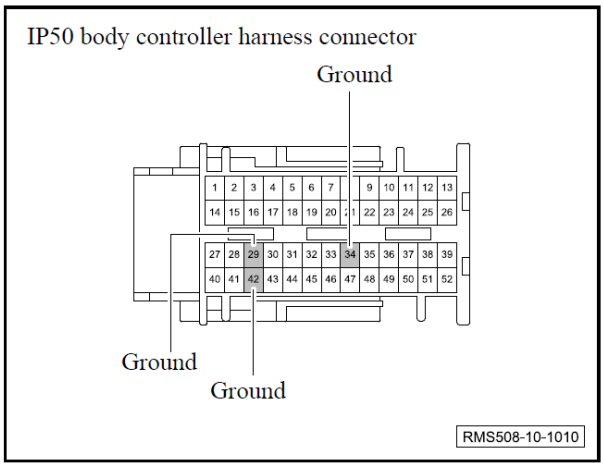
Standard voltage value: **11~14V**

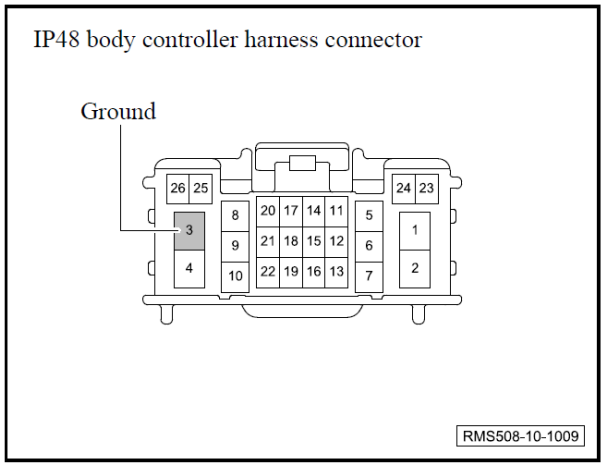
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connectors IP50 and IP48.

C Measure the resistance between terminal 29/34/42 of the body controller harness connector IP50 and the body ground.

D Measure the resistance between terminal 3 of the body controller harness connector IP48 and the body ground.
Standard resistance value: **<1Ω**

E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 7	

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.8 DTC: U007388

DTC	DTC definition
U007388	CAN bus off

1. Diagnosis steps

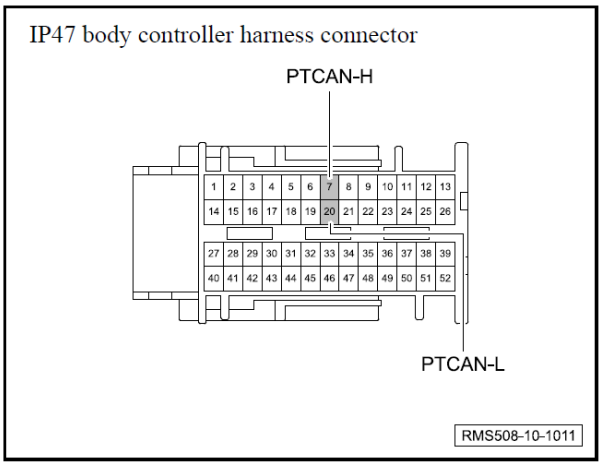
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the PTCAN data communication wire.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Measure the resistance between terminal 7 and terminal 20 of the body controller harness connector IP47.
Standard resistance value: about **120Ω**
D Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.9 DTC: U007488

DTC	DTC definition
U007488	CAN bus off

1. Diagnosis steps

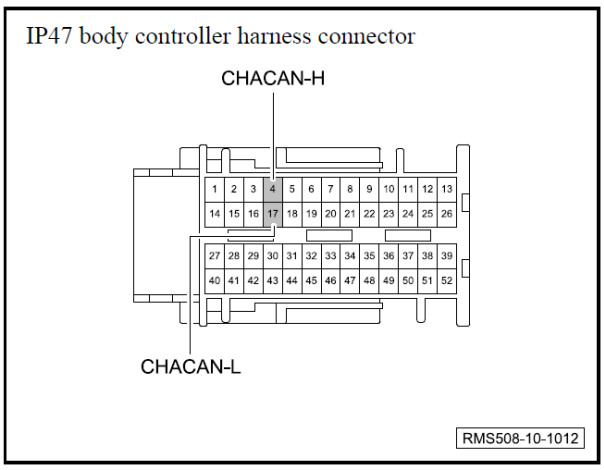
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CHACAN data communication wire.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Measure the resistance between terminal 4 and terminal 17 of the body controller harness connector IP47.
Standard resistance value: about **120Ω**
D Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

Yes → Repair or replace the harness.

No

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.10 DTC: U007588

DTC	DTC definition
U007588	CAN bus off

1. Diagnosis steps

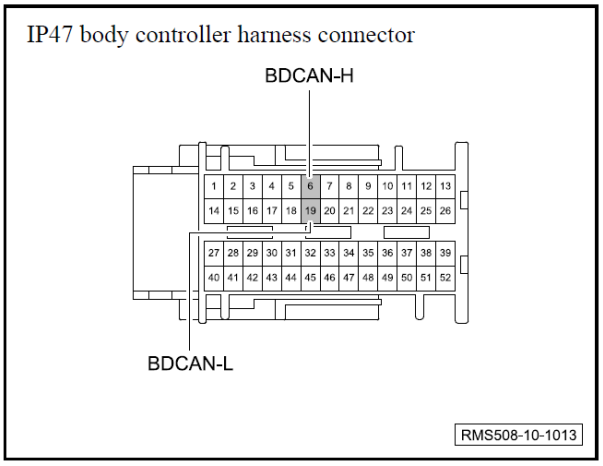
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the BDCAN data communication wire.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Measure the resistance between terminal 6 and terminal 19 of the body controller harness connector IP47.
Standard resistance value: about **120Ω**
D Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.11 DTC: U007688

DTC	DTC definition
U007688	CAN bus off

1. Diagnosis steps

Step 1	Check the DTCs.

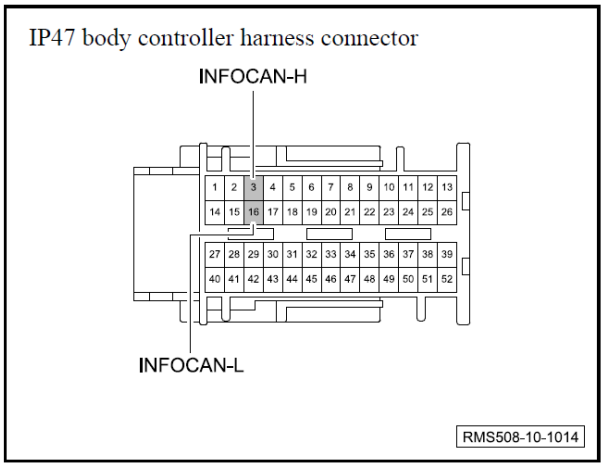
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the INFOCAN data communication wire.



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Measure the resistance between terminal 3 and terminal 16 of the body controller harness connector IP47.
Standard resistance value: about **120Ω**

D Confirm if the resistance conforms to the standard value

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the body controller.

A Check whether the power supply and ground wires of the body controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.12 DTC: U010387

DTC	DTC definition
U010387	Lost communication with GSM

1. Diagnosis steps

Step 1	Check the DTCs.

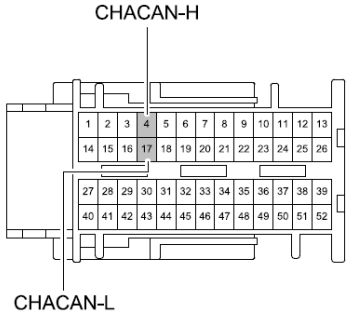
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

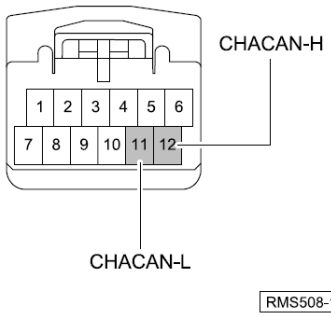
Yes

Step 2	Check the CAN data communication wire between the body controller and the gearshift control mechanism assembly.

IP47 body controller harness connector



IP30 gearshift control mechanism assembly harness connector



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the gearshift control mechanism assembly harness connector IP30.
D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 12 of the gearshift control mechanism assembly harness connector IP30.
E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 11 of the gearshift control mechanism assembly harness connector IP30.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the gearshift control mechanism assembly.

A Check whether the power supply ground wire of the gearshift control mechanism assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the gearshift control mechanism assembly.

A Replace the gearshift control mechanism assembly.

B Is the fault eliminated after replacing the gearshift control mechanism assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.13 DTC: U010087

DTC	DTC definition
U010087	Lost communication with EMS

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

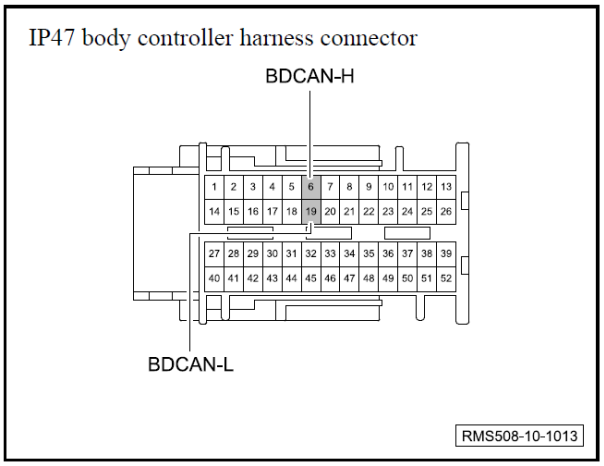
D Read the DTC again.

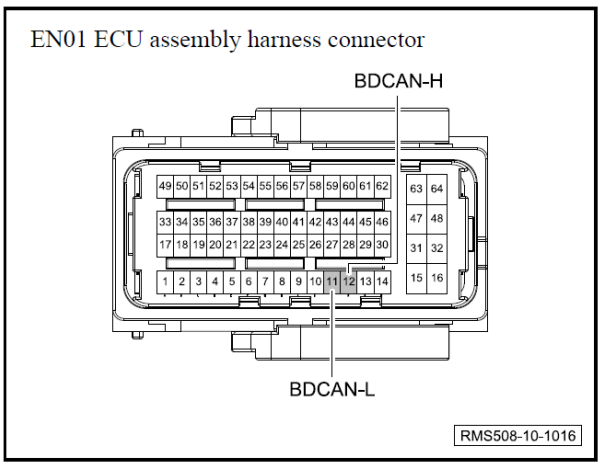
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the ECU assembly.





A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the ECU assembly harness connector EN01.
D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 12 of the ECU assembly harness connector EN01.
E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 11 of the ECU assembly harness connector EN01.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the ECU assembly.

A Check whether the power supply and ground wire of the ECU assembly are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the ECU assembly.

A Replace the ECU assembly.
B Is the fault eliminated after replacing the ECU assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.14 DTC: U013187

DTC	DTC definition
U013187	Lost communication with EPS

1. Diagnosis steps

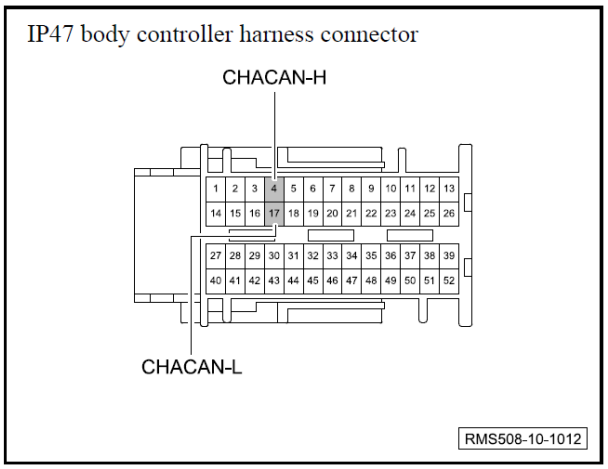
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

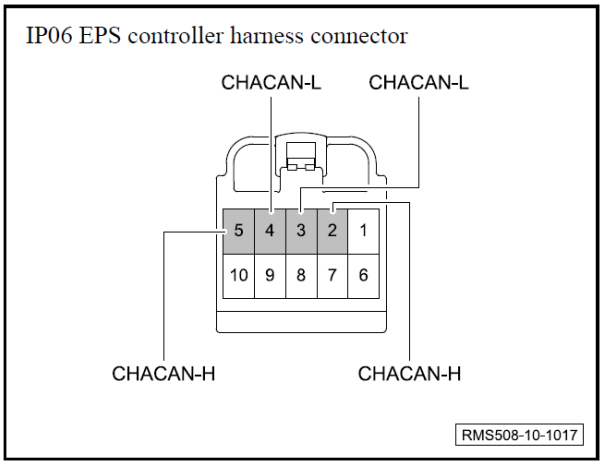
Yes

Step 2	Check the CAN data communication wire between the body controller and the EPS controller.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the EPS controller harness connector IP06.
D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 2/5 of the EPS controller harness connector IP06.
E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 3/4 of the EPS controller harness connector IP06.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the EPS controller.

A Check whether the power supply and ground wires of the EPS controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the steering column assembly.

A Replace the steering column assembly.

B Is the fault eliminated after replacing the steering column assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.15 DTC: U015187

DTC	DTC definition
U015187	Lost communication with ABM

1. Diagnosis steps

Step 1	Check the DTCs.

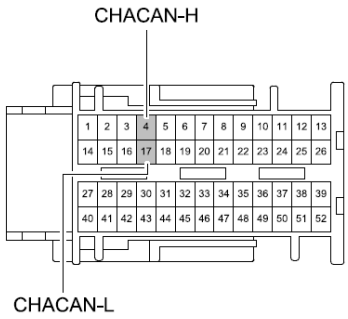
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

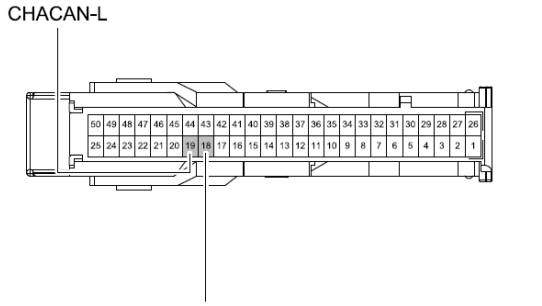
Yes

Step 2	Check the CAN data communication wire between the body controller and airbag ECU.

IP47 body controller harness connector



IP36 airbag ECU harness connector



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect airbag ECU harness connector IP36.
D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 18 of the airbag ECU harness connector IP36.
E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 19 of the airbag ECU harness connector IP36.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of SRS ECU.

A Check whether the power supply ground wire of the airbag ECU is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace airbag ECU.

A Replace airbag ECU.

B Is the fault eliminated after replacing the airbag ECU?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.16 DTC: U012887

DTC	DTC definition
U012887	Lost communication with EPB

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

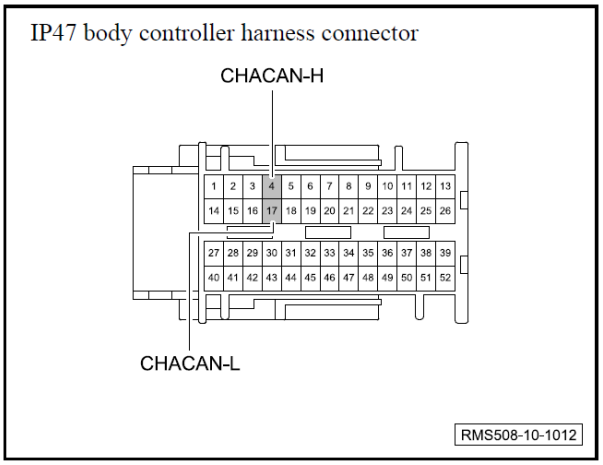
D Read the DTC again.

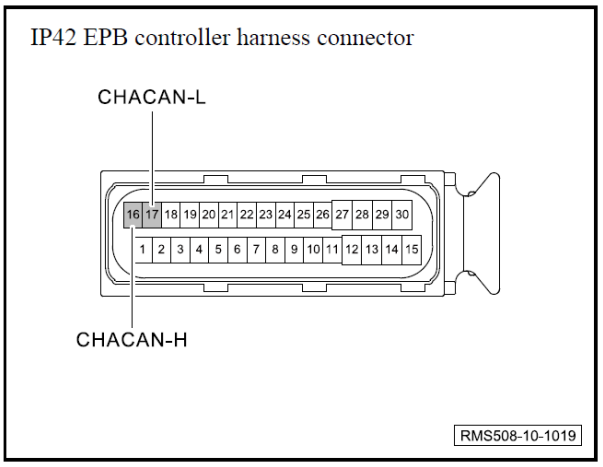
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the EPB controller.





A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect EPB controller harness connector IP42.
D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 16 of the EPB controller harness connector IP42.
E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 17 of the EPB controller harness connector IP42.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the EPB controller.

A Check whether the power supply and ground wires of the EPB controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the EPB controller.

A Replace the EPB controller.
B Is the fault eliminated after replacing the EPB controller?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.28.5.17 DTC: U023087

DTC	DTC definition
U023087	Lost communication with PLG

1. Diagnosis steps

Step 1	Check the DTCs.

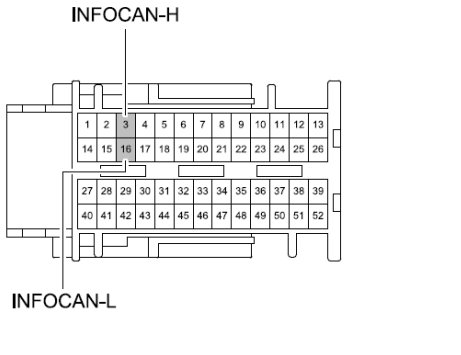
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

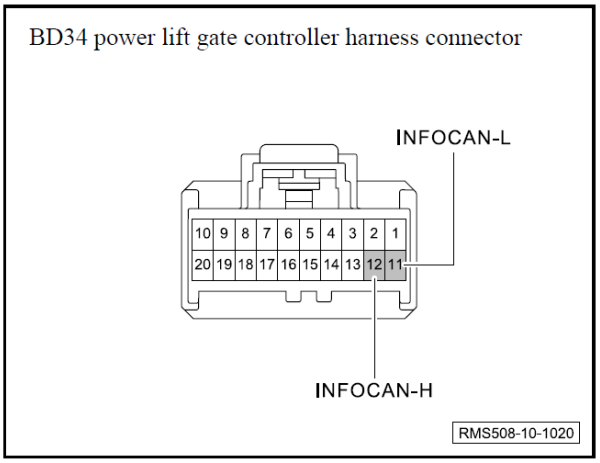
Step 2	Check the CAN data communication wire between the body controller and the power lift gate controller.

IP47 body controller harness connector



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the power lift gate controller harness connector BD34.
D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 12 of the power lift gate controller harness connector BD34.
E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal 11 of the power lift gate controller harness connector BD34.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the power lift gate controller.

A Check whether the power supply and ground wires of the power lift gate controller are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the power lift gate controller.

A Replace the power lift gate controller.

B Is the fault eliminated after replacing the power lift gate controller?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.18 DTC: U015587

DTC	DTC definition
U015587	Lost communication with IC

1. Diagnosis steps

Step 1	Check the DTCs.

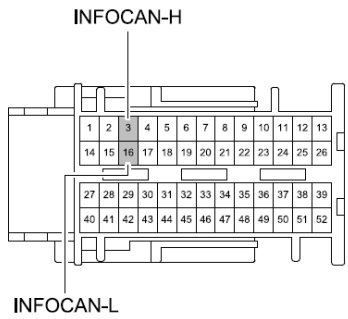
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

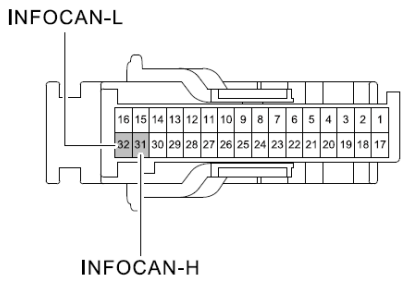
Yes

Step 2	Check the CAN data communication wire between the body controller and the instrument cluster.

IP47 body controller harness connector



IP13 combination instrument harness connector



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the instrument cluster harness connector IP13.
D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal 31 of the instrument cluster harness connector IP13.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 32 of instrument cluster harness connector IP13.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the instrument cluster.

A Check whether the power supply and ground wires of the instrument cluster are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the instrument cluster.

A Replace the instrument cluster.

B Is the fault eliminated after replacing the instrument cluster?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.19 DTC: U018687

DTC	DTC definition
U018687	Lost communication with IVI

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

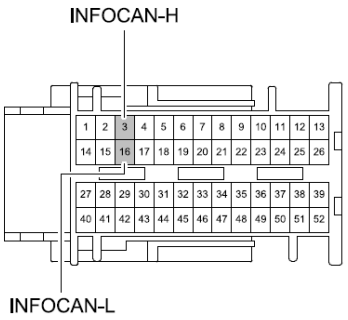
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

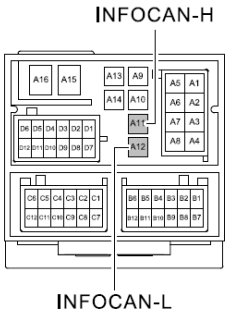
Yes

Step 2	Check the CAN data communication wire between the body controller and the entertainment system host.

IP47 body controller harness connector



IP14 entertainment system host harness connector



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the entertainment system host harness connector IP14.

D Measure the resistance between terminal 3 of the body controller harness connector IP47 and terminal A11 of the entertainment system host harness connector IP14.

E Measure the resistance between terminal 16 of the body controller harness connector IP47 and terminal A12 of the entertainment system host harness connector IP14.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the entertainment system host.

A Check whether the power supply ground wire of the entertainment system host works normally.

No → Repair or replace the harness.

Yes

Step 4	Replace the entertainment system host.

A Replace the entertainment system host.

B Is the fault eliminated after replacing the entertainment system host?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.28.5.20 DTC: U023287

DTC	DTC definition
U023287	Lost communication with SRR_1

1. Diagnosis steps

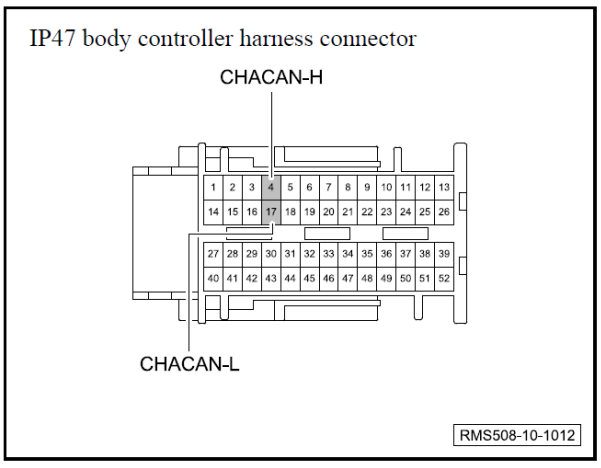
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

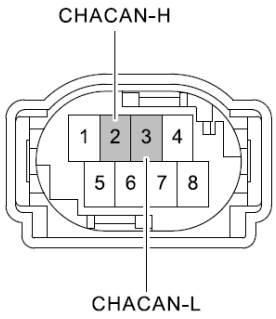
Step 2	Check the CAN data communication wire between the body controller and the left corner radar.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the left corner radar harness connector RB05.
D Measure the resistance of circuit between terminal 4 of the body controller harness connector IP47 and terminal 2 of the left corner radar harness connector RB05.
E Measure the resistance of circuit between terminal 17 of the body controller harness connector IP47 and terminal 3 of the left corner radar harness connector RB05.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

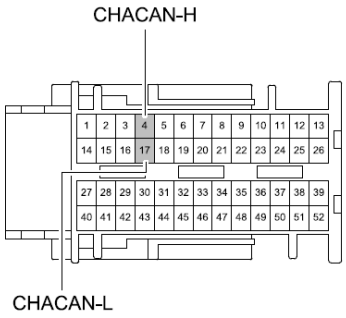
RB05 left corner radar harness connector



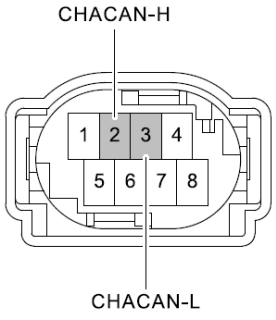
Yes

Step 3	Check the CAN data communication wire between the body controller and the right corner radar.

IP47 body controller harness connector



RB04 right corner radar harness connector



A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the right corner radar harness connector RB04.

D Measure the resistance of circuit between terminal 4 of the body controller harness connector IP47 and terminal 2 of the right corner radar harness connector RB04.

E Measure the resistance of circuit between terminal 17 of the body controller harness connector IP47 and terminal 3 of the right corner radar harness connector RB04.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No

Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply and ground wires of the left and right corner radars.

A Check whether the power supply and ground wires of the left and right corner radars are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the left and right corner radars.

A Replace the left and right corner radars.

B Is the fault eliminated after replacing the left and right corner radars?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.21 DTC:B102011,B102013

DTC	DTC definition
B102011	Front left turn signal short-circuited
B102013	Front left turn signal short-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the front left turn signal.

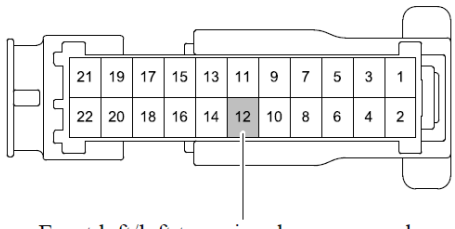
A Check whether the front left turn signal is burnt or damaged.

Yes → Replace the front left combination light.

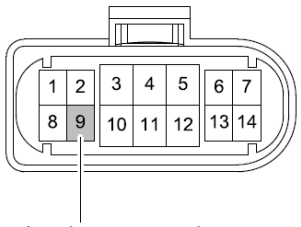
No

Step 3	Check whether the output circuit of the front left turn signal is open-circuited.

IP51 body controller harness connector



FB17 front left combination light harness connector



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP51.

C Disconnect the front left combination light harness connector FB17.

D Measure the resistance between terminal 12 of the body controller harness connector IP51 and terminal 9 of the front left combination light harness connector FB17.

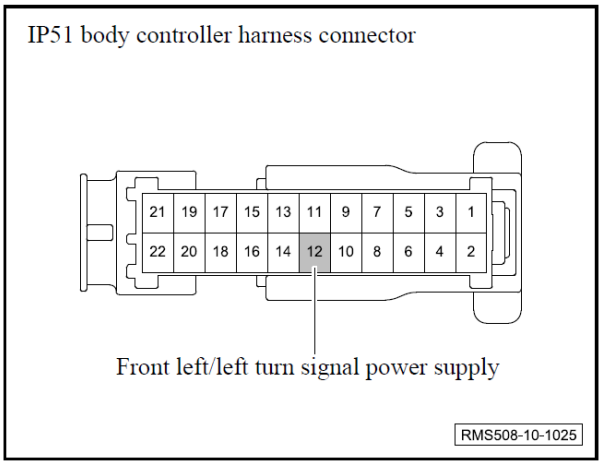
Standard resistance value: **<1Ω**

E Confirm whether the resistance conforms to the standard.

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the output circuit of the front left turn signal is short-circuited to ground.

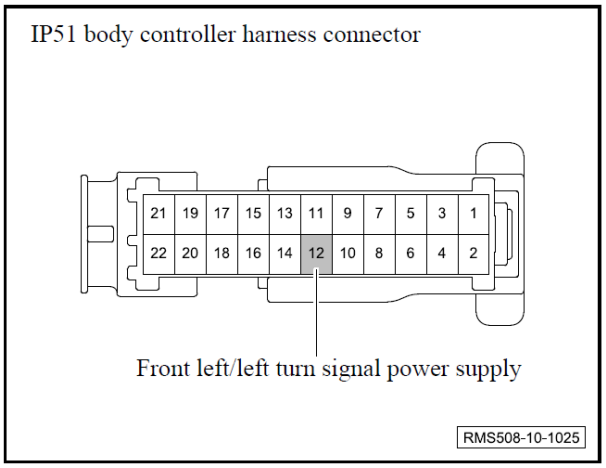


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front left combination light harness connector FB17.
D Measure the resistance between terminal 12 of the body controller harness connector IP51 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the output circuit of the front left turn signal is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front left combination light harness connector FB17.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 12 of the body controller harness connector IP51 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

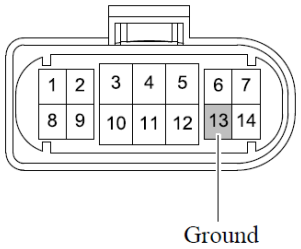
No → Replace or repair the harness or connector.

Yes

Step 6	Check the ground circuit of the front left turn signal.

A Turn the start switch to "OFF" position.
B Disconnect the front left combination light harness connector FB17.
C Measure the resistance between terminal 13 of the front left combination light harness connector FB17 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

FB17 front left combination light harness connector



RMS508-10-1027

No

Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.22 DTC:B102111,B102113

DTC	DTC definition
B102111	Front right turn signal short-circuited
B102113	Front right turn signal open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the front right turn signal.

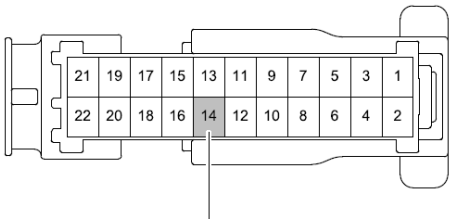
A Check whether the front right turn signal is burnt or damaged.

Yes → Replace the front right combination light.

No

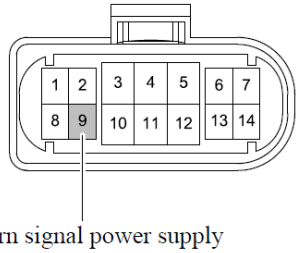
Step 3	Check whether the output circuit of the front right turn signal is open-circuited.

IP51 body controller harness connector



RMS508-10-1028

FB33 front right combination light harness connector



RMS508-10-1029

A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP51.

C Disconnect the front right combination light harness connector FB33.

D Measure the resistance between terminal 14 of the body controller harness connector IP51 and terminal 9 of the front right combination light harness connector FB33.
Standard resistance value: **<1Ω**

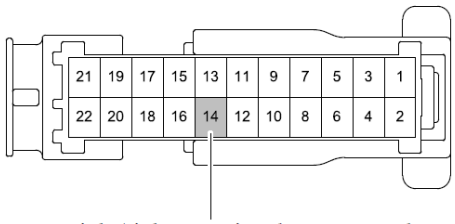
E Confirm whether the resistance conforms to the standard.

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the output circuit of the front right turn signal is short-circuited to ground.

IP51 body controller harness connector



RMS508-10-1028

A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP51.

C Disconnect the front right combination light harness connector FB33.

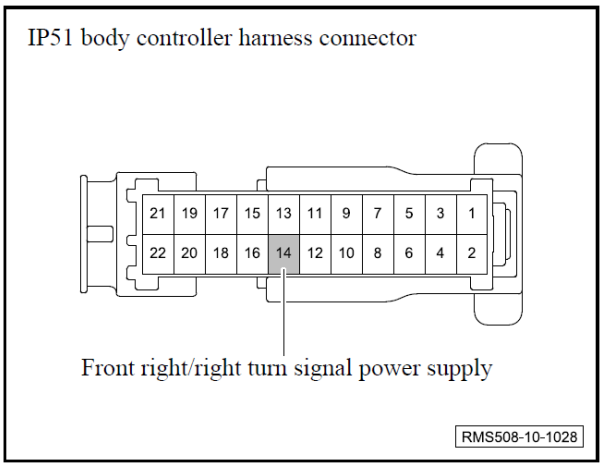
D Measure the resistance between terminal 14 of the body controller harness connector IP51 and the body ground.
Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the output circuit of the front right turn signal is short-circuited to power supply.

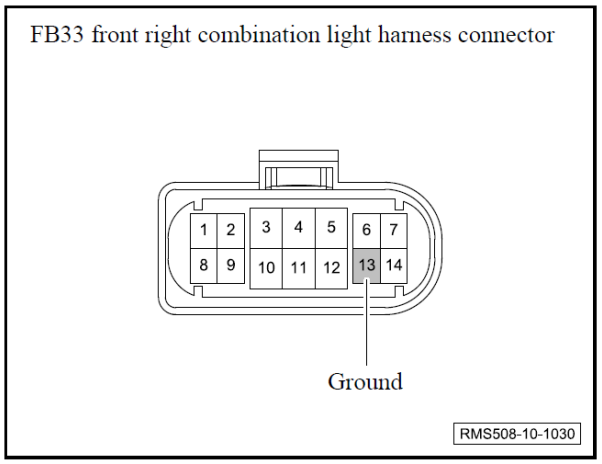


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP51.
C Disconnect the front right combination light harness connector FB33.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 14 of the body controller harness connector IP51 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Check the ground circuit of the front right turn signal.



A Turn the start switch to "OFF" position.
B Disconnect the front right combination light harness connector FB33.
C Measure the resistance between terminal 13 of the front right combination light harness connector FB33 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.23 DTC:B103011,B103013

DTC	DTC definition
B103011	Lift gate left turn signal short-circuited
B103013	Lift gate left turn signal open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

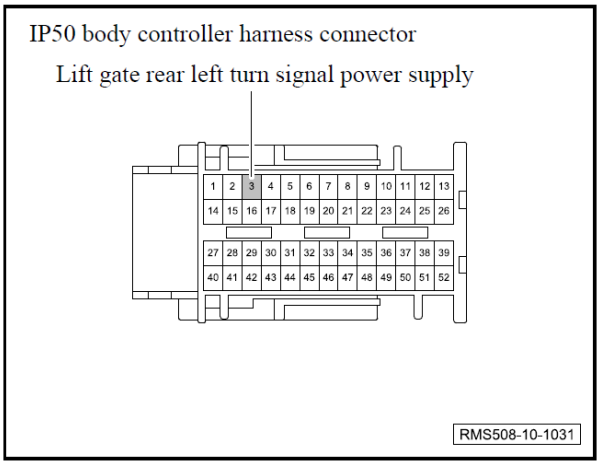
Step 2	Check the lift gate rear left turn signal.

A Check whether lift gate rear left turn signal is burnt or damaged.

Yes → Replace the lift gate rear left combination light.

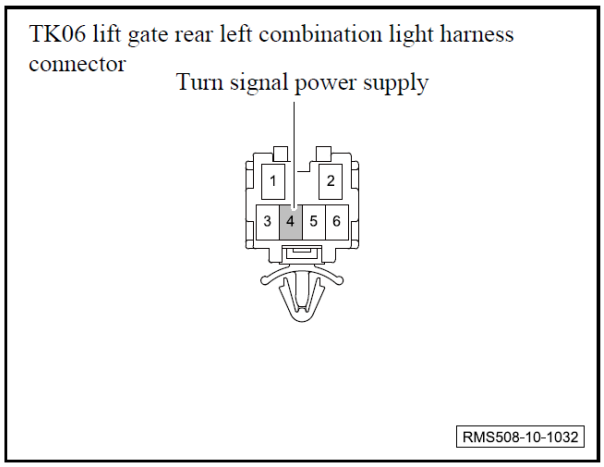
No

Step 3	Check whether the output circuit of the lift gate rear left turn signal is open-circuited.



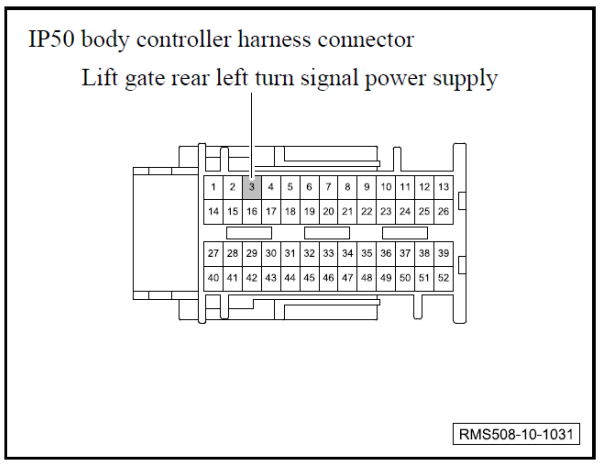
A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the lift gate rear left combination light harness connector TK06.
D Measure the resistance between terminal 3 of the body controller harness connector IP50 and terminal 4 of the lift gate rear left combination light harness connector TK06.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the output circuit of the lift gate rear left turn signal is short-circuited to ground.

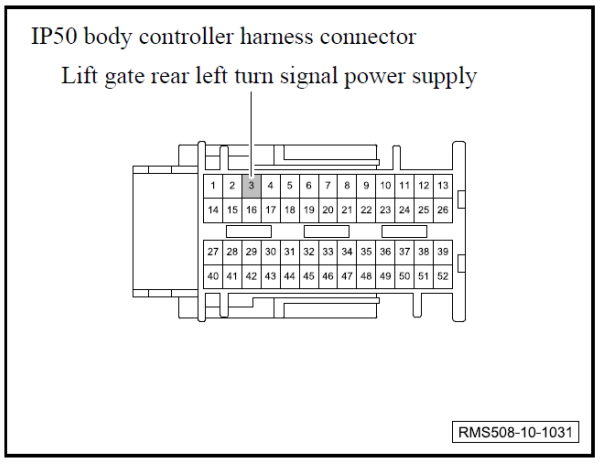


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the lift gate rear left combination light harness connector TK06.
D Measure the resistance between terminal 3 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the output circuit of the lift gate rear left turn signal is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the lift gate rear left combination light harness connector TK06.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 3 of the body controller harness connector IP50 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

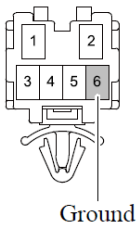
No → Replace or repair the harness or

connector.

Yes

Step 6	Check the ground circuit of the rear left turn signal of the lift gate.

TK06 lift gate rear left combination light harness connector



RMS508-10-1033

A Turn the start switch to "OFF" position.
B Disconnect the lift gate rear left combination light harness connector TK06.
C Measure the resistance between terminal 6 of the lift gate rear left combination light harness connector TK06 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes →

Next

Step 8	The diagnosis is over.

8.28.5.24 DTC:B103111,B103113

DTC	DTC definition
B103111	Lift gate right turn signal short-circuited
B103113	Lift gate right turn signal open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the lift gate rear right turn signal.

A Check whether lift gate rear right turn signal is burnt or damaged.

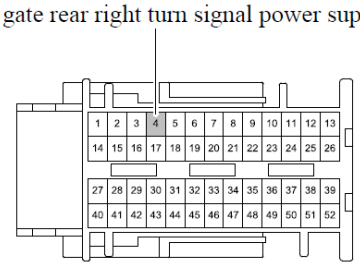
Yes → Replace the lift gate rear right combination light.

No

Step 3	Check whether the output circuit of the lift gate rear right turn signal is open-circuited.

IP50 body controller harness connector

Lift gate rear right turn signal power supply



RMS508-10-1034

A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP50.

C Disconnect the lift gate rear right combination light harness connector TK07.

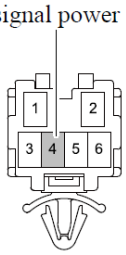
D Measure the resistance between terminal 4 of the body controller harness connector IP50 and terminal 4 of the lift gate rear right combination light harness connector TK07.

Standard resistance value: **<1Ω**

E Confirm whether the resistance conforms to the standard.

TK07 lift gate rear right combination light harness connector

Turn signal power supply

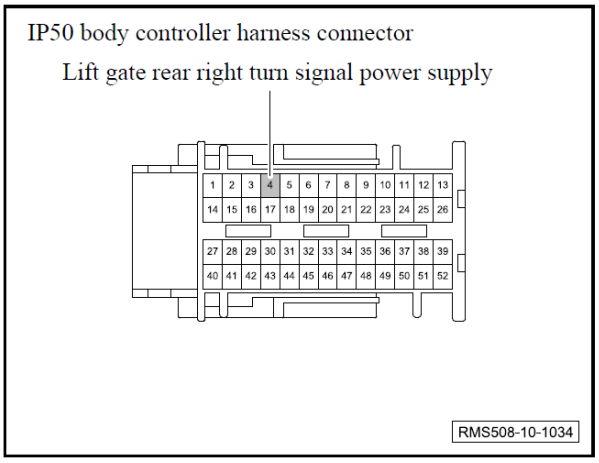


RMS508-10-1035

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the output circuit of the lift gate rear right turn signal is short-circuited to ground.

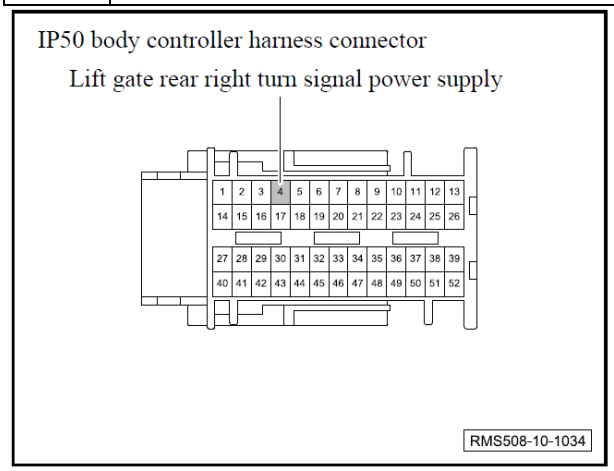


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the lift gate rear right combination light harness connector TK07.
D Measure the resistance between terminal 4 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the output circuit of the lift gate rear right turn signal is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the lift gate rear right combination light harness connector TK07.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 4 of the body controller harness connector IP50 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

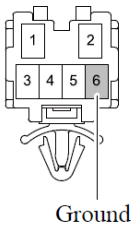
No → Replace or repair the harness or connector.

Yes

Step 6	Check the ground circuit of the rear right turn signal of the lift gate.

A Turn the start switch to "OFF" position.
B Disconnect the lift gate rear right combination light harness connector TK07.
C Measure the resistance between terminal 6 of the lift gate rear right combination light harness connector TK07 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

TK07 lift gate rear right combination light harness connector



No

Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.25 DTC:B103211,B103213

DTC	DTC definition
B103211	Rear bumper left turn signal short-circuited
B103213	Rear bumper left turn signal open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Start the vehicle, and read and record the DTCs.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

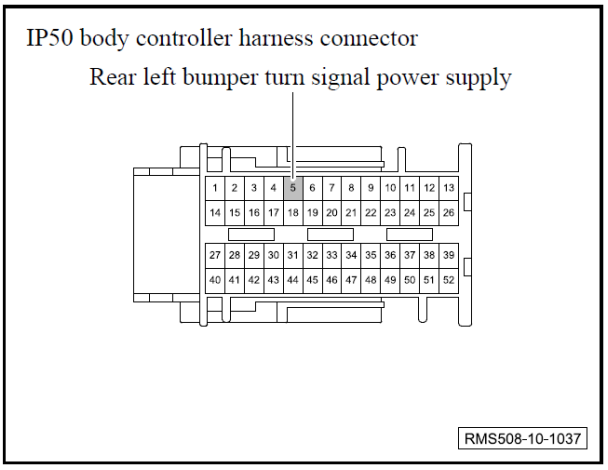
Step 2	Check the rear left bumper turn signal bulb.

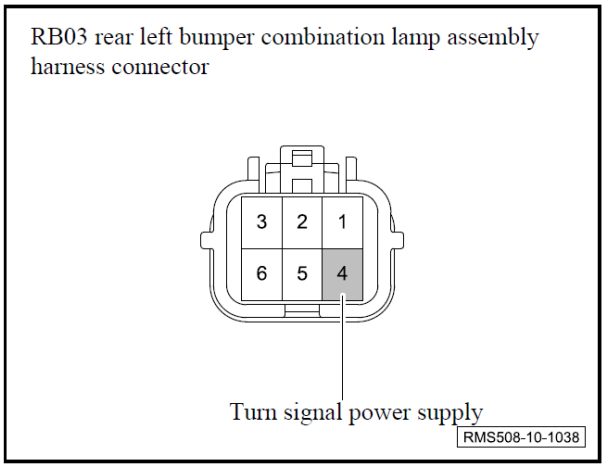
A Check whether the bulb of the rear left turn signal light is burnt or damaged.

Yes → Replace the rear left bumper turn signal bulb.

No

Step 3	Check whether the output circuit of the rear left bumper turn signal is open-circuited.



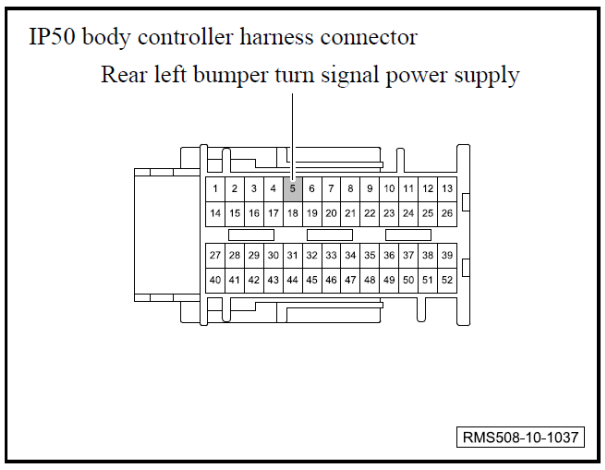


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear left bumper combination light assembly harness connector RB03.
D Measure the resistance between terminal 5 of the body controller harness connector IP50 and terminal 4 of the rear left bumper combination light assembly harness connector RB03.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Replace or repair the harness or connector.

Yes

Step 4	Check whether the output circuit of the rear left bumper turn signal is short-circuited to ground.

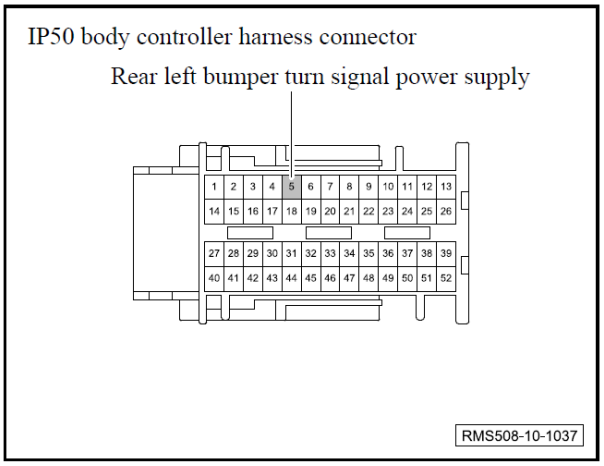


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear left bumper combination light assembly harness connector RB03.
D Measure the resistance between terminal 5 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the output circuit of the rear left bumper turn signal is short-circuited to the power supply.

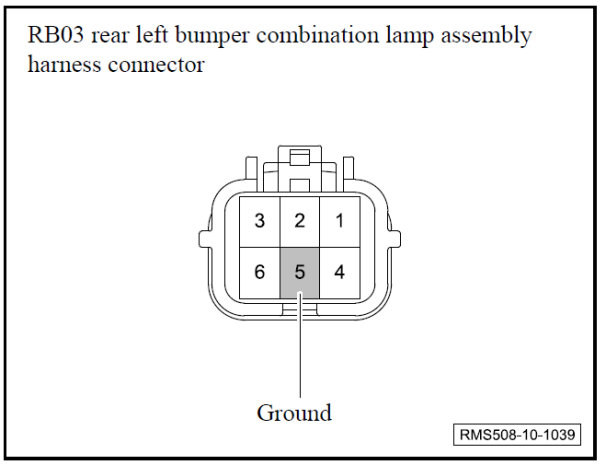


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear left bumper combination light assembly harness connector RB03.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 5 of the body controller harness connector IP50 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 6	Check the ground circuit of the rear left bumper turn signal.



A Turn the start switch to "OFF" position.
B Disconnect the rear left bumper combination light assembly harness connector RB03.
C Measure the resistance between terminal 5 of the rear left bumper combination light assembly harness connector RB03 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.26 DTC:B103311,B103313

DTC	DTC definition
B103311	Rear bumper right turn signal short-circuited
B103313	Rear bumper right turn signal open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

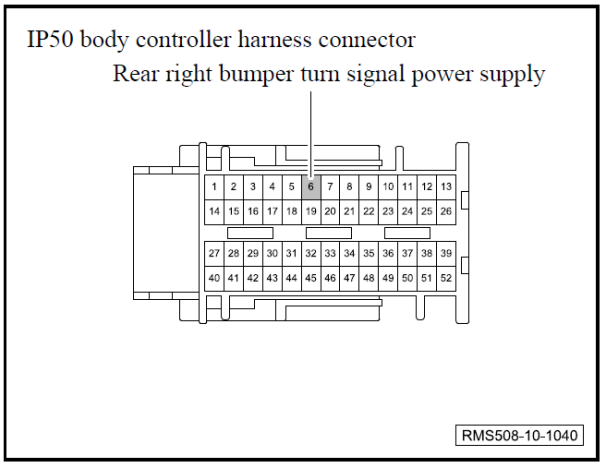
Step 2	Check the rear right bumper turn signal bulb.

A Check whether the bulb of the rear right turn signal light is burnt or damaged.

Yes → Replace the rear right bumper turn signal bulb.

No

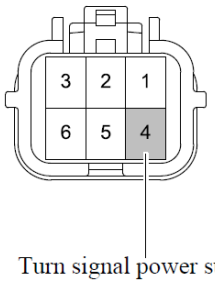
Step 3	Check whether the output circuit of the rear right bumper turn signal is open-circuited.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear right bumper combination light assembly harness connector RB02.
D Measure the resistance between terminal 6 of the body controller harness connector IP50 and terminal 4 of the rear left bumper combination light assembly harness connector RB02.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Replace or repair the harness or connector.

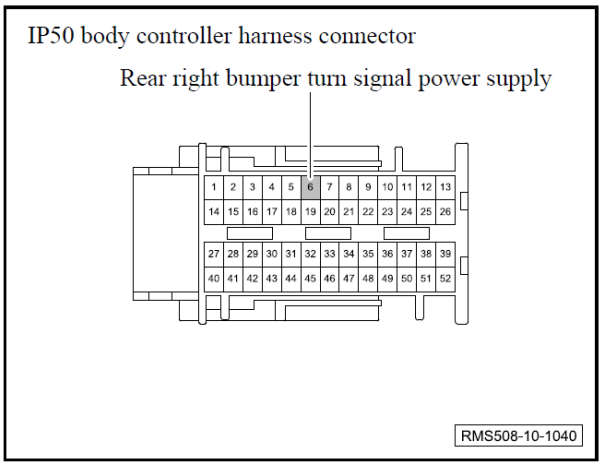
RB02 rear right bumper combination light assembly harness connector



Yes

Step 4	Check whether the output circuit of the rear right bumper turn signal is short-circuited to ground.

IP50 body controller harness connector



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP50.

C Disconnect the rear right bumper combination light assembly harness connector RB02.

D Measure the resistance between terminal 6 of the body controller harness connector IP50 and the body ground.

Standard resistance value: 10 kΩ or higher

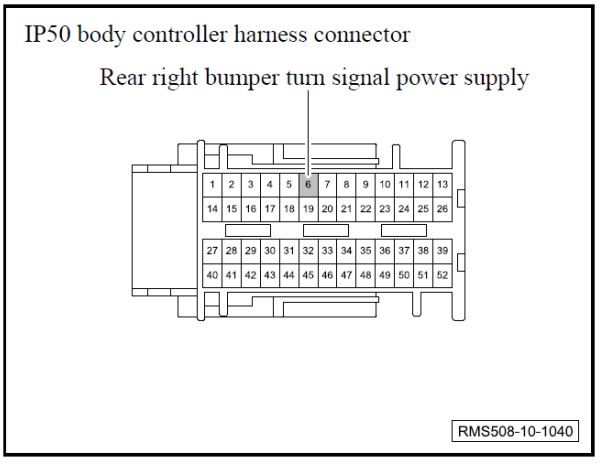
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the output circuit of the rear right bumper turn signal is short-circuited to the power supply.

IP50 body controller harness connector



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP50.

C Disconnect the rear right bumper combination light assembly harness connector RB02.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 6 of the body controller harness connector IP50 and the body ground.

Standard voltage value: **0V**

F Make sure that the voltage conforms to the standard value.

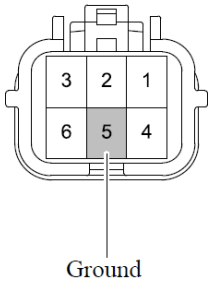
No → Replace or repair the harness or

connector.

Yes

Step 6	Check the ground circuit of the rear right bumper turn signal.

RB02 rear right bumper combination light assembly harness connector



A Turn the start switch to "OFF" position.
B Disconnect the rear right bumper combination light assembly harness connector RB02.
C Measure the resistance between terminal 5 of the rear right bumper combination light assembly harness connector RB02 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.27 DTC: B102911

DTC	DTC definition
B102911	Left blind spot indicator short-circuited to the ground

1. Diagnosis steps

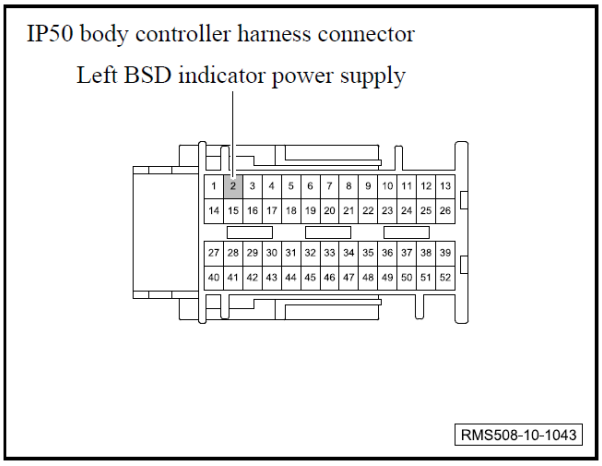
Step 1	Check the DTCs.

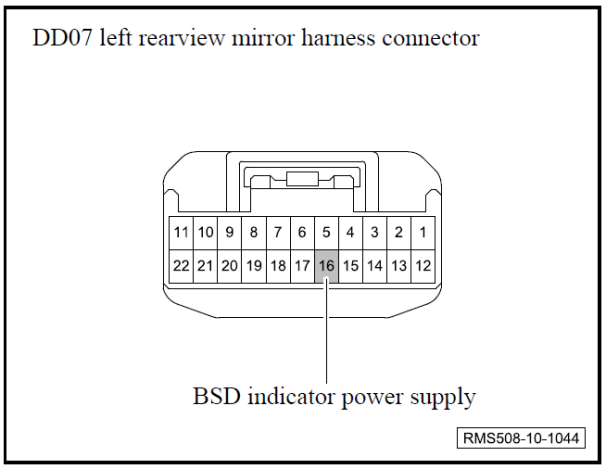
A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the output circuit of the left BSD indicator is open-circuited.





A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP50.

C Disconnect the left rearview mirror harness connector DD07.

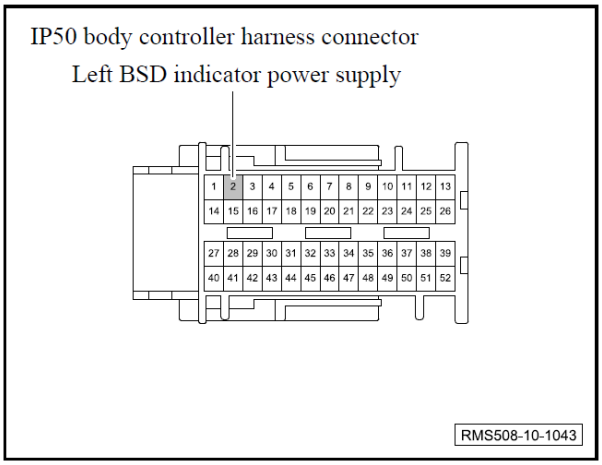
D Measure the resistance between terminal 2 of the body controller harness connector IP50 and terminal 16 of the left rearview mirror harness connector DD07.
Standard resistance value: **<1Ω**

E Confirm whether the resistance conforms to the standard.

No → Replace or repair the harness or connector.

Yes

Step 3	Check whether the output circuit of the left BSD indicator is short-circuited to the ground.



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP50.

C Disconnect the left rearview mirror harness connector DD07.

D Measure the resistance between terminal 2 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.28 DTC: B102A11

DTC	DTC definition
B102A11	Right blind spot indicator short-circuited to the ground

1. Diagnosis steps

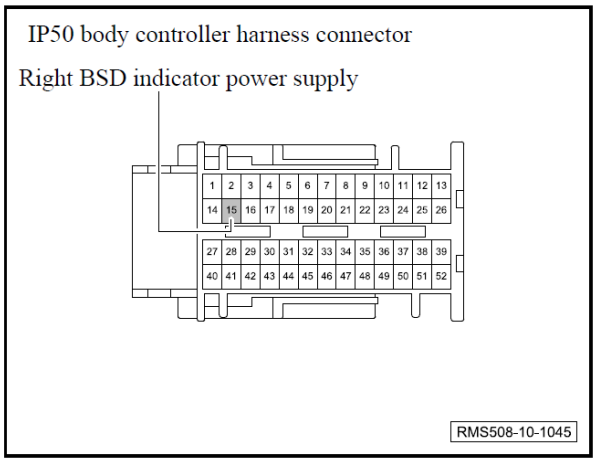
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

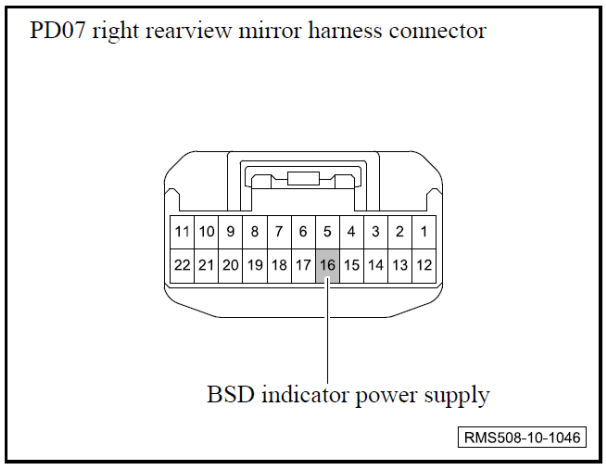
Yes

Step 2	Check whether the output circuit of the right BSD indicator is open-circuited.



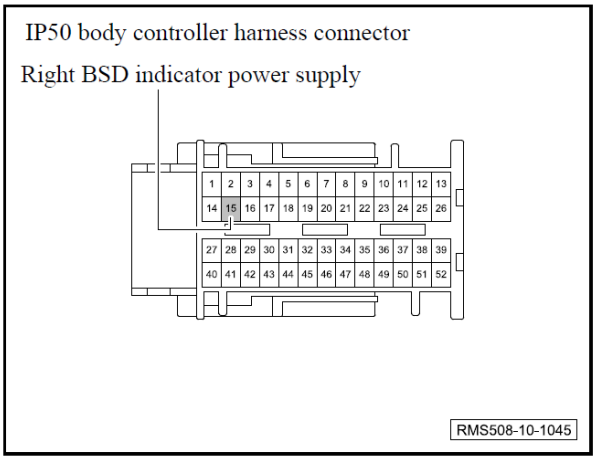
A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the right rearview mirror harness connector PD07.
D Measure the resistance between terminal 15 of the body controller harness connector IP50 and terminal 16 of the right rearview mirror harness connector PD07.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Replace or repair the harness or connector.



Yes

Step 3	Check whether the output circuit of the right BSD indicator is short-circuited to the ground.



A Turn the start switch to "OFF" position.

B Disconnect the body controller harness connector IP50.

C Disconnect the right rearview mirror harness connector PD07.

D Measure the resistance between terminal 15 of the body controller harness connector IP50 and the body ground.
Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.29 DTC: B104171

DTC	DTC definition
B104171	Front wiper motor stalled

1. Diagnosis steps

Step 1	Check the DTCs.

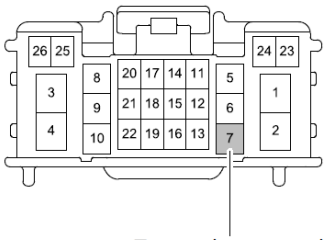
A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

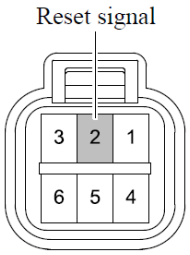
Step 2	Check the circuit between the front wiper motor and the body controller.

IP48 body controller harness connector



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP48.
C Disconnect the front wiper motor harness connector FB09.
D Measure the resistance of the circuit between terminal 7 of the body controller harness connector IP48 and terminal 2 of the front wiper motor harness connector FB09.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

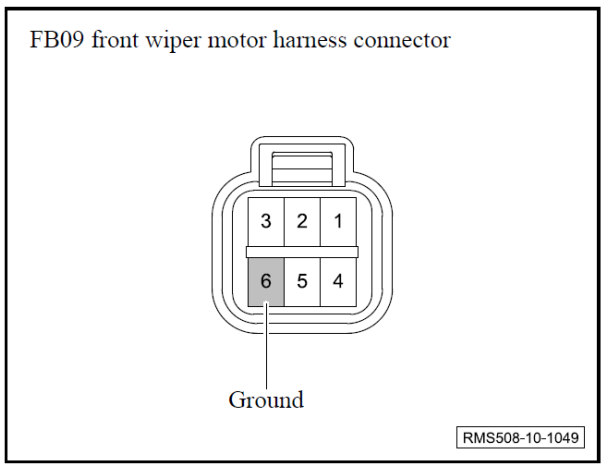
FB09 front wiper motor harness connector



No → Repair or replace the harness.

Yes

Step 3	Check the ground circuit of the front wiper motor.



A Turn the start switch to "OFF" position.
B Disconnect the front wiper motor harness connector FB09.
C Measure the resistance between terminal 6 of the front wiper motor harness connector FB09 and the body ground.
Standard resistance value: **<1Ω**
D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Replace the front wiper motor and bracket assembly.

A Replace the front wiper motor and bracket assembly.
B Is the fault eliminated after replacing the front wiper motor and bracket assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.30 DTC: B104271

DTC	DTC definition
B104271	Rear wiper motor stalled

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.

D Read the DTC again.

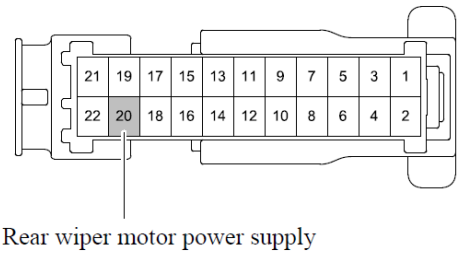
E Check whether the same DTC is displayed.

No — As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the rear wiper motor and the body controller.

IP51 body controller harness connector



A Turn the start switch to "OFF" position.

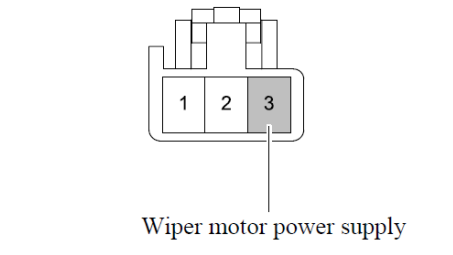
B Disconnect the body controller harness connector IP51.

C Disconnect the rear wiper motor harness connector TK12.

D Measure the resistance of the circuit between terminal 20 of the body controller harness connector IP51 and terminal 3 of the rear wiper motor harness connector TK12.
Standard resistance value: **<1Ω**

E Confirm whether the resistance conforms to the standard.

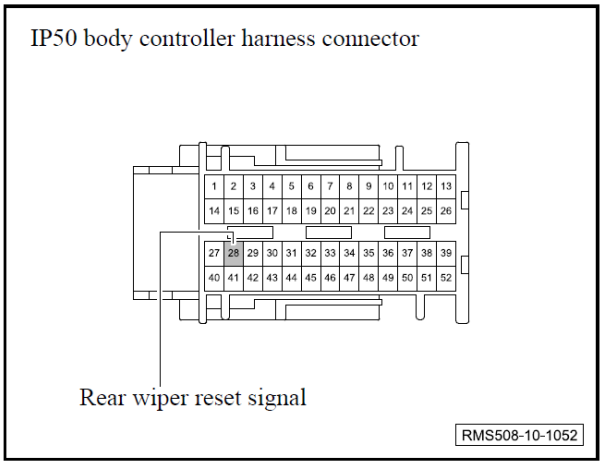
TK12 rear wiper motor harness connector



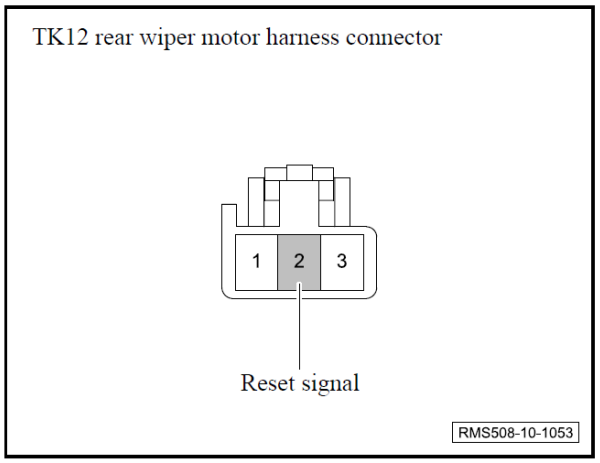
No — Repair or replace the harness.

Yes

Step 3	Check the reset signal circuit of the rear wiper motor.



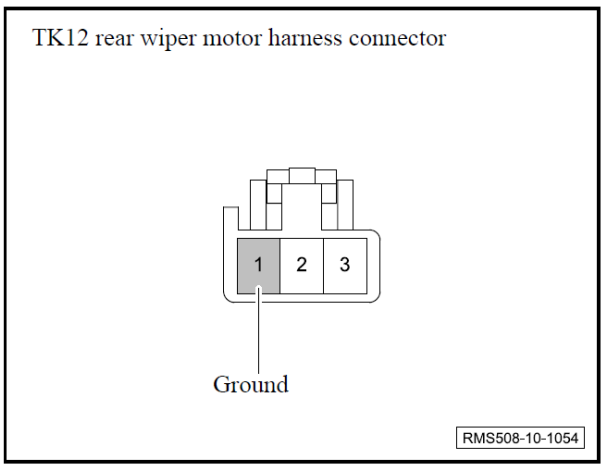
A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP50.
C Disconnect the rear wiper motor harness connector TK12.
D Measure the resistance of the circuit between terminal 28 of the body controller harness connector IP50 and terminal 2 of the rear wiper motor harness connector TK12.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.



No → Repair or replace the harness.

Yes

Step 4	Check the ground circuit of the rear wiper motor.



A Turn the start switch to "OFF" position.
B Disconnect the rear wiper motor harness connector TK12.
C Measure the resistance of the circuit between terminal 1 of the rear wiper motor harness connector TK12 and the body ground.
Standard resistance value: **<1Ω**
D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the rear wiper motor and bracket assembly.

A Replace the rear wiper motor and bracket assembly.
B Is the fault eliminated after replacing the rear wiper motor and bracket assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.31 DTC: B101449, B101683.....

DTC	DTC definition
B101449	Internal fault of sunroof
B101683	Sunroof LIN bus communication fails
B103087	Sunshade LIN bus communication fails
B103096	Internal fault of sunshade

1. Diagnosis steps

Notes

This diagnosis is suitable for models with panoramic sunroofs. The diagnosis method for models with small sunroofs is similar, so this diagnosis content can be referred to.

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse IF09 of the panoramic sunroof controller.

A Check whether the fuse IF09 is blown.

No → Go to Step 5.

Yes

Step 3	Check and repair the circuit of the fuse IF09.

A Check whether the fuse IF09 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

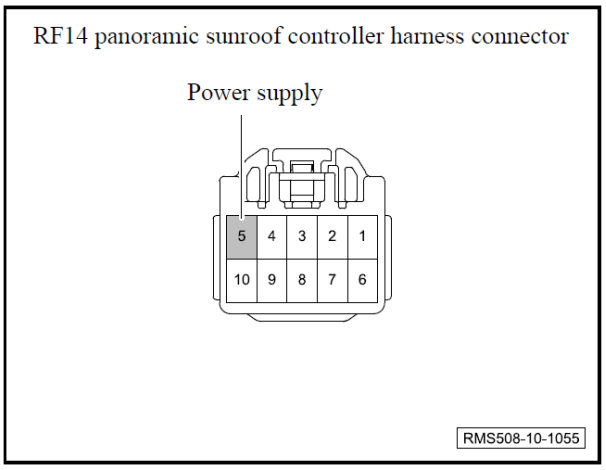
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF0920A**

D Confirm whether the panoramic sunroof controller works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the panoramic sunroof controller.



A Turn the start switch to "OFF" position.

B Disconnect the panoramic sunroof controller harness connector RF14.

C Put the Start switch to “ON” position.

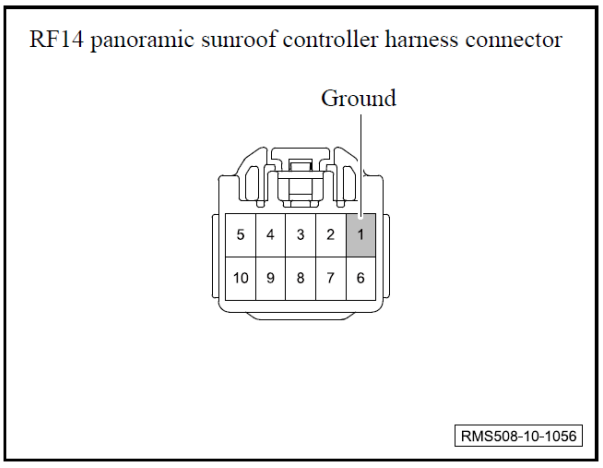
D Measure the voltage between terminal 5 of the panoramic sunroof controller harness connector RF14 and the body ground.
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the panoramic sunroof controller.

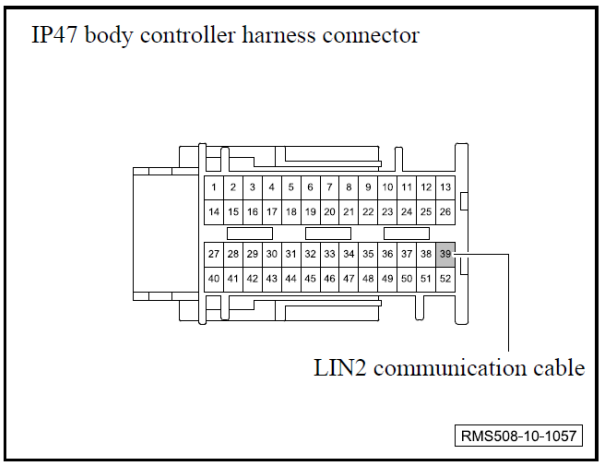


A Turn the start switch to "OFF" position.
B Disconnect the panoramic sunroof controller harness connector RF14.
C Measure the resistance between terminal 1 of the panoramic sunroof controller harness connector RF14 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

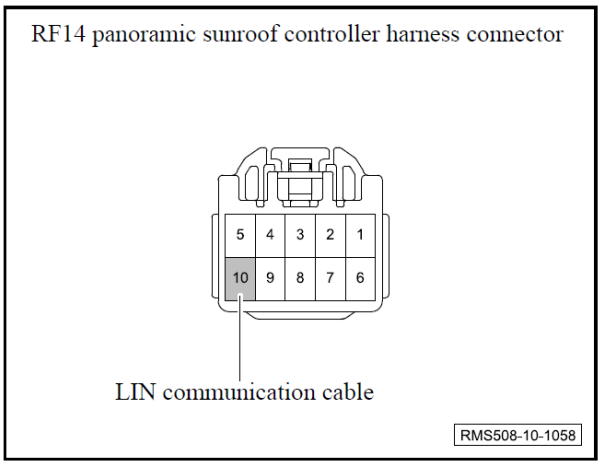
No → Repair or replace the harness.

Yes

Step 6	Check the LIN communication wire between the body controller and the panoramic sunroof controller.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the panoramic sunroof controller harness connector RF14.
D Measure the resistance between terminal 39 of the body controller harness connector IP47 and terminal 10 of the panoramic sunroof controller harness connector RF14.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value



No → Check the LIN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 7	Replace the panoramic sunroof controller.

A Replace the panoramic sunroof controller.
B Is the fault eliminated after replacing the panoramic sunroof controller?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.28.5.32 DTC:B101796,B101B96

DTC	DTC definition
B101796	Front left window switch fault
B101B96	LIN bus communication of driver's door window switch fails

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the main electric window switch.

A Check whether the main electric window switch is damaged or watered.

Yes → Replace the main electric window switch.

No

Step 3	Check fuse IF16 of the main electric window switch.

A Check whether the fuse IF16 is blown.

No → Go to Step 5.

Yes

Step 4	Repair the circuit of fuse IF16.

A Check whether the circuit of fuse IF16 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

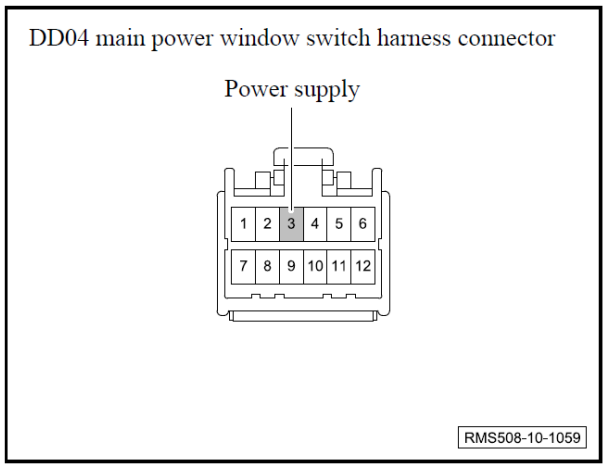
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF165A**

D Confirm whether the main electric window switch works normally.

Yes → The system works normally.

No

Step 5	Check the power circuit of the main electric window switch.



A Turn the start switch to "OFF" position.

B Disconnect the harness connector DD04 of the main electric window switch.

C Put the Start switch to “ON” position.

D Measure the voltage between terminal 3 of the main electric window switch harness connector DD04 and the body ground.
Standard voltage value: **11~14V**

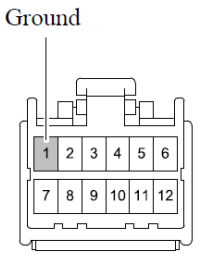
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the main electric window switch.

DD04 main power window switch harness connector



RMS508-10-1060

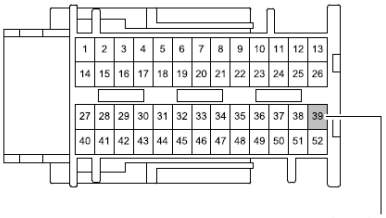
A Turn the start switch to "OFF" position.
B Disconnect the harness connector DD04 of the main electric window switch.
C Measure the resistance between terminal 1 of the main electric window switch harness connector DD04 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 7	Check the LIN communication wire between the body controller and the main electric window switch.

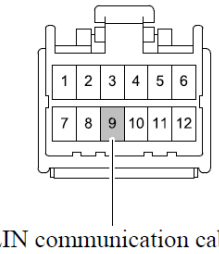
IP47 body controller harness connector



RMS508-10-1057

A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the harness connector DD04 of the main electric window switch.
D Measure the resistance between terminal 39 of the body controller harness connector IP47 and terminal 9 of the main electric window switch harness connector DD04.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

DD04 main power window switch harness connector



RMS508-10-1061

No → Check the LIN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 8	Replace the main electric window switch.

A Replace the main electric window switch.
B Is the fault eliminated after replacing the main electric window switch?

Yes → The system works normally.

No

Step 9	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 10	The diagnosis is over.

8.28.5.33 DTC: B132596, B132696.....

DTC	DTC definition
B132596	Wiper switch fault
B132696	Light switch fault
B161096	LIN bus communication of combination switch

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check fuses IF11 and IF24 of the combination switch.

A Check whether the fuses IF11 and IF24 are blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuits of fuses IF11 and IF24.

A Check whether the fuses IF11 and IF24 are short-circuited.

B Repair the circuit and make sure there is no short circuit.

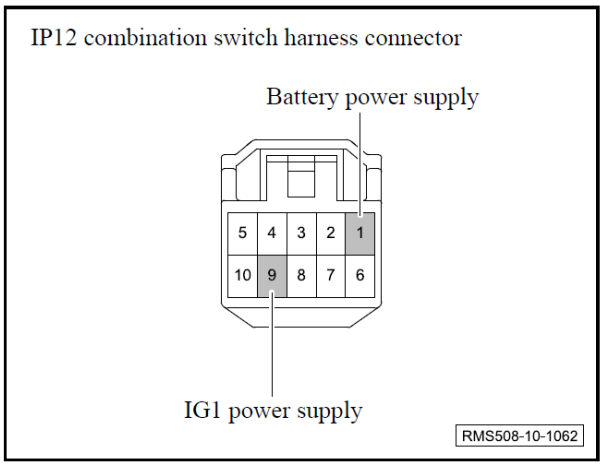
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF1110A, IF245A**

D Confirm whether the combination switch works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the combination switch.



A Turn the start switch to "OFF" position.

B Disconnect the combination switch harness connector IP12.

C Put the Start switch to “ON” position.

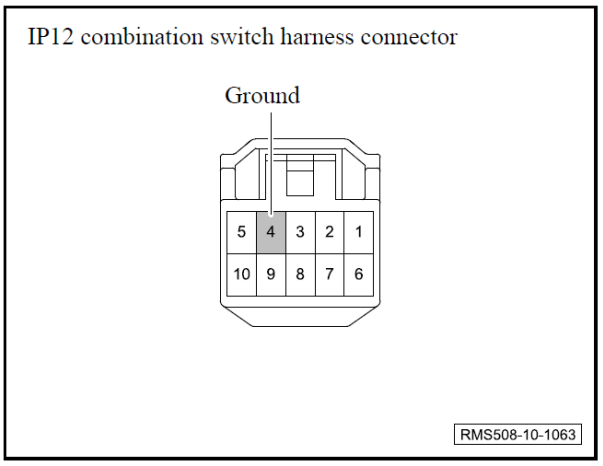
D Measure the voltage between terminal 1/9 of the combination switch harness connector IP12 and the body ground.
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the combination switch.



A Turn the start switch to "OFF" position.

B Disconnect the combination switch harness connector IP12.

C Measure the resistance between terminal 4 of the combination switch harness connector IP12 and the body ground.
Standard resistance value: **<1Ω**

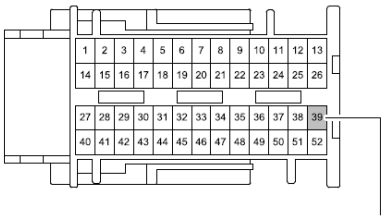
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

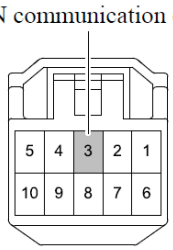
Step 6	Check the LIN communication wire between the body controller and the combination switch.

IP47 body controller harness connector



RMS508-10-1057

IP12 combination switch harness connector



RMS508-10-1064

A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the combination switch harness connector IP12.

D Measure the resistance between terminal 39 of the body controller harness connector IP47 and terminal 3 of the combination switch harness connector IP12.

Standard resistance value: **<1Ω**

E Confirm if the resistance conforms to the standard value

No → Check the LIN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 7	Replace the combination switch.

A Replace the combination switch.

B Is the fault eliminated after replacing the combination switch?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.28.5.34 DTC: B141096

DTC	DTC definition
B141096	LIN bus communication of light/rain sensor fails

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse IF20 of the light/rain sensor.

A Check whether the fuse IF20 is blown.

No → Go to Step 4.

Yes

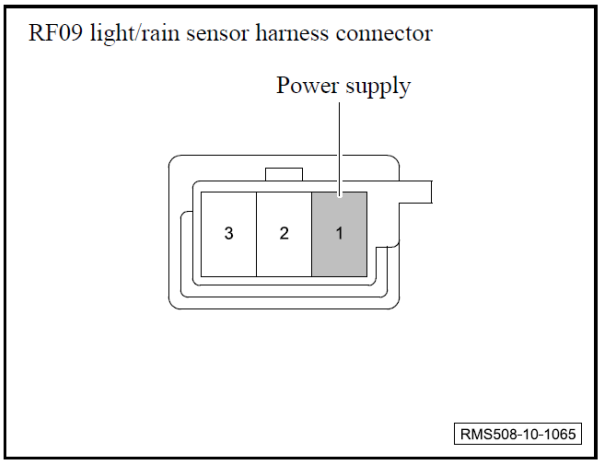
Step 3	Check the circuit of the fuse IF20.

A Check whether the circuit of fuse IF20 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF205A**
D Confirm whether the light/rain sensor works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the light/rain sensor.

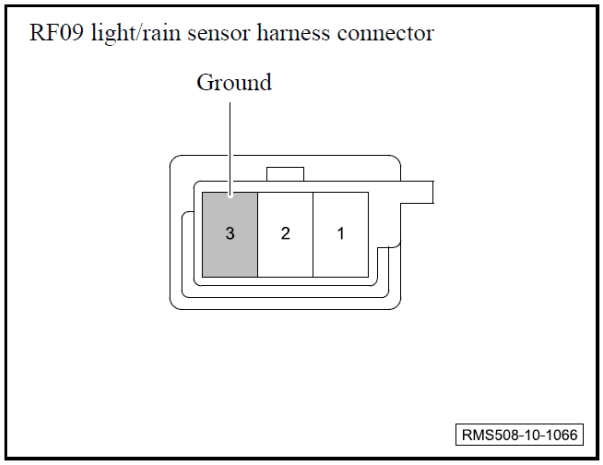


A Turn the start switch to "OFF" position.
B Disconnect the light/rain sensor harness connector RF09.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 1 of the light/rain sensor harness connector RF09 and the body ground.
Standard voltage value: **11~14V**
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the light/rain sensor.

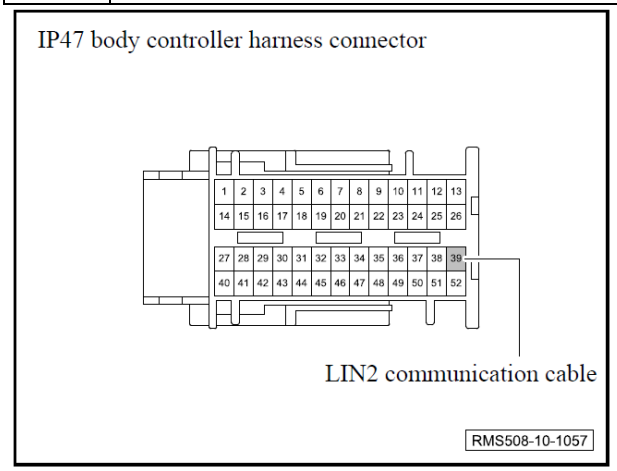


A Turn the start switch to "OFF" position.
B Disconnect the light/rain sensor harness connector RF09.
C Measure the resistance between terminal 3 of the light/rain sensor harness connector RF09 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

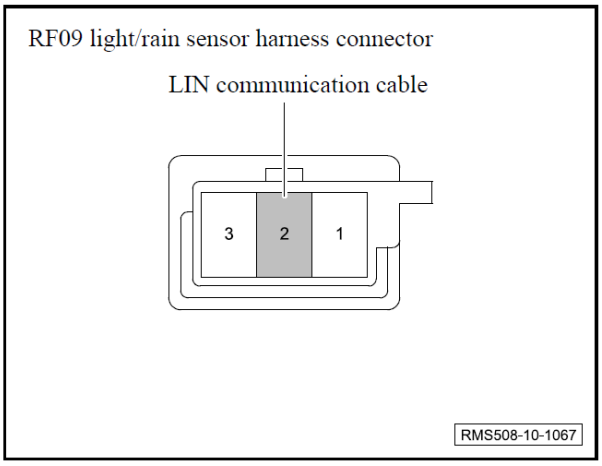
Step 6	Check the LIN communication wire between the body controller and the sunlight/rain sensor.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the light/rain sensor harness connector RF09.
D Measure the resistance between terminal 39 of the body controller harness connector IP47 and terminal 2 of the sunlight/rain sensor harness connector RF09.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Check the LIN data communication wire for possible short circuit, open circuit and virtual connection, or

replace the harness.



Yes

Step 7	Replace the light/rain sensor.

A Replace the light/rain sensor.

B Is the fault eliminated after replacing the light/rain sensor?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.28.5.35 DTC: B10F087, B10F187.....

DTC	DTC definition
B10F087	Front left tire pressure signal lost
B10F187	Front right tire pressure signal lost
B10F287	Rear left tire pressure signal lost
B10F387	Rear right tire pressure signal lost

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Erase the DTC, start the vehicle, and drive the vehicle at the speed ≥25km/h till tire pressure display is normal.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Carry out interference inspection of modified and additional circuits of the vehicle.

A Check whether the vehicle is installed with electronic equipment (including a Bluetooth access card).
B After removing the electronic equipment, erase the DTC, start the vehicle, and drive the vehicle at the speed ≥25km/h till tire pressure display is normal.
C Read the DTC again.
D Check whether the same DTC is displayed.

No → The system works normally.

Yes

Step 3	Replace the tire pressure sensor.

A Replace the tire pressure sensor and use a diagnostic scanner to match it again.
B Is the fault eliminated after replacing the tire pressure sensor?

Yes → The system works normally.

No

Step 4	Check the power supply and ground wires of the tire pressure monitoring control unit (body controller).

A Check whether the power supply and ground wires of the tire pressure monitoring control unit (body controller) are normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the tire pressure monitoring control unit (body controller).

A Replace the tire pressure monitoring control unit (body controller).

B Is the fault eliminated after replacing the tire pressure monitoring control unit (body controller)?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.36 DTC: B10F084, B10F184.....

DTC	DTC definition
B10F084	Battery Low of Front Left Tire Pressure Sensor
B10F184	Battery Low of Front Right Tire Pressure Sensor
B10F284	Battery Low of Rear Left Tire Pressure Sensor
B10F384	Battery Low of Rear Right Tire Pressure Sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Erase the DTC, start the vehicle, and drive the vehicle at the speed ≥25km/h till tire pressure display is normal.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Replace the tire pressure sensor.

A Replace the tire pressure sensor and use a diagnostic scanner to match it again.

B Is the fault eliminated after replacing the tire pressure sensor?

Yes → The system works normally.

No

Step 3	Replace the tire pressure monitoring control unit (body controller).

A Replace the tire pressure monitoring control unit (body controller).

B Is the fault eliminated after replacing the tire pressure monitoring control unit (body controller)?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.28.5.37 DTC: B120000

DTC	Description
B120000	ENGINE START/STOP button stuck

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	

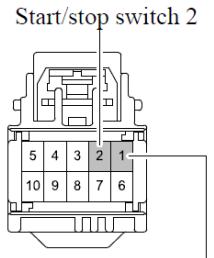
A Check whether the ENGINE START/STOP button is damaged or watered.

Yes → Repair or replace the ENGINE START/STOP button.

No

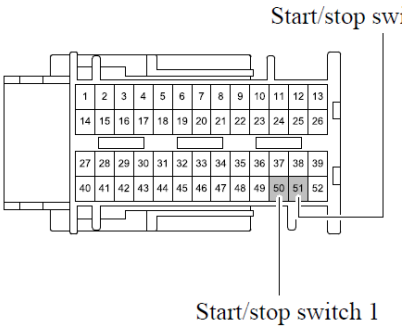
Step 3	Check whether the circuit between the ENGINE START STOP button and the body controller is open-circuited.

IP21 ENGINE START STOP button harness connector



RMS508-10-1068

IP47 body controller harness connector



RMS508-10-1069

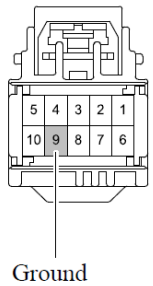
A Turn the start switch to "OFF" position.
B Disconnect harness connector IP21 of the ENGINE START/STOP button.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 1 of the ENGINE START STOP button harness connector IP21 and terminal 50 of the body controller harness connector IP47.
E Measure the resistance between terminal 2 of the ENGINE START STOP button harness connector IP21 and terminal 51 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Check the ground circuit of the ENGINE START/STOP button.

IP21 ENGINE START STOP button harness connector



RMS508-10-1070

A Turn the start switch to "OFF" position.
B Disconnect harness connector IP21 of the ENGINE START/STOP button.
C Measure the resistance of the circuit between terminal 9 of the ENGINE START/STOP button harness connector IP21 and the body ground.
Standard resistance value: **<1Ω**
D Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 5	Replace the ENGINE START/STOP button.

A Replace the ENGINE START/STOP button.
B Is the fault eliminated after replacing the ENGINE START/STOP button?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.38 DTC: B124696

DTC	**DTC definition**
B124696	ACC relay control output invalid

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

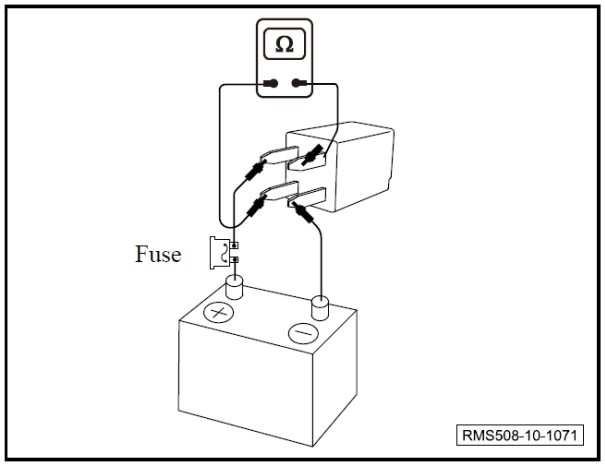
Step 2	Check the terminals of harness connectors between the body controller and the cab fuse box.

A Turn the start switch to "OFF" position.
B Disconnect the harness connectors of the body controller, the ACC relay, and the cab fuse box.
C Check the terminals in the harness connector for looseness, poor contact, bending, corrosion, contamination, deterioration or damage.

Yes → Repair the harness or connector.

No

Step 3	Check the ACC relay.

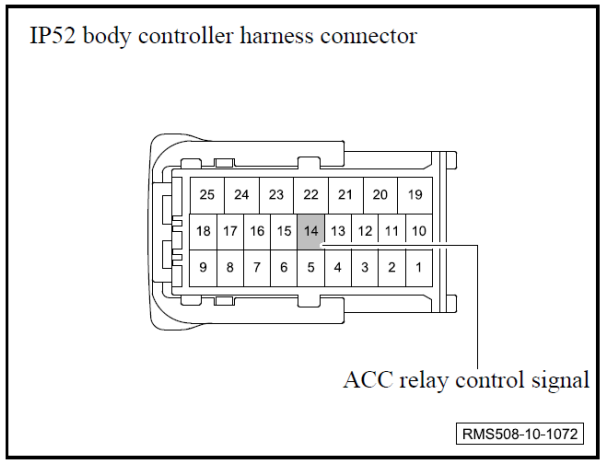


A Turn the start switch to "OFF" position.
B Remove the ACC relay.
C Connect one end of the ACC relay coil to the positive battery terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the ACC relay.

Yes

Step 4	Check whether the control circuit of the ACC relay is open-circuited.

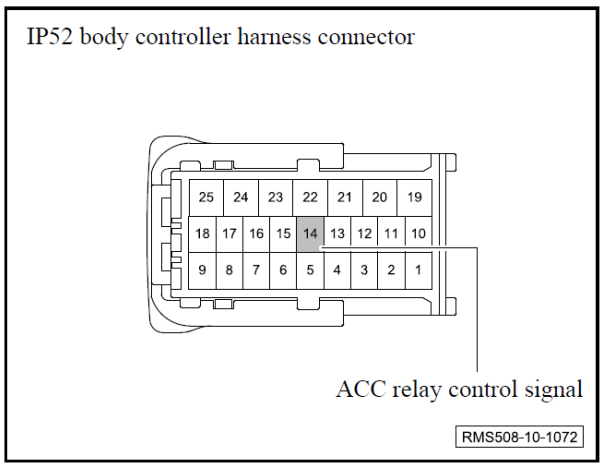


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP52.
C Remove the ACC relay.
D Measure the resistance between terminal 14 of the body controller harness connector IP52 and slot 85 of the ACC relay.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the control circuit of the ACC relay is short-circuited to ground.

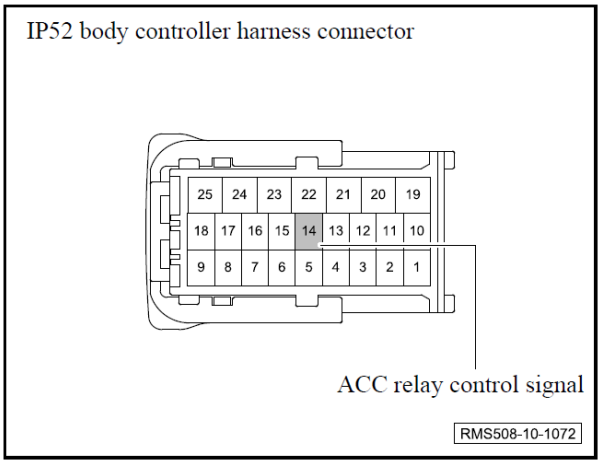


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP52.
C Remove the ACC relay.
D Measure the resistance between terminal 14 of the body controller harness connector IP52 and the body ground.
Standard resistance: **10 kΩ** or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 6	Check whether the control circuit of the ACC relay is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP52.
C Remove the ACC relay.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 14 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.39 DTC: B124796

DTC	**DTC definition**
B124796	IGN1 relay control output invalid

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

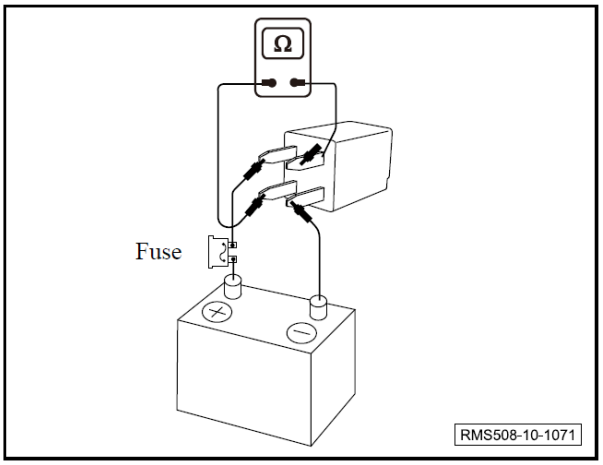
Step 2	Check the terminals of harness connectors between the body controller and the cab fuse box.

A Turn the start switch to "OFF" position.
B Disconnect the harness connectors of the body controller, the IG1 relay, and the cab fuse box.
C Check the terminals in the harness connector for looseness, poor contact, bending, corrosion, contamination, deterioration or damage.

Yes → Repair the harness or connector.

No

Step 3	Check the IG1 relay.

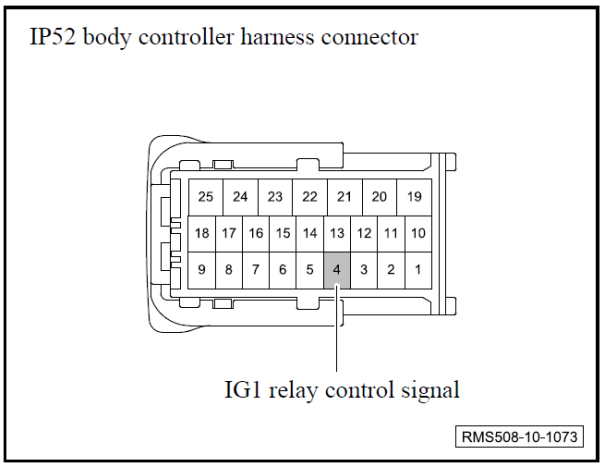


A Turn the start switch to "OFF" position.
B Remove the IG1 relay.
C Connect one end of the IG1 relay coil to the positive battery terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the IG1 relay.

Yes

Step 4	Check whether the control circuit of the IG1 relay is open-circuited.

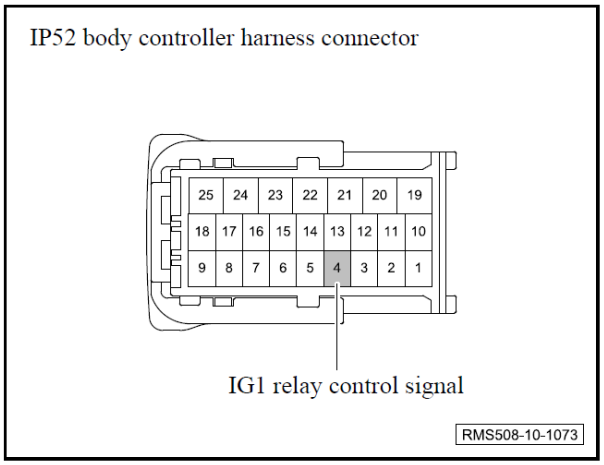


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP52.
C Remove the IG1 relay.
D Measure the resistance between terminal 4 of the body controller harness connector IP52 and slot 85 of IG1 relay.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the control circuit of the IG1 relay is short-circuited to ground.

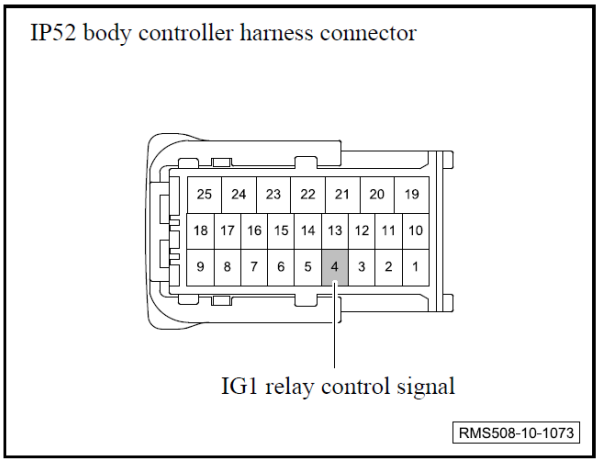


A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP52.
C Remove the IG1 relay.
D Measure the resistance between terminal 4 of the body controller harness connector IP52 and the body ground.
Standard resistance: **10 kΩ** or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 6	Check whether the control circuit of the IG1 relay is short-circuited to power supply.



A Turn the start switch to "OFF" position.
B Disconnect the body controller harness connector IP52.
C Remove the IG1 relay.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 4 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.40 DTC: B123013

DTC	Description
B123013	Front left door handle antenna open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

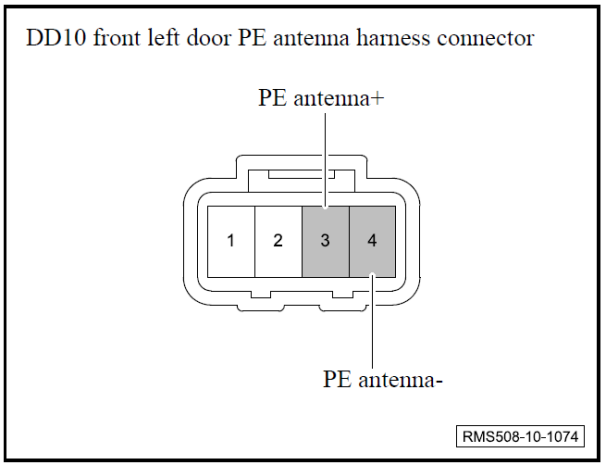
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the front left door PE antenna and the body controller.



A Turn the start switch to "OFF" position.

B Disconnect the front left door PE antenna harness connector DD10.

C Disconnect the body controller harness connector IP50.

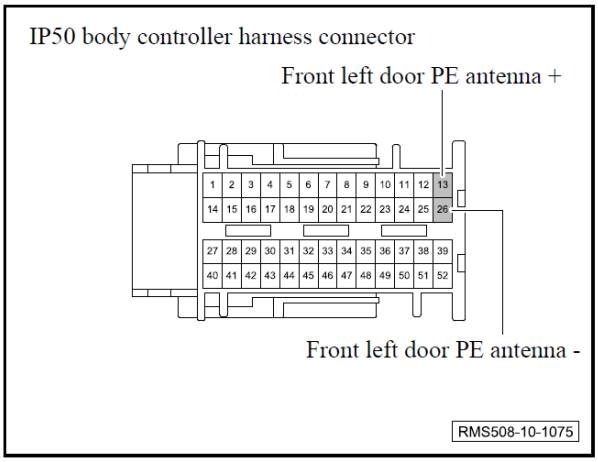
D Measure the resistance between terminal 3 of the front left door PE antenna harness connector DD10 and terminal 13 of the body controller harness connector IP50.

E Measure the resistance between terminal 4 of the front left door PE antenna harness connector DD10 and terminal 26 of the body controller harness connector IP50.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 3	Replace the front left door PE antenna.

A Replace the front left door PE antenna.
B Is the fault eliminated after replacing the front left door PE antenna?

Yes → The system works normally.

No

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.41 DTC: B123413

DTC	Description
B123413	Armrest box antenna open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.

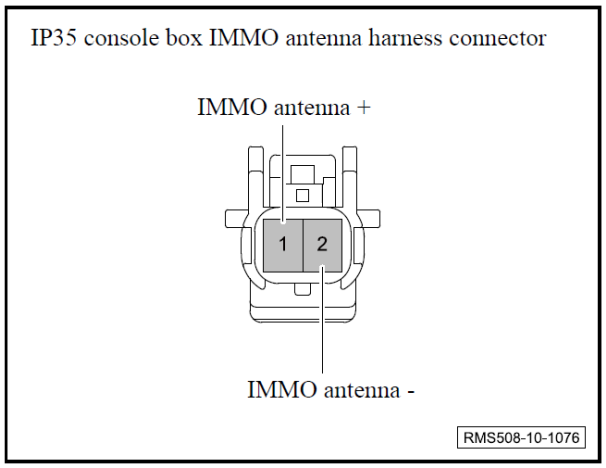
D Read the DTC again.

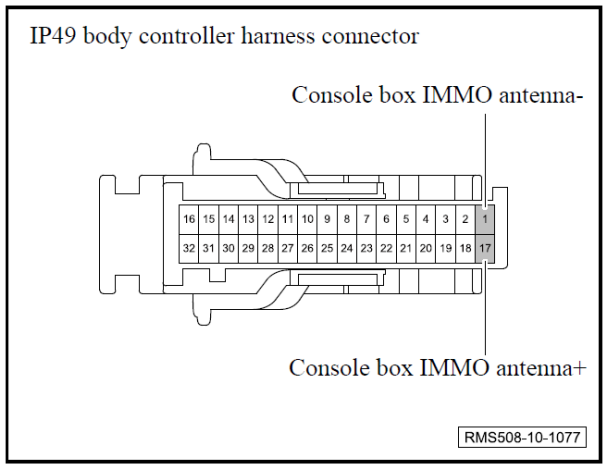
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the circuit between the console box IMMO antenna and the body controller.





A Turn the start switch to "OFF" position.

B Disconnect the console box IMMO antenna harness connector IP35.

C Disconnect the body controller harness connector IP49.

D Measure the resistance between terminal 1 of the console box IMMO antenna harness connector IP35 and terminal 17 of the body controller harness connector IP49.

E Measure the resistance between terminal 2 of the console box IMMO antenna harness connector IP35 and terminal 1 of the body controller harness connector IP49.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Replace the console box IMMO antenna.

A Replace the console box IMMO antenna.

B Is the fault eliminated after replacing the console box IMMO antenna?

Yes → The system works normally.

No

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.42 DTC: B123613

DTC	Description
B123613	Lift gate antenna open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

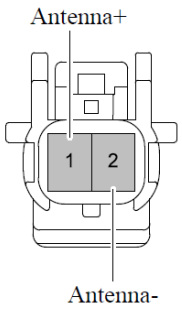
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

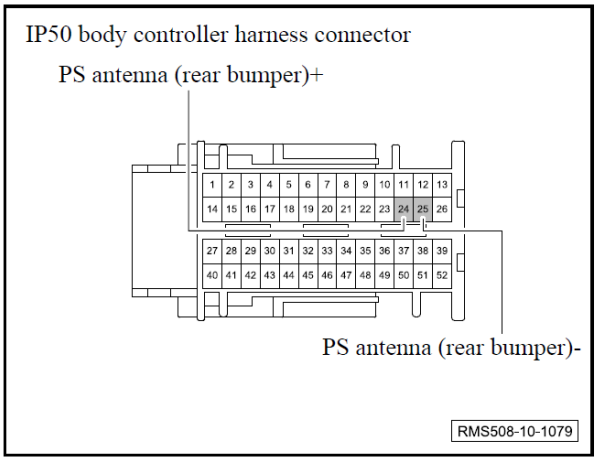
Step 2	Check the circuit between the PS antenna (rear bumper) and the body controller.

RB10 PS antenna (rear bumper) harness connector



A Turn the start switch to "OFF" position.
B Disconnect the PS antenna (rear bumper) harness connector RB10.
C Disconnect the body controller harness connector IP50.
D Measure the resistance between terminal 1 of the PS antenna (rear bumper) harness connector RB10 and terminal 24 of the body controller harness connector IP50.
E Measure the resistance between terminal 2 of the PS antenna (rear bumper) harness connector RB10 and terminal 25 of the body controller harness connector IP50.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 3	Replace the PS antenna (rear bumper).

A Replace the PS antenna (rear bumper).
B Is the fault eliminated after replacing the PS antenna (rear bumper)?

Yes → The system works normally.

No

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.43 DTC: B123213

DTC	Description
B123213	Rear right seat antenna open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.

D Read the DTC again.

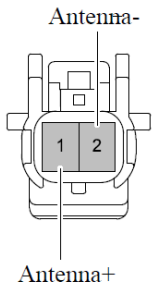
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

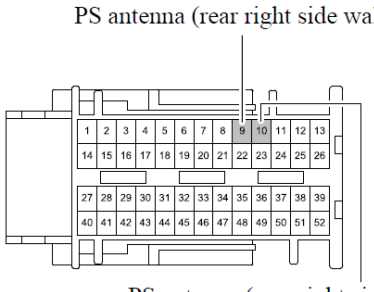
Step 2	Check the circuit between the PS antenna (rear right side wall) and the body controller.

BD08 PS antenna (rear right side wall) harness connector



RMS508-10-1080

IP50 body controller harness connector



RMS508-10-1081

A Turn the start switch to "OFF" position.

B Disconnect the PS antenna (rear right side wall) harness connector BD08.

C Disconnect the body controller harness connector IP50.

D Measure the resistance between terminal 1 of the PS antenna (rear right side wall) harness connector BD08 and terminal 9 of the body controller harness connector IP50.

E Measure the resistance between terminal 2 of the PS antenna (rear right side wall) harness connector BD08 and terminal 10 of the body controller harness connector IP50.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Replace the PS antenna (rear right side wall).

A Replace the PS antenna (rear right side wall).

B Is the fault eliminated after replacing the PS antenna (rear right side wall)?

Yes → The system works normally.

No

Step 4	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.44 DTC: B123513

DTC	Description
B123513	Rear left seat antenna open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

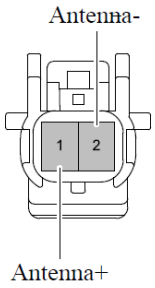
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

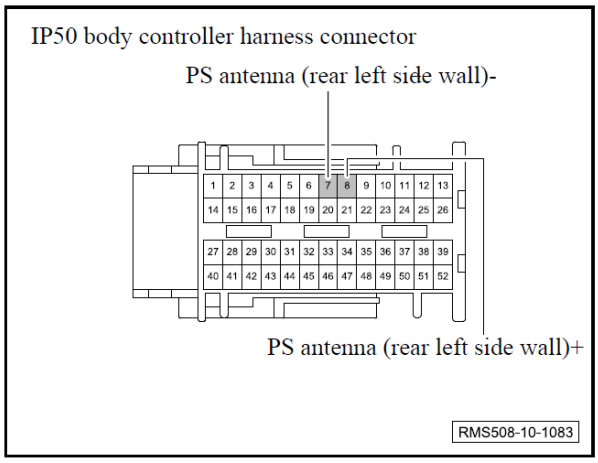
Step 2	Check the circuit between the PS antenna (rear left side wall) and the body controller.

BD32 PS antenna (rear left side wall) harness connector



A Turn the start switch to "OFF" position.
B Disconnect the PS antenna (rear left side wall) harness connector BD32.
C Disconnect the body controller harness connector IP50.
D Measure the resistance between terminal 1 of the PS antenna (rear left side wall) harness connector BD32 and terminal 8 of the body controller harness connector IP50.
E Measure the resistance between terminal 2 of the PS antenna (rear left side wall) harness connector BD32 and terminal 7 of the body controller harness connector IP50.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.



Yes

Step 3	Replace the PS antenna (rear left side wall).

A Replace the PS antenna (rear left side wall).

B Is the fault eliminated after replacing the PS antenna (rear left side wall)?

Yes → The system works normally.

No

Step 4	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 5	The diagnosis is over.

8.28.5.45 DTC:C181011,C181115

DTC	**DTC definition**
C181011	Interior temperature sensor is short-circuited to ground
C181115	Interior temperature sensor short-circuited to power supply or open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.
D Start the vehicle, turn on the automatic A/C system, and operate each function of the automatic A/C system.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the interior temperature sensor.

A Turn the start switch to "OFF" position.
B Remove the interior temperature sensor.
C Measure the resistance at both ends of the interior temperature sensor to see if it is normal

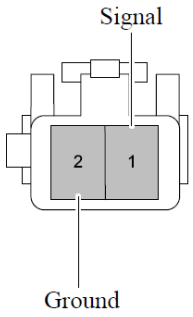
Temperature (°C)	Corresponding resistance (KΩ)		
	Minimum	Standard value	Max. value
10	3.243	3.414	3.591
17	2.348	2.447	2.549
20	2.053	2.131	2.210
25	1.694	1.700	1.751
32	1.203	1.252	1.301

No → Replace the interior temperature sensor

Yes

Step 3	Check whether the circuit between the interior temperature sensor and the body controller is open-circuited.

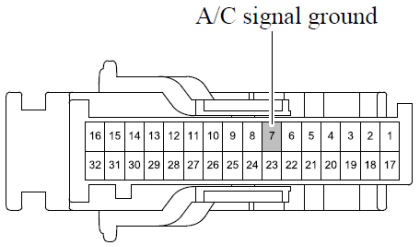
IP20 indoor temperature sensor harness connector



A Turn the start switch to "OFF" position.
B Disconnect the interior temperature sensor harness connector IP20.
C Disconnect the body controller harness connectors IP47 and IP49.
D Measure the resistance of the circuit between terminal 1 of the interior temperature sensor harness connector IP20 and terminal 29 of the body controller harness connector IP47.
E Measure the resistance of the circuit between terminal 2 of the interior temperature sensor harness connector IP20 and terminal 7 of the body controller harness connector IP49.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard value

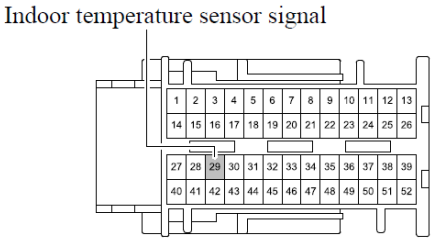
No → Replace or repair the harness or connector.

IP49 body controller harness connector



RMS508-10-1085

IP47 body controller harness connector

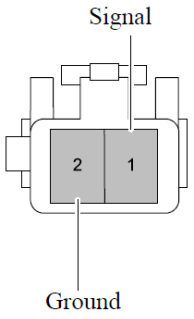


RMS508-10-1086

Yes

Step 4	Check whether the circuit of the interior temperature sensor is short-circuited to the ground.

IP20 indoor temperature sensor harness connector



RMS508-10-1084

A Turn the start switch to "OFF" position.

B Disconnect the interior temperature sensor harness connector IP20.

C Disconnect the body controller harness connectors IP47 and IP49.

D Measure the resistance between terminal 1/2 of the interior temperature sensor harness connector IP20 and the body ground.

Standard resistance value: 10 kΩ or higher

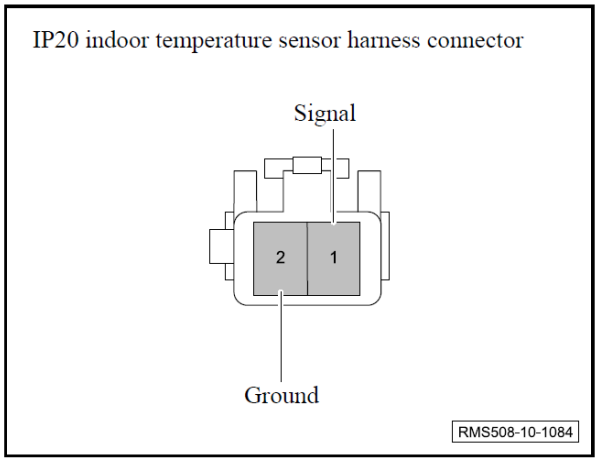
E Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit of the interior temperature sensor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the interior temperature sensor harness connector IP20.
C Disconnect the body controller harness connectors IP47 and IP49.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1/2 of the indoor temperature sensor harness connector IP20 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the interior temperature sensor.

A Replace the interior temperature sensor.
B Is the fault eliminated after replacing the interior temperature sensor?

Yes	The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.46 DTC:C182011,C182115

DTC	**DTC definition**
C182011	Exterior temperature sensor is short-circuited to ground
C182115	Exterior temperature sensor short-circuited to power supply or open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.
D Start the vehicle, turn on the automatic A/C system, and operate each function of the automatic A/C system.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the ambient temperature sensor.

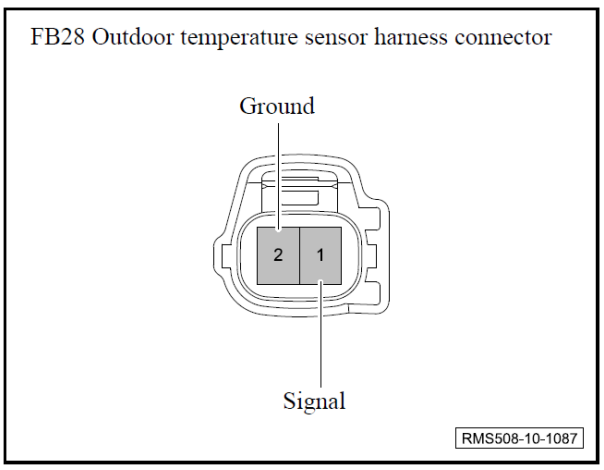
A Turn the start switch to "OFF" position.
B Remove the ambient temperature sensor.
C Measure the resistance at both ends of the ambient temperature sensor to see if it is normal

Temperature (°C)	Corresponding resistance (KΩ)		
	Minimum	Standard value	Max. value
-25±1	19.856	22.108	24.593
0±1	5.268	5.629	6.010
10±1	3.243	3.414	3.591
25±1	1.694	1.700	1.751
35±1	1.055	1.102	1.150

No → Replace the ambient temperature sensor

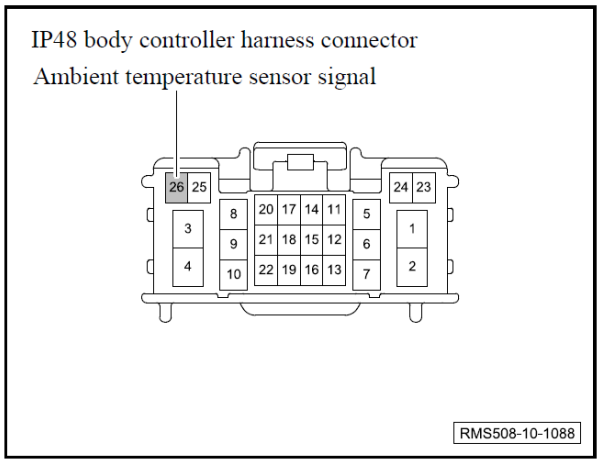
Yes

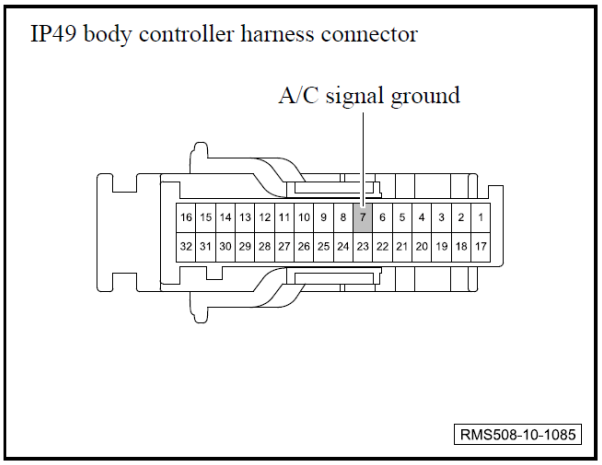
Step 3	Check whether the circuit between the ambient temperature sensor and the body controller is open-circuited.



A Turn the start switch to "OFF" position.
B Disconnect the ambient temperature sensor harness connector FB28.
C Disconnect the body controller harness connectors IP48 and IP49.
D Measure the resistance of the circuit between terminal 1 of the ambient temperature sensor harness connector FB28 and terminal 26 of the body controller harness connector IP48.
E Measure the resistance of the circuit between terminal 2 of the ambient temperature sensor harness connector FB28 and terminal 7 of the body controller harness connector IP49.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard value

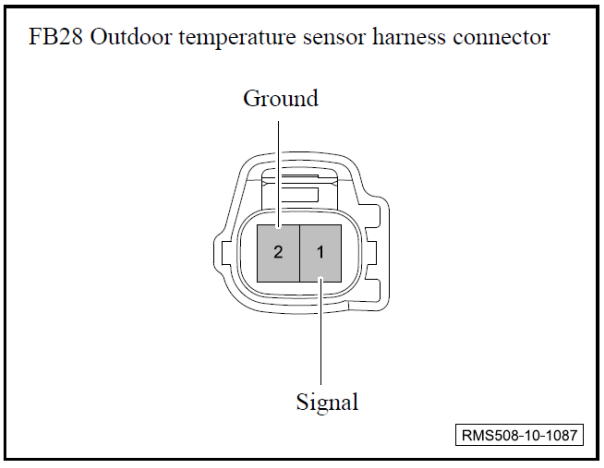
No → Replace or repair the harness or connector.





Yes

Step 4	Check whether the circuit of the ambient temperature sensor is short-circuited to the ground.



A Turn the start switch to "OFF" position.

B Disconnect the ambient temperature sensor harness connector FB28.

C Disconnect the body controller harness connectors IP48 and IP49.

D Measure the resistance between terminal 1/2 of the ambient temperature sensor harness connector FB28 and the body ground.

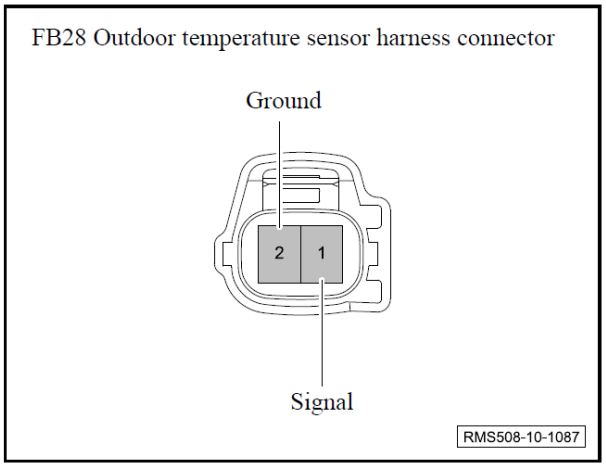
Standard resistance value: 10 kΩ or higher

E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit of the ambient temperature sensor is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the ambient temperature sensor harness connector FB28.
C Disconnect the body controller harness connectors IP48 and IP49.
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 1/2 of the ambient temperature sensor harness connector FB28 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the ambient temperature sensor.

A Replace the ambient temperature sensor.
B Is the fault eliminated after replacing the ambient temperature sensor?

Yes	The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.47 DTC:C183011,C183115

DTC	**DTC definition**
C183011	Evaporator temperature sensor is short-circuited to ground
C183115	Evaporator temperature sensor short-circuited to power supply or open-circuited

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.
D Start the vehicle, turn on the automatic A/C system, and operate each function of the automatic A/C system.
E Read the DTC again.
F Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

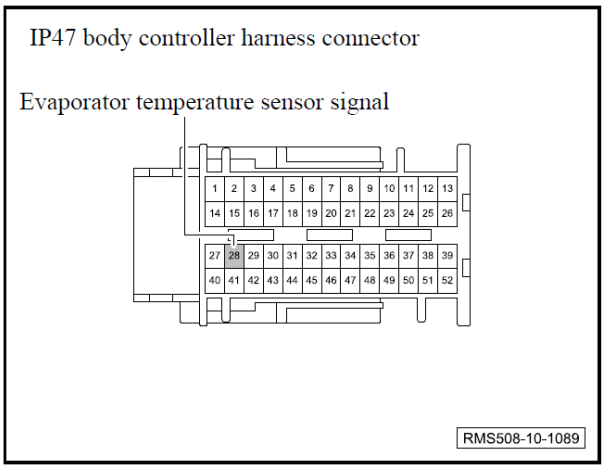
Step 2	Check evaporator temperature sensor

A Turn the start switch to "OFF" position.
B Remove the evaporator temperature sensor.
C Measure whether the resistance at both ends of the evaporator temperature sensor is normal. Standard resistance value: 2.2kΩ±3%(25°C)

No → Replacement of evaporator temperature sensor

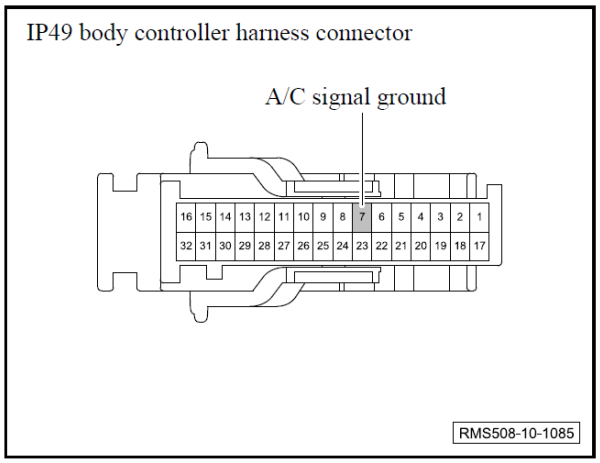
Yes

Step 3	Check whether the circuit between the evaporator temperature sensor and the body controller is open-circuited.



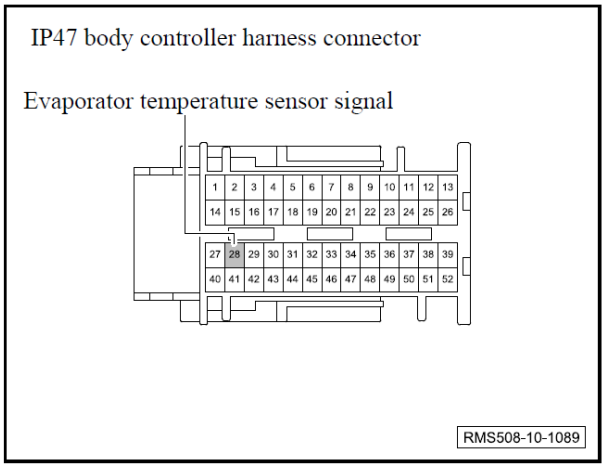
A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connectors IP47 and IP49.
D Measure the resistance of the circuit between terminal 15 of the A/C assembly connector harness connector and terminal 28 of the body controller harness connector IP47.
E Measure the resistance of the circuit between terminal 14 of the A/C assembly connector harness connector and terminal 7 of the body controller harness connector IP49.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 4	Check whether the evaporator temperature sensor circuit is short-circuited to ground.



A Turn the start switch to "OFF" position.

B Disconnect the A/C assembly connector harness connector.

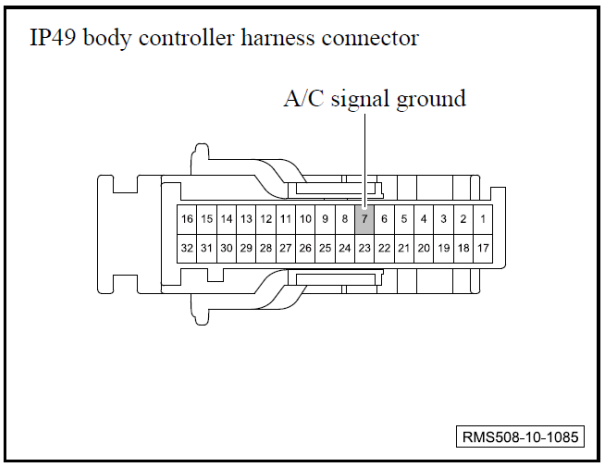
C Disconnect the body controller harness connectors IP47 and IP49.

D Measure the resistance of circuit between terminal 28 of the body controller harness connector IP47 and the body ground.

E Measure the resistance of circuit between terminal 7 of the body controller harness connector IP49 and the body ground.

Standard resistance value: 10 kΩ or higher

F Confirm if the resistance conforms to the standard value

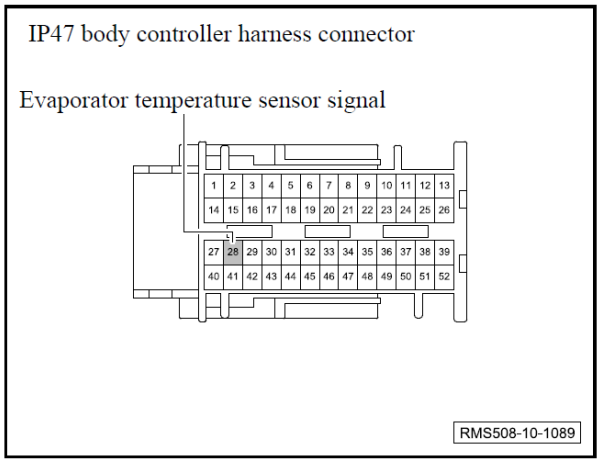


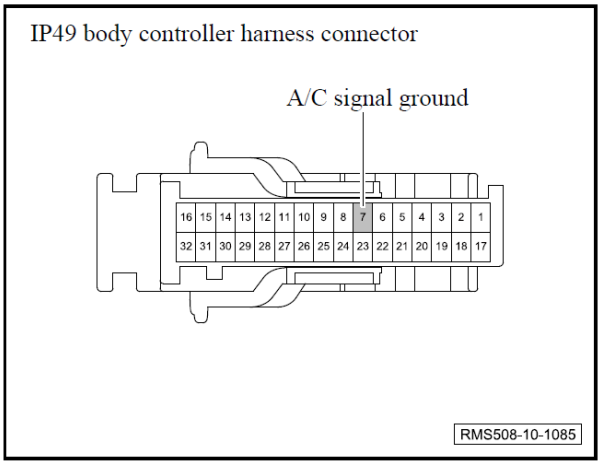
No

Replace or repair the harness or connector.

Yes

Step 5	Check whether the evaporator temperature sensor circuit is short-circuited to power supply.





A Turn the start switch to "OFF" position.

B Disconnect the A/C assembly connector harness connector.

C Disconnect the body controller harness connectors IP47 and IP49.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 28 of the body controller harness connector IP47 and the body ground.

F Measure the voltage between terminal 7 of the body controller harness connector IP49 and the body ground.

Standard voltage value: **0V**

G Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 6	Replace the evaporator temperature sensor.

A Replace the evaporator temperature sensor.

B Is the fault eliminated after replacing the evaporator temperature sensor?

Yes	The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.48 DTC:C184314,C184412

DTC	DTC definition
C184314	Mode control motor feedback end short-circuited to the ground or open-circuited
C184412	Mode motor feedback short-circuited to power supply

1. Diagnosis steps

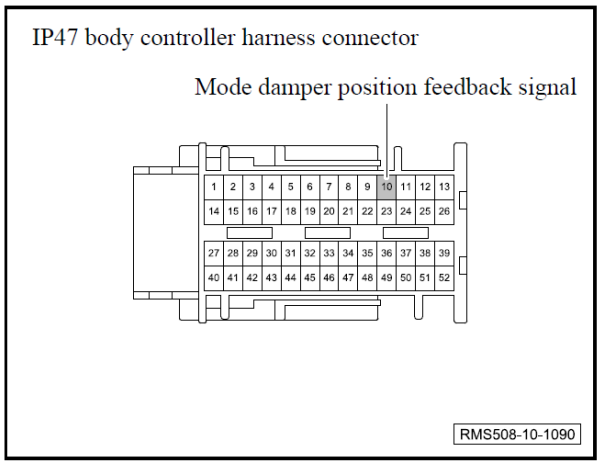
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the feedback signal circuit of the mode damper actuator is open-circuited.

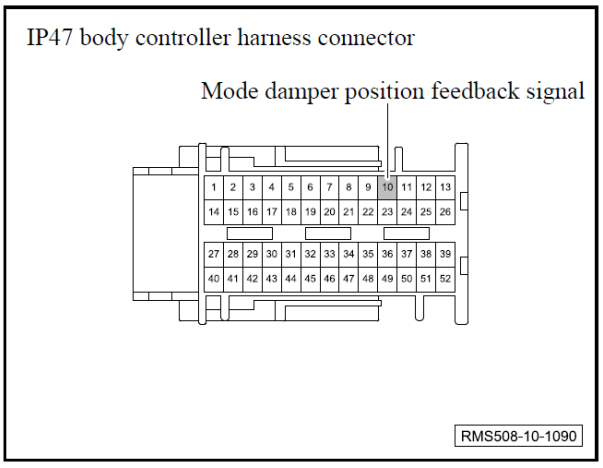


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 3 of the A/C assembly connector harness connector and terminal 10 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Check whether the feedback signal circuit of the mode damper actuator is short-circuited to the ground.

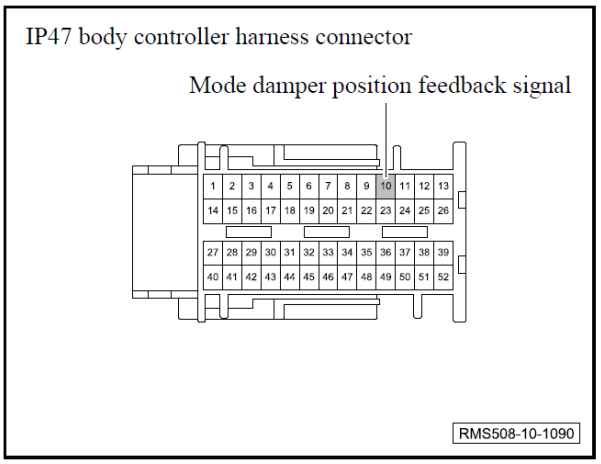


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 10 of the body controller harness connector IP47 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Check whether the feedback signal circuit of the mode damper actuator is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 10 of the body controller harness connector IP47 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Replace the mode damper actuator.

A Replace the mode damper actuator.
B Is the fault eliminated after replacing the mode damper actuator?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.49 DTC: C184571

DTC	**DTC definition**
C184571	Mode motor stalling

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

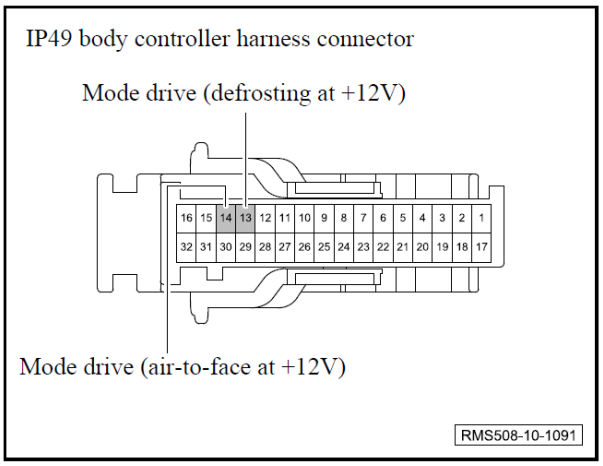
Step 2	Check the mode damper actuator.

A Check whether the mode damper actuator motor is stuck or damaged.

Yes → Repair or replace the mode damper actuator.

No

Step 3	Check whether the motor circuit of the mode damper actuator is open-circuited.

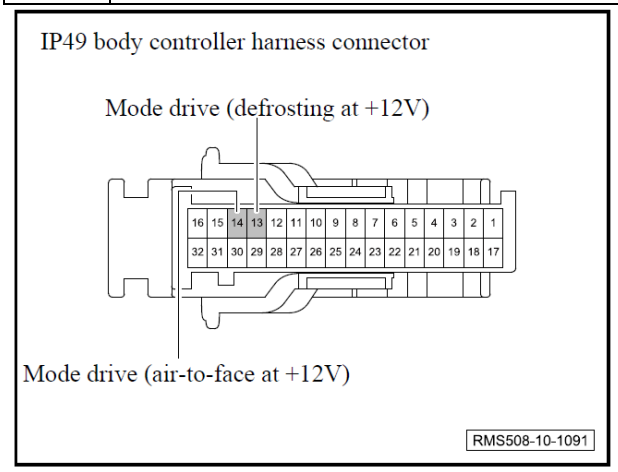


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connector IP49.
D Measure the resistance between terminal 5 of the A/C assembly connector harness connector and terminal 13 of the body controller harness connector IP49.
E Measure the resistance between terminal 4 of the A/C assembly connector harness connector and terminal 14 of the body controller harness connector IP49.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Check whether the motor circuit of the mode damper actuator is short-circuited to the ground.

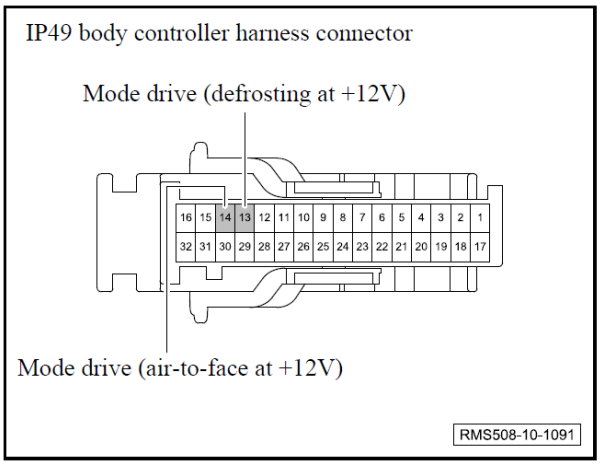


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connector IP49.
D Measure the resistance between terminals 13 and 14 of the body controller harness connector IP49 and the body ground.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit of the mode damper actuator is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connector IP49.
D Put the Start switch to “ON” position.
E Measure the voltage between terminals 13 and 14 of the body controller harness connector IP49 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Replace the mode damper actuator.

A Replace the mode damper actuator.
B Is the fault eliminated after replacing the mode damper actuator?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.28.5.50 DTC:C185D14,C185E12

DTC	**DTC definition**
C185D14	Circulation motor feedback end short-circuited to the ground or open-circuited
C185E12	Circulation motor feedback short-circuited to power supply

1. Diagnosis steps

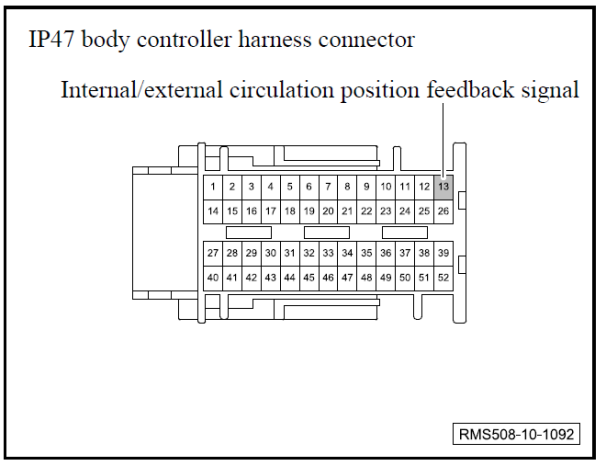
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the feedback signal circuit of the interior/exterior circulation damper actuator is open-circuited.

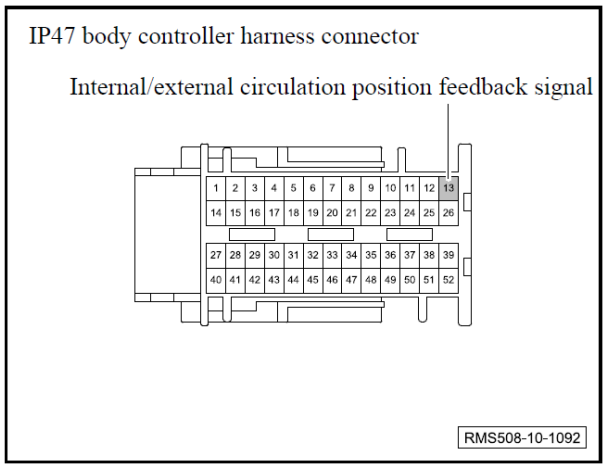


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 18 of the A/C assembly connector harness connector and terminal 13 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Check whether the feedback signal circuit of the interior/exterior circulation damper actuator is short-circuited to the ground.

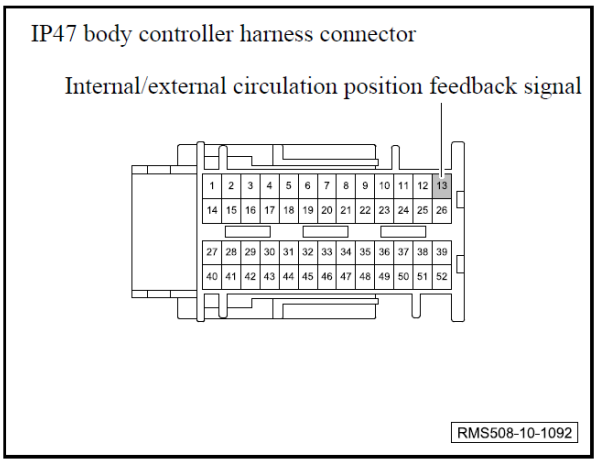


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 13 of the body controller harness connector IP47 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Check whether the feedback signal circuit of the interior/exterior circulation damper actuator is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 13 of the body controller harness connector IP47 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Replace the internal and external circulation damper actuator.

A Replace the internal and external circulation damper actuator.
B Is the fault eliminated after replacing the interior/exterior circulation damper actuator?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.51 DTC: C185F71

DTC	**DTC definition**
C185F71	Circulation motor stalled

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

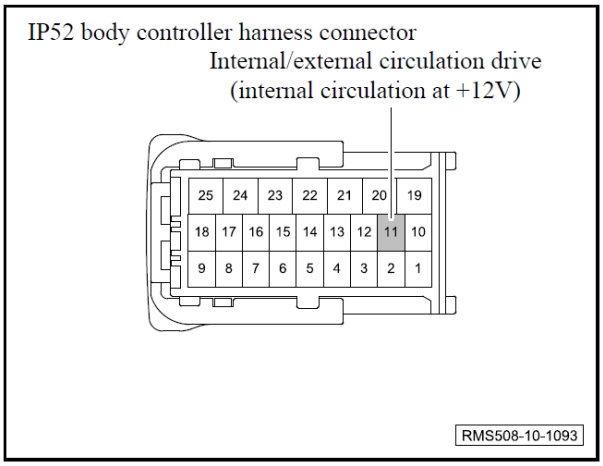
Step 2	Check the interior/exterior circulation damper actuator.

A Check whether the interior/exterior circulation damper actuator motor is stuck or damaged?

Yes → Repair or replace the interior/exterior circulation damper actuator.

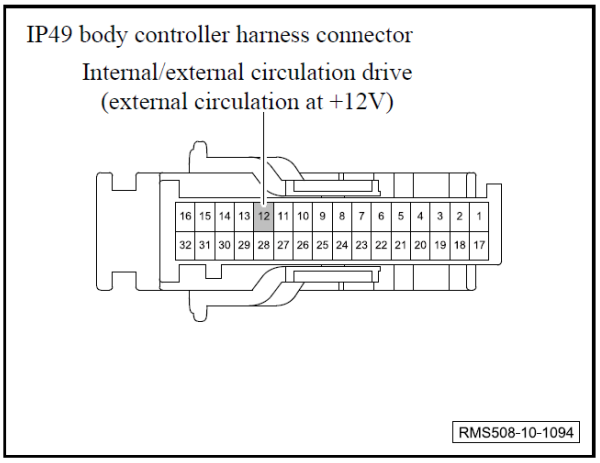
No

Step 3	Check whether the motor circuit of the interior/exterior circulation damper actuator is open-circuited.



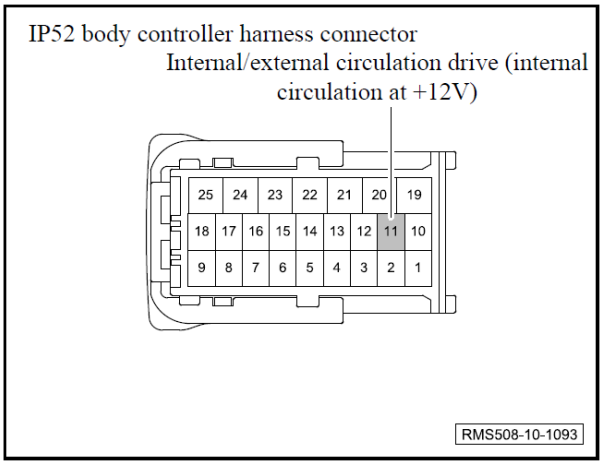
A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connectors IP49 and IP52.
D Measure the resistance between terminal 21 of the A/C assembly connector harness connector and terminal 11 of the body controller harness connector IP52.
E Measure the resistance between terminal 22 of the A/C assembly connector harness connector and terminal 12 of the body controller harness connector IP49.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

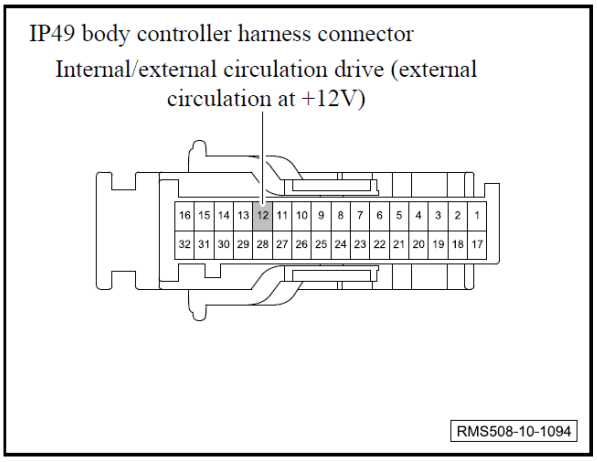
No → Repair or replace the harness.



Yes

Step 4	Check whether the motor circuit of the interior/exterior circulation damper actuator is short-circuited to the ground.





A Turn the start switch to "OFF" position.

B Disconnect the A/C assembly connector harness connector.

C Disconnect the body controller harness connectors IP49 and IP52.

D Measure the resistance between terminal 12 of the body controller harness connector IP49 and the body ground.

E Measure the resistance between terminal 11 of the body controller harness connector IP52 and the body ground.

Standard resistance value: **<1Ω**

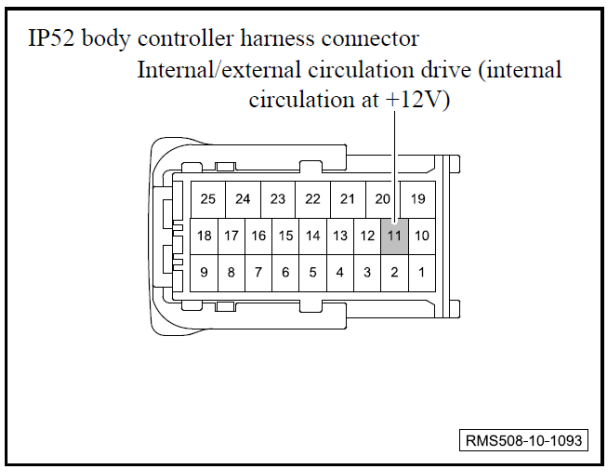
F Confirm if the resistance conforms to the standard value

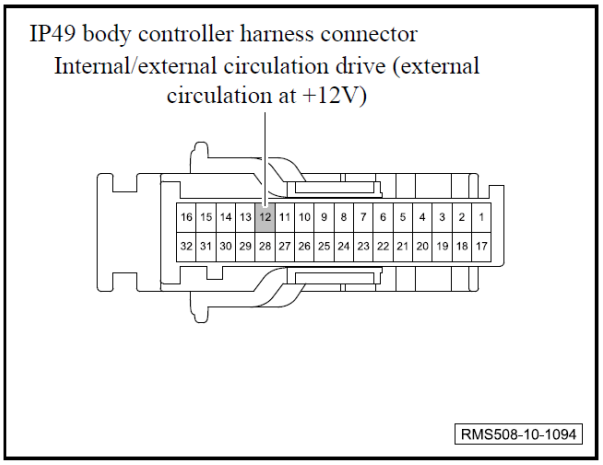
No

Replace or repair the harness or connector.

Yes

Step 5	Check whether the circuit of the interior/exterior circulation damper actuator is short-circuited to the power supply.





A Turn the start switch to "OFF" position.

B Disconnect the A/C assembly connector harness connector.

C Disconnect the body controller harness connectors IP49 and IP52.

D Put the Start switch to “ON” position.

E Measure the voltage between terminal 12 of the body controller harness connector IP49 and the body ground.

F Measure the voltage between terminal 11 of the body controller harness connector IP52 and the body ground.

Standard voltage value: **0V**

G Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Replace the internal and external circulation damper actuator.

A Replace the internal and external circulation damper actuator.

B Is the fault eliminated after replacing the interior/exterior circulation damper actuator?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.52 DTC:C188314,C188412

DTC	DTC definition
C188314	Right temperature motor feedback end short-circuited to the ground or open-circuited
C188412	Right temperature motor feedback end short-circuited to the power supply

1. Diagnosis steps

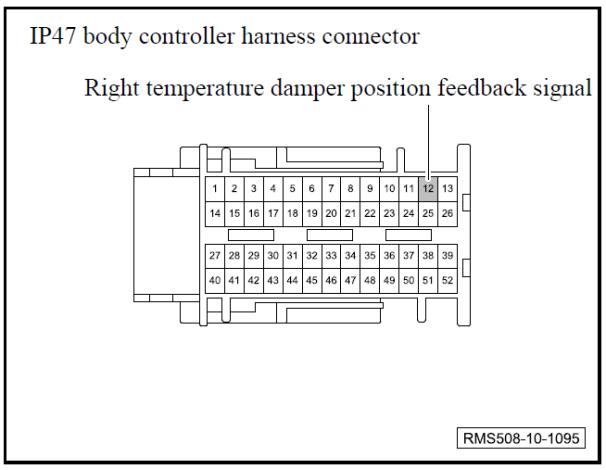
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check whether the feedback signal circuit of the temperature damper actuator (right) is open-circuited.

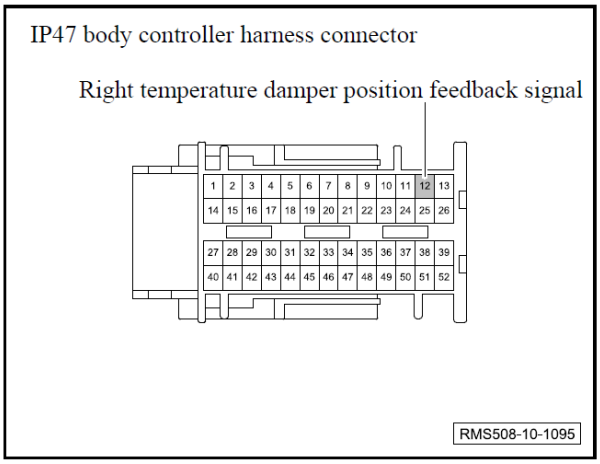


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 6 of the A/C assembly connector harness connector and terminal 12 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 3	Check whether the feedback signal circuit of the temperature damper actuator (right) is short-circuited to the ground.

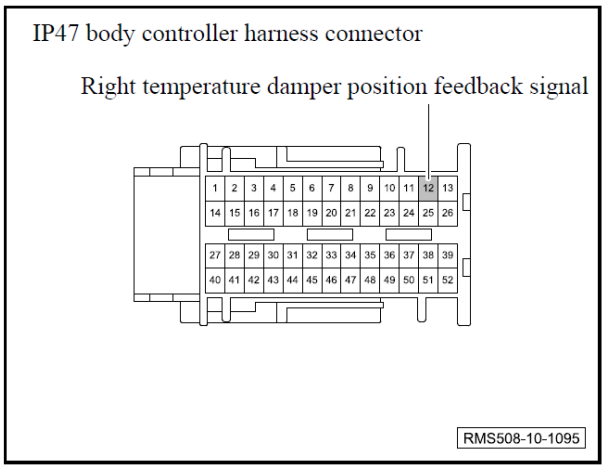


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 12 of the body controller harness connector IP47 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Check whether the feedback signal circuit of the temperature damper actuator is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect body controller harness connector IP47
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 12 of the body controller harness connector IP47 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Replace temperature damper actuator (right).

A Replace temperature damper actuator (right).
B Is the fault eliminated after replacing the temperature damper actuator (right)?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.53 DTC: C188571

DTC	**DTC definition**
C188571	Right temperature motor stalled

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Start the vehicle, and read and record the DTCs.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

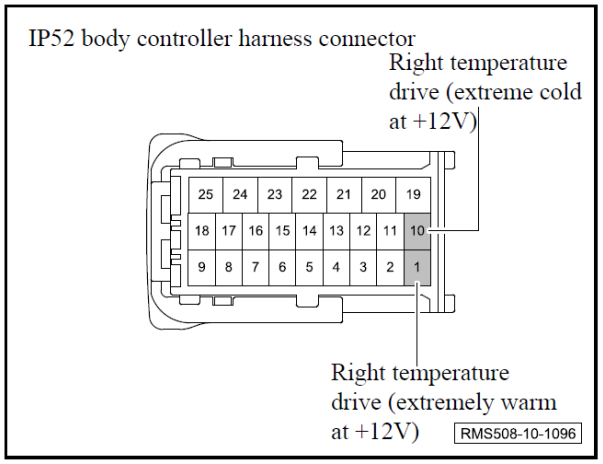
Step 2	Check the right temperature damper actuator.

A Check whether the temperature damper actuator (right) motor is stuck or damaged?

Yes → Repair or replace the temperature damper actuator (right).

No

Step 3	Check whether the motor circuit of the temperature damper actuator (right) is open-circuited.

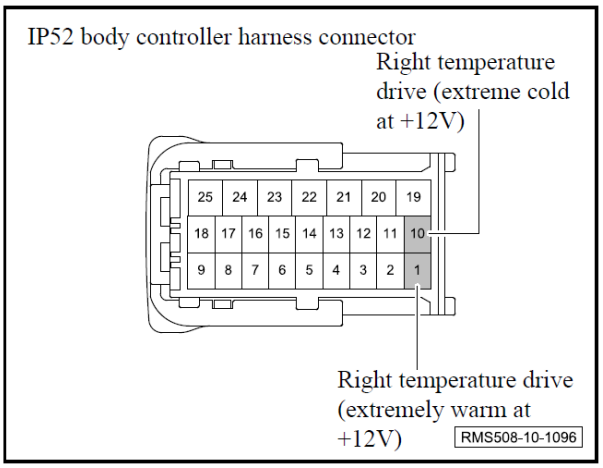


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connector IP52.
D Measure the resistance between terminal 7 of the A/C assembly connector harness connector and terminal 1 of the body controller harness connector IP52.
E Measure the resistance between terminal 8 of the A/C assembly connector harness connector and terminal 10 of the body controller harness connector IP52.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Repair or replace the harness.

Yes

Step 4	Check whether the motor circuit of the temperature damper actuator (right) is short-circuited to the ground.

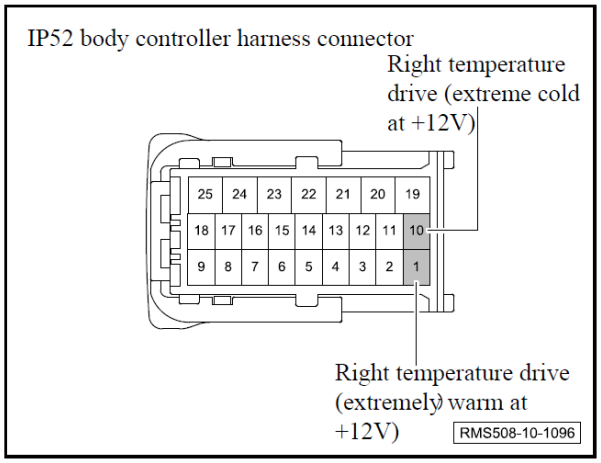


A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connector IP52.
D Measure the resistance between terminals 1 and 10 of the body controller harness connector IP52 and the body ground.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 5	Check whether the motor circuit of the temperature damper actuator (right) is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the A/C assembly connector harness connector.
C Disconnect the body controller harness connector IP52.
D Put the Start switch to “ON” position.
E Measure the voltage between terminals 1 and 10 of the body controller harness connector IP52 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 6	Replace temperature damper actuator (right).

A Replace temperature damper actuator (right).
B Is the fault eliminated after replacing the temperature damper actuator (right)?

Yes → The system works normally.

No

Step 7	

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 4	

8.28.5.54 DTC:C18B287,U1A4187

DTC	**DTC definition**
C18B287	Fault of PM2.5 sensor
U1A4187	Lost communication with PM2.5 sensor

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse IF27 of PM2.5 sensor.

A Check whether the fuse IF27 is blown.

No → Go to Step 4.

Yes

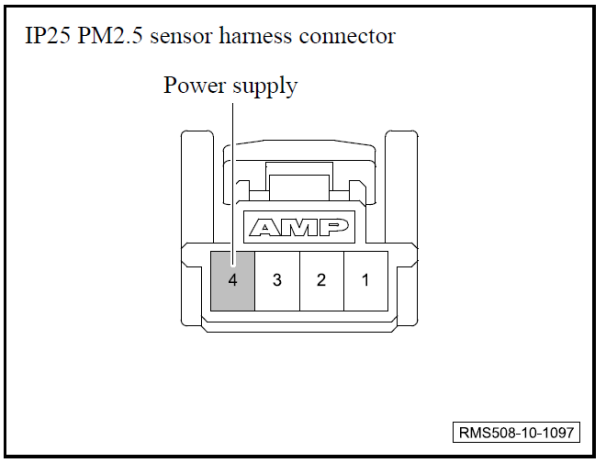
Step 3	Check and repair the circuit of fuse IF27.

A Check whether the fuse IF27 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF275A**
D Confirm whether the PM2.5 sensor works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the PM2.5 sensor.



A Turn the start switch to "OFF" position.

B Disconnect the PM2.5 sensor harness connector IP25.

C Put the Start switch to “ON” position.

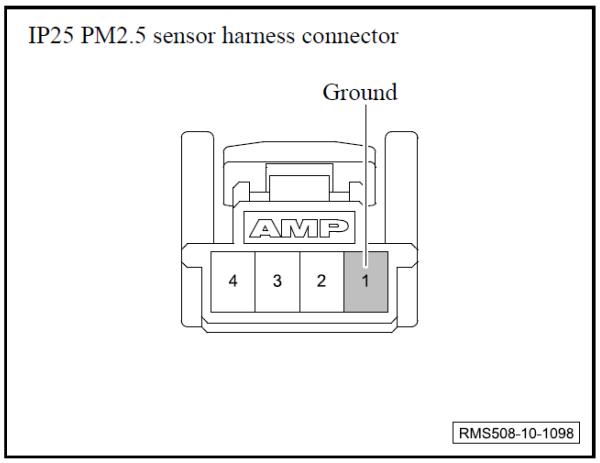
D Measure the voltage between terminal 4 of the PM2.5 sensor harness connector IP25 and the body ground.
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the PM2.5 sensor.



A Turn the start switch to "OFF" position.

B Disconnect the PM2.5 sensor harness connector IP25.

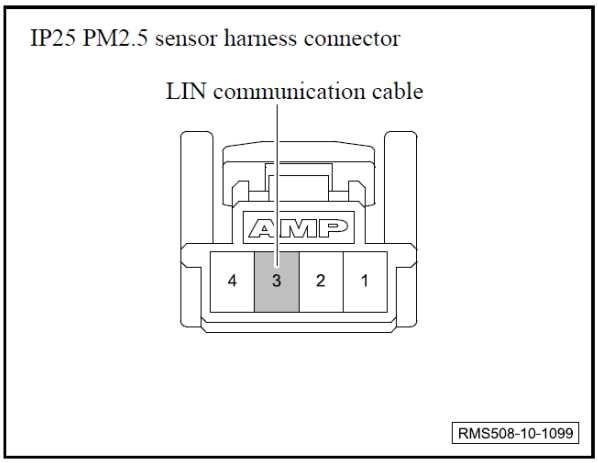
C Measure the resistance between terminal 1 of the PM2.5 sensor harness connector IP25 and the body ground.
Standard resistance value: **<1Ω**

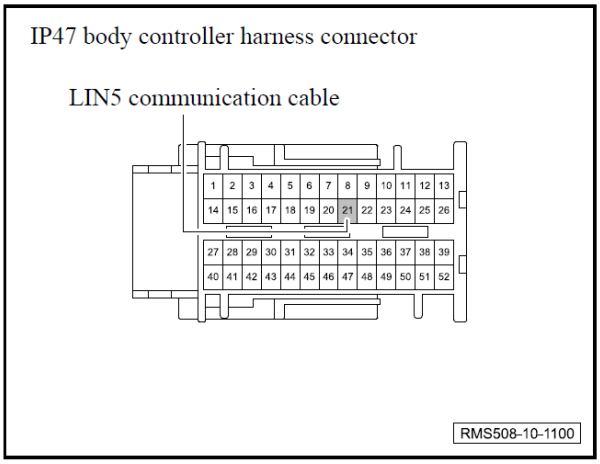
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 6	Check whether the circuit between the PM2.5 sensor and the body controller is open-circuited.



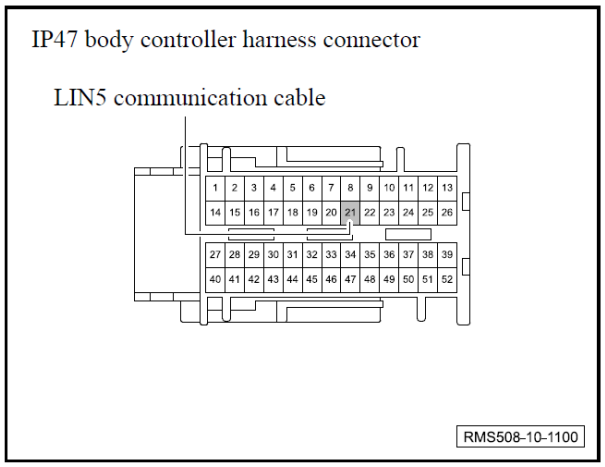


A Turn the start switch to "OFF" position.
B Disconnect the PM2.5 sensor harness connector IP25.
C Disconnect body controller harness connector IP47
D Measure the resistance of the circuit between terminal 3 of the PM2.5 sensor harness connector IP25 and terminal 21 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.

Yes

Step 7	Check whether the circuit between the PM2.5 sensor and the body controller is short-circuited to the ground.

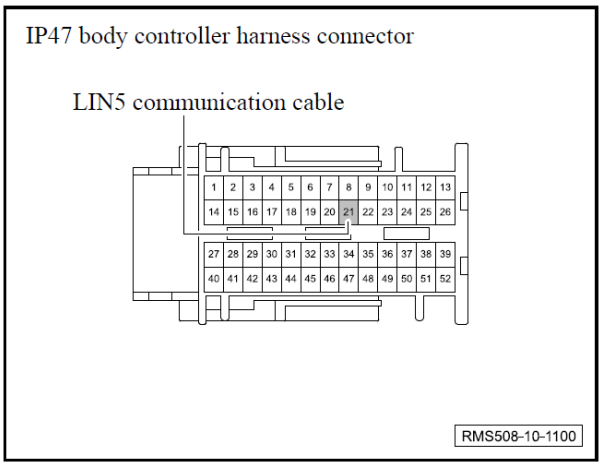


A Turn the start switch to "OFF" position.
B Disconnect the PM2.5 sensor harness connector IP25.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 21 of the body controller harness connector IP47 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.

Yes

Step 8	Check whether the circuit between the PM2.5 sensor and the body controller is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the PM2.5 sensor harness connector IP25.
C Disconnect body controller harness connector IP47
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 21 of the body controller harness connector IP47 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 9	Replace the PM2.5 sensor.

A Replace the PM2.5 sensor.
B Is the fault eliminated after replacing the PM2.5 sensor?

Yes → The system works normally.

No

Step 10	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

8.28.5.55 DTC: U1A4287

DTC	**DTC definition**
U1A4287	Lost communication with anion generator

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse IF27 of the anion generator.

A Check whether the fuse IF27 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse IF27.

A Check whether the fuse IF27 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

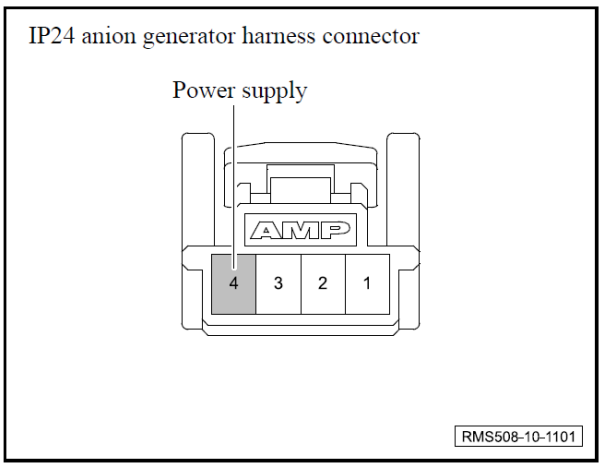
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **IF275A**

D Confirm whether the inion generator works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the anion generator.



A Turn the start switch to "OFF" position.

B Disconnect the inion generator harness connector IP24.

C Put the Start switch to “ON” position.

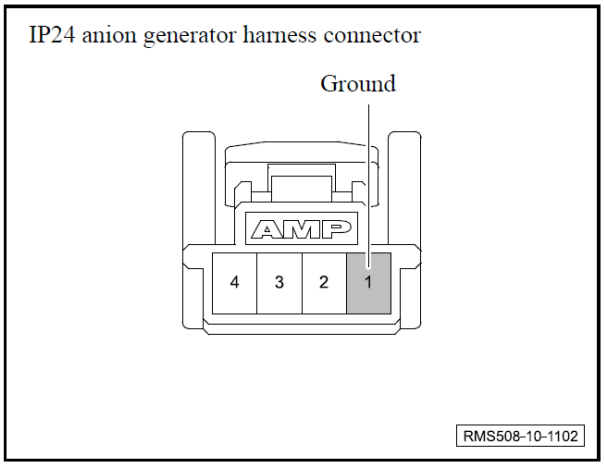
D Measure the voltage between terminal 4 of the anion generator harness connector IP24 and the body ground.
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the anion generator.

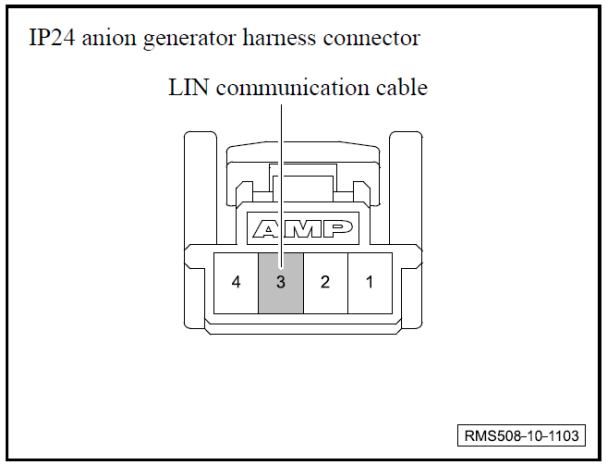


A Turn the start switch to "OFF" position.
B Disconnect the inion generator harness connector IP24.
C Measure the resistance between terminal 1 of the anion generator harness connector IP24 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

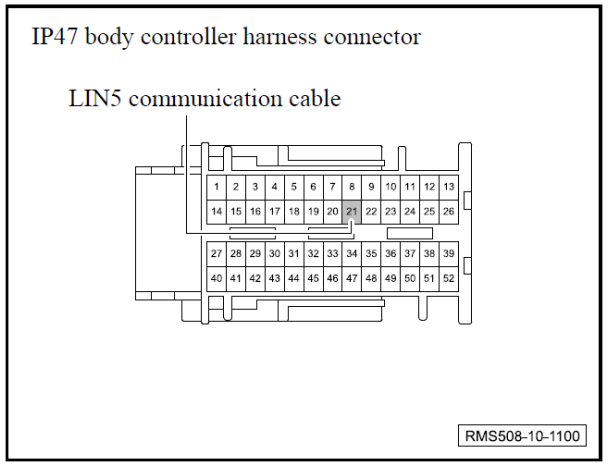
Yes

Step 6	Check whether the circuit between the anion generator and the body controller is open-circuited.



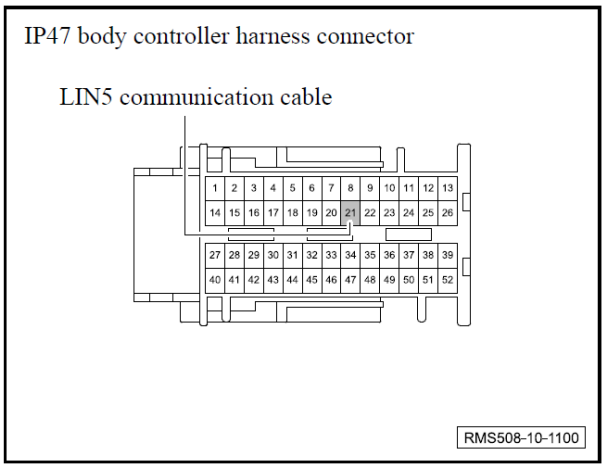
A Turn the start switch to "OFF" position.
B Disconnect the inion generator harness connector IP24.
C Disconnect body controller harness connector IP47
D Measure the resistance of circuit between terminal 3 of the anion generator harness connector IP24 and terminal 21 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.



Yes

Step 7	Check whether the circuit between the anion generator and the body controller is short-circuited to the ground.

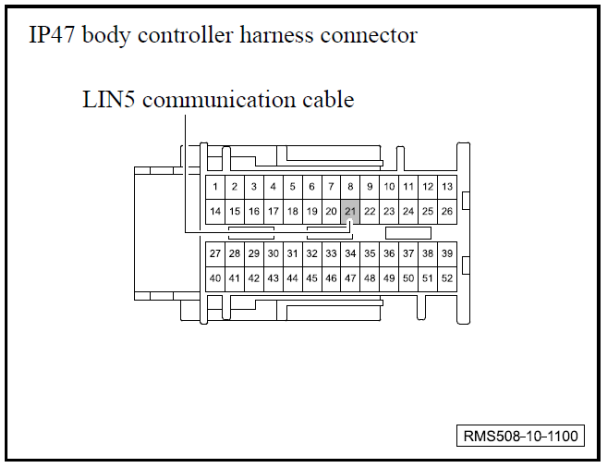


A Turn the start switch to "OFF" position.
B Disconnect the inion generator harness connector IP24.
C Disconnect body controller harness connector IP47
D Measure the resistance between terminal 21 of the body controller harness connector IP47 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 8	Check whether the circuit between the anion generator and the body controller is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the inion generator harness connector IP24.
C Disconnect body controller harness connector IP47
D Put the Start switch to “ON” position.
E Measure the voltage between terminal 21 of the body controller harness connector IP47 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 9	Replace the anion generator.

A Replace the anion generator.
B Is the fault eliminated after replacing the anion generator?

Yes → The system works normally.

No

Step 10	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 11	The diagnosis is over.

8.28.5.56 DTC:U02A687

DTC	DTC definition
U02A687	Lost communication with BSC

1. Diagnosis steps

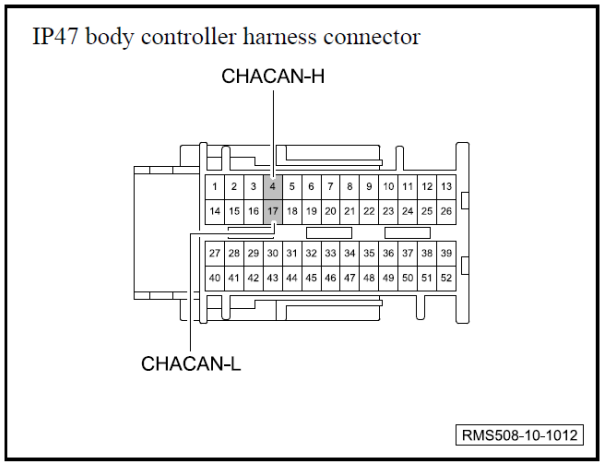
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

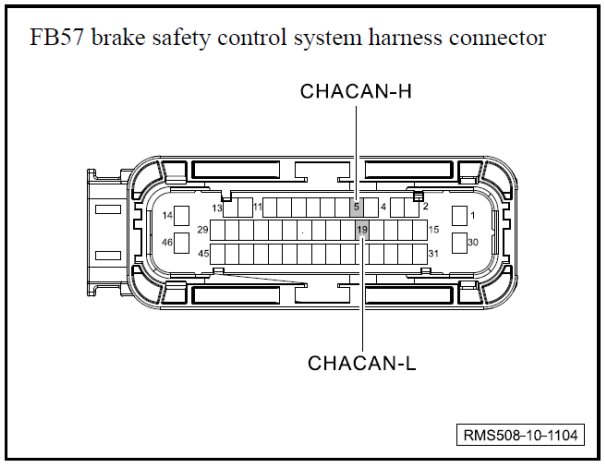
Yes

Step 2	Check the CAN data communication wire between the body controller and the brake safety control system.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the brake safety control system harness connector FB57.
D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal 5 of the brake safety control system harness connector FB57.
E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal 19 of the brake safety control system harness connector FB57.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply and ground wires of the brake safety control system.

A Check whether the power supply ground wire of the brake safety control system is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the brake safety control system.

A Replace the brake safety control system.

B Is the fault eliminated after replacing the brake safety control system?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.57 DTC: U011187

DTC	DTC definition
U011187	Lost communication with BMS

1. Diagnosis steps

Step 1	Check the DTCs.

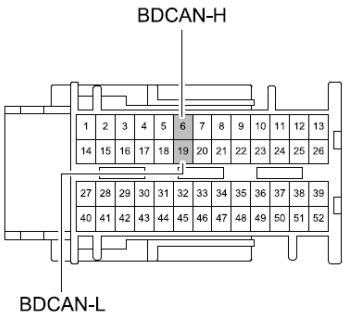
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

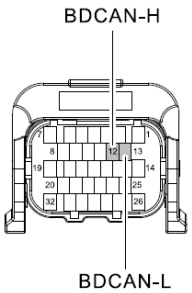
Yes

Step 2	Check the CAN data communication wire between the body controller and the battery pack assembly.

IP47 body controller harness connector



FB59 battery pack assembly harness connector



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the battery pack assembly harness connector FB59.
D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 12 of the battery pack assembly harness connector FB59.
E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 13 of the battery pack assembly harness connector FB59.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the battery pack assembly.

A Check whether the power supply and ground wires of the battery pack assembly are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the battery pack assembly.

A Replace the battery pack assembly.

B Is the fault eliminated after replacing the battery pack assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.58 DTC: U011687

DTC	DTC definition
U011687	Lost communication with CCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

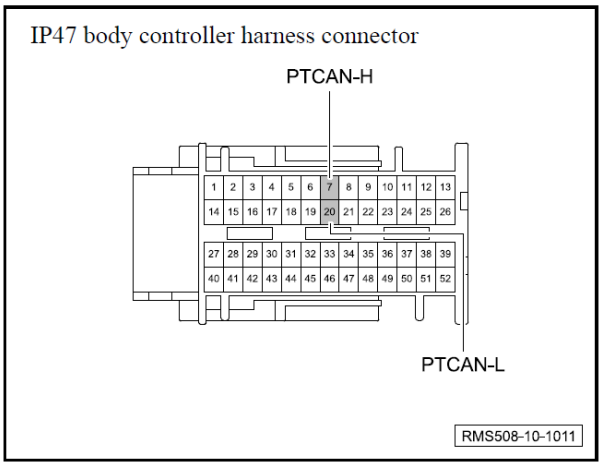
D Read the DTC again.

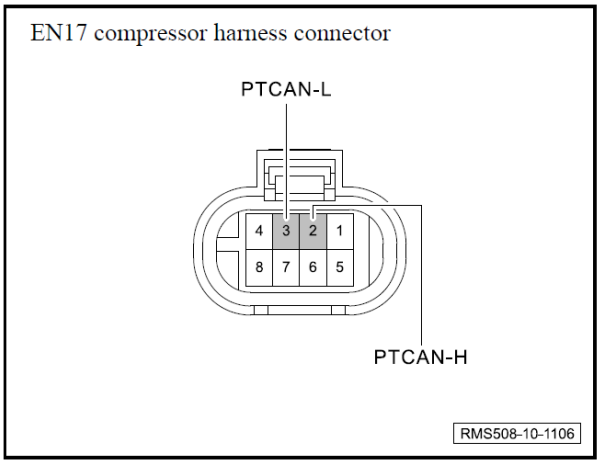
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the compressor.





A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the compressor harness connector EN17.
D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 2 of the compressor harness connector EN17.
E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the compressor harness connector EN17.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the compressor.

A Check whether the power supply and ground wires of the compressor are normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the compressor assembly.

A Replace the compressor assembly.
B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.59 DTC: U029887

DTC	DTC definition
U029887	Lost communication with DCDC

1. Diagnosis steps

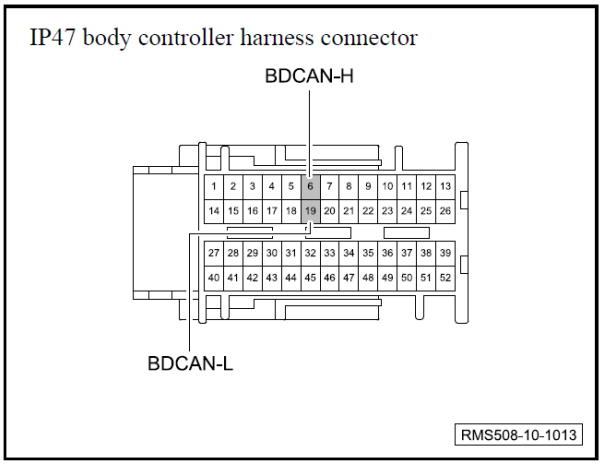
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

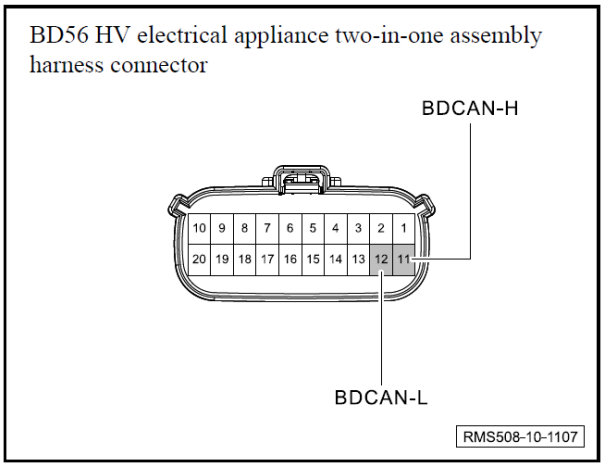
Yes

Step 2	Check the CAN data communication wire between the body controller and the HV electrical appliance two-in-one assembly.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the HV electrical appliance two-in-one assembly the harness connector BD56.
D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 11 of the HV electrical appliance two-in-one assembly harness connector BD56.
E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 12 of the HV electrical appliance two-in-one assembly harness connector BD56.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground wire of the HV electrical appliance two-in-one assembly.

A Check whether the power supply ground wire of HV electrical appliance two-in-one assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the HV electrical appliance two-in-one assembly.

A Replace the HV electrical appliance two-in-one assembly.

B Is the fault eliminated after replacing the HV electrical appliance two-in-one assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.60 DTC: U029B87, U011087

DTC	DTC definition
U029B87	Lost communication with GCU
U011087	Lost communication with MCUFO

1. Diagnosis steps

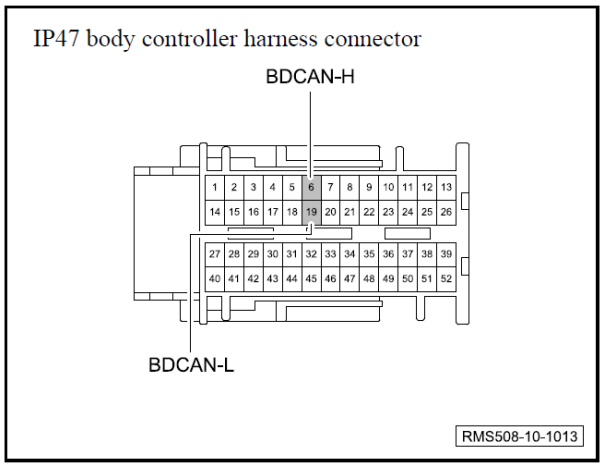
Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

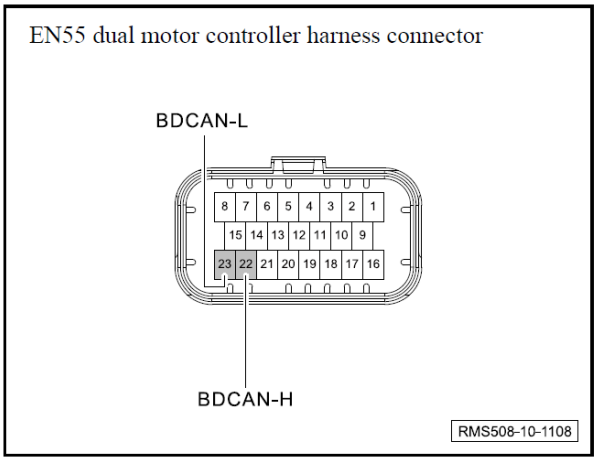
Yes

Step 2	Check the CAN data communication wire between the body controller and the dual-motor controller.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect dual-motor harness connector EN55.
D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 22 of the dual-motor controller harness connector EN55.
E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 23 of the dual-motor controller harness connector EN55.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 3	Check the power supply ground wire of the dual-motor controller.

A Check whether the power supply ground wire of the dual-motor controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the integrated dual motor controller.

A Replace the integrated dual motor controller.

B Is the fault eliminated after replacing the integrated dual motor controller?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.61 DTC: U016687

DTC	DTC definition
U016687	Lost communication with PTC

1. Diagnosis steps

Step 1	Check the DTCs.

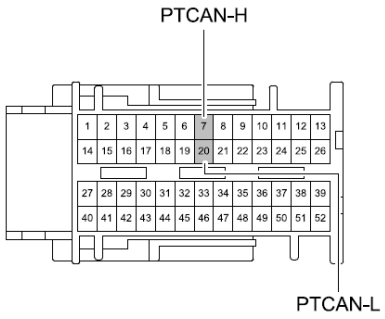
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

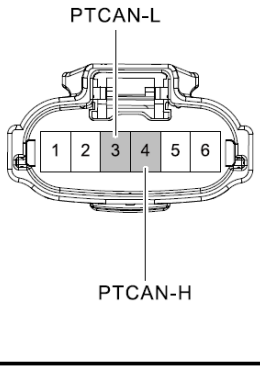
Yes

Step 2	Check the CAN data communication wire between the body controller and the PTC heater assembly.

IP47 body controller harness connector



FB48 PTC heater assembly harness connector



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the PTC heater assembly harness connector FB48.
D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 4 of the PTC heater assembly harness connector FB48.
E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the PTC heater assembly harness connector FB48.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.62 DTC: U029387

DTC	DTC definition
U029387	Lost communication with VCU

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

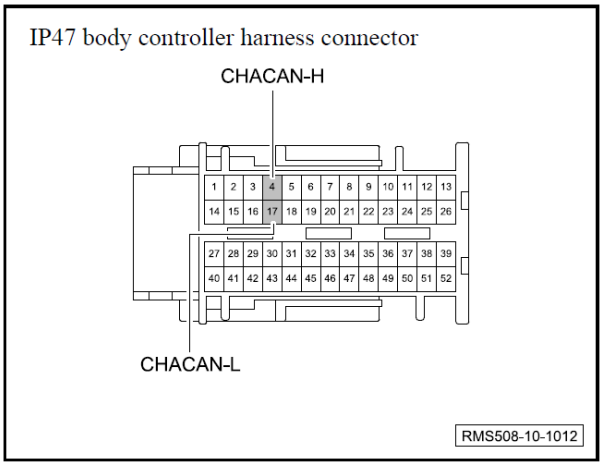
D Read the DTC again.

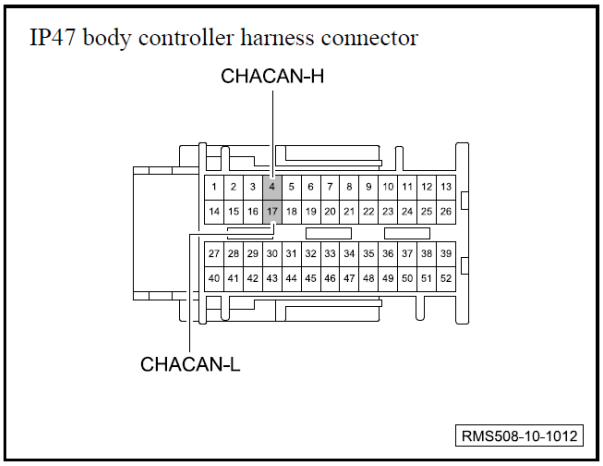
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the BDCAN data communication wire between the body controller and the VCU.



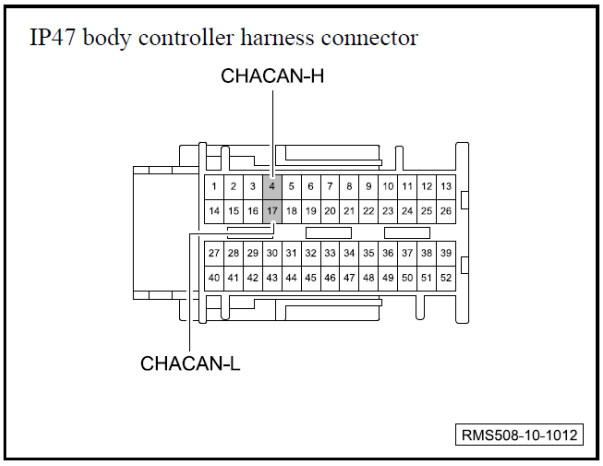


A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the VCU harness connector FB49.
D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal C3 of the VCU harness connector FB49.
E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal C4 of the VCU harness connector FB49.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the BDCAN data communication wire for any possible short circuit, open circuit and virtual connection, or replace the harness.

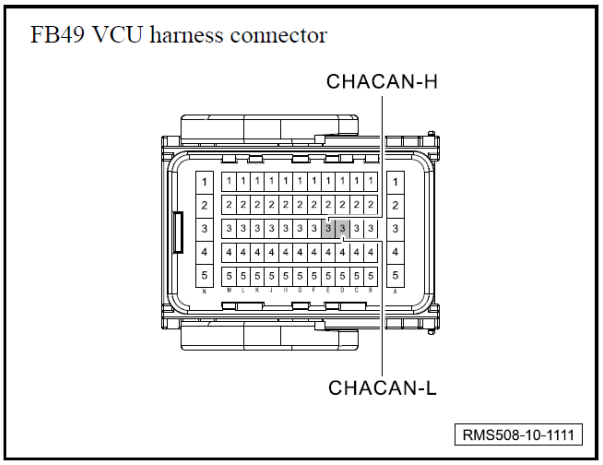
Yes

Step 3	Check the CHACAN data communication wire between the body controller and the VCU.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the VCU harness connector FB49.
D Measure the resistance between terminal 4 of the body controller harness connector IP47 and terminal E3 of the VCU harness connector FB49.
E Measure the resistance between terminal 17 of the body controller harness connector IP47 and terminal D3 of the VCU harness connector FB49.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CHACAN data communication wire for any possible short circuit, open circuit and virtual connection, or replace the harness.



Yes

Step 4	Check the power supply ground wire of VCU.

A Check whether the power supply ground wire of VCU is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the VCU.

A Replace the VCU.

B Is the fault eliminated after replacing the VCU?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.63 DTC: U060087

DTC	DTC definition
U060087	Lost communication with PCM

1. Diagnosis steps

Step 1	Check the DTCs.

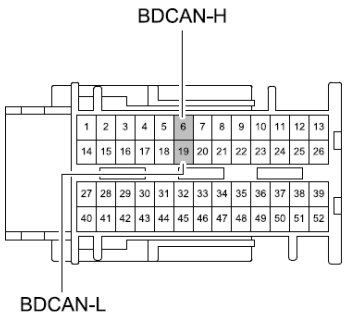
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

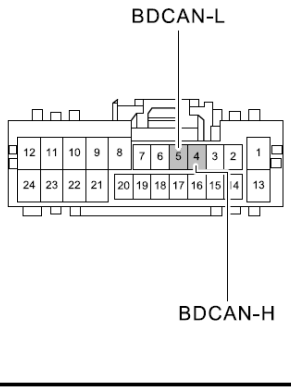
Yes

Step 2	Check the CAN data communication wire between the body controller and the fuel pump controller.

IP47 body controller harness connector



BD50 fuel pump controller harness connector



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the fuel pump controller harness connector BD50.
D Measure the resistance between terminal 6 of the body controller harness connector IP47 and terminal 4 of the fuel pump controller harness connector BD50.
E Measure the resistance between terminal 19 of the body controller harness connector IP47 and terminal 5 of the fuel pump controller harness connector BD50.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply ground wire of the oil pump controller.

A Check whether the power supply ground wire of the oil pump controller is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the oil pump controller.

A Replace the oil pump controller.

B Is the fault eliminated after replacing the fuel pump controller?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 6	The diagnosis is over.

8.28.5.64 DTC: P1B0007, P1B0009.....

DTC	**DTC definition**
P1B0007	Idling of battery circulating water pump
P1B0009	Fault of battery circulating coolant pump
P1B0002	No speed regulation signal input of battery circulating water pump

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF19 of the battery circulating water pump.

A Check whether the fuse LF19 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF19.

A Check whether the circuit of fuse LF19 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

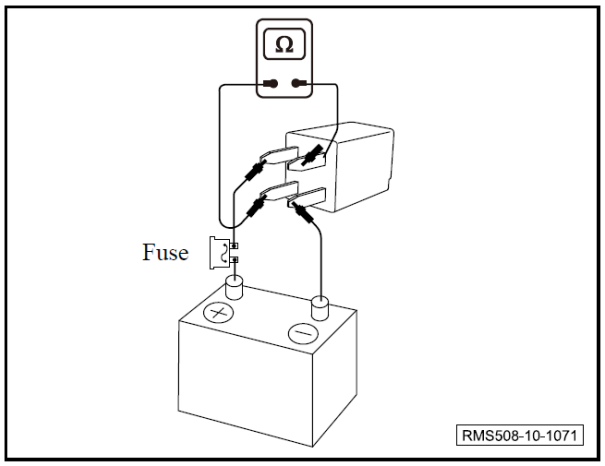
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **LF1910A**

D Confirm whether the battery circulating water pump works normally.

Yes → The system works normally.

No

Step 4	Check the battery circulating water pump relay.



A Turn the start switch to "OFF" position.

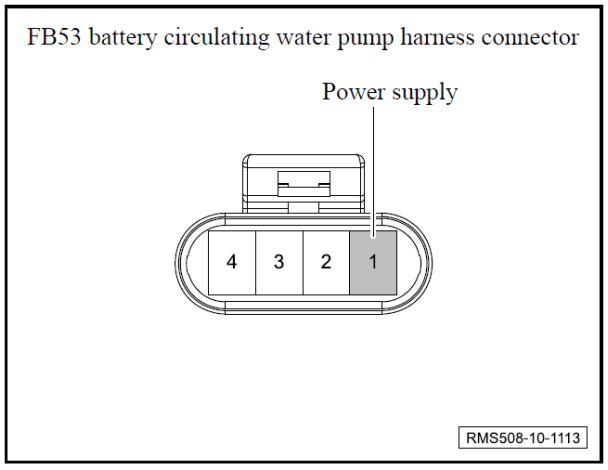
B Remove the battery circulating water pump relay LRP08.

C Connect one end of the battery circulating water pump relay coil to the battery positive terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the battery circulating water pump relay.

Yes

Step 5	Check the power circuit of the battery circulating water pump.

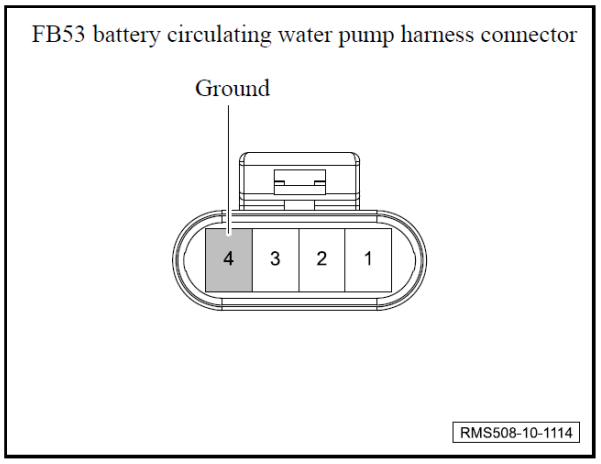


A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB53 of the battery circulating water pump.
C Remove the battery circulating water pump relay LRP08.
D Measure the resistance between terminal 1 of the battery circulating water pump harness connector FB53 and slot terminal 87 of the battery circulating water pump relay LRP08.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the battery circulating water pump.

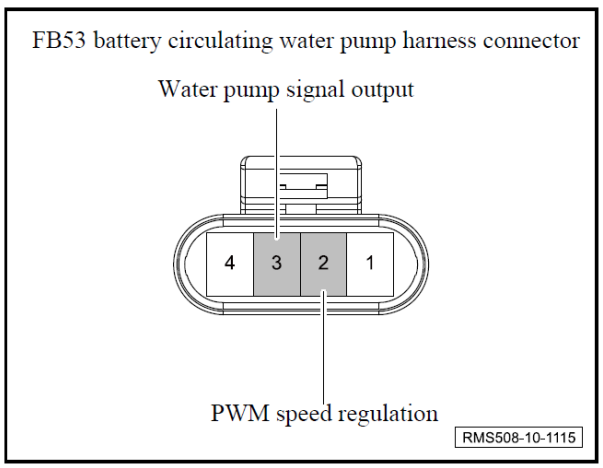


A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB53 of the battery circulating water pump.
C Measure the resistance between terminal 4 of the battery circulating water pump harness connector FB53 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 7	Check whether the circuit between the battery circulating water pump and the body controller is open-circuited.



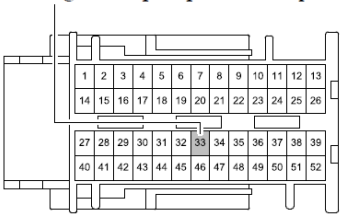
A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB53 of the battery circulating water pump.
C Disconnect the body controller harness connectors IP47 and IP52.
D Measure the resistance between terminal 2 of the battery circulating water pump harness connector FB53 and terminal 8 of the body controller harness connector IP52.
E Measure the resistance between terminal 3 of the battery circulating water pump harness connector FB53 and terminal 33 of the body controller harness connector IP47.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard

value

No → Replace or repair the harness or connector.

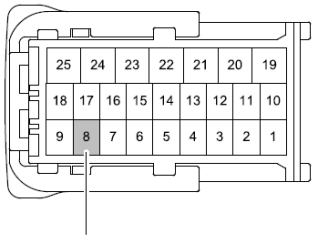
IP47 body controller harness connector

Battery circulating water pump PWM acquisition



RMS508-10-1116

IP52 body controller harness connector

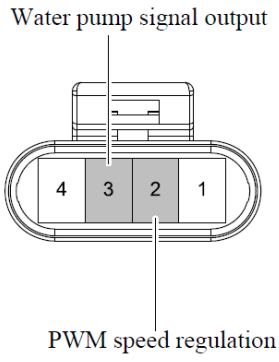


RMS508-10-1117

Yes

Step 8	Check whether the circuit between the battery circulating water pump and the body controller is short-circuited to the ground.

FB53 battery circulating water pump harness connector



RMS508-10-1115

A Turn the start switch to "OFF" position.

B Disconnect the harness connector FB53 of the battery circulating water pump.

C Disconnect the body controller harness connectors IP47 and IP52.

D Measure the resistance between terminals 2 and 3 of the battery circulating water pump harness connector FB53 and the body ground.
Standard resistance value: 10 kΩ or higher

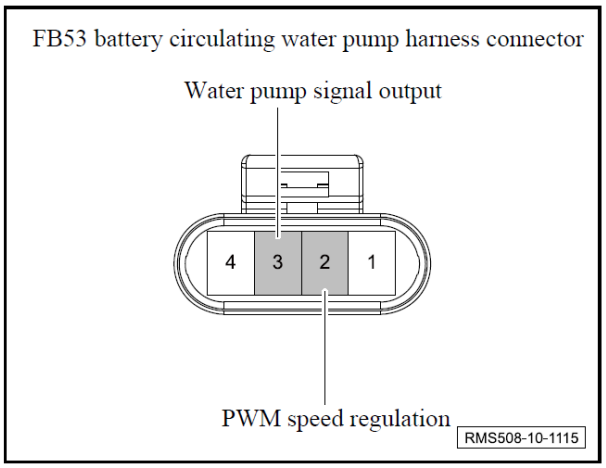
E Confirm if the resistance conforms to the standard value

No

Replace or repair the harness or connector.

Yes

Step 9	Check whether the circuit between the battery circulating water pump and the body controller is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB53 of the battery circulating water pump.
C Disconnect the body controller harness connectors IP47 and IP52.
D Put the Start switch to “ON” position.
E Measure the voltage between terminals 2 and 3 of the battery circulating water pump harness connector FB53 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No	Replace or repair the harness or connector.

Yes

Step 10	Replace the battery circulating water pump.

A Replace the battery circulating water pump.
B Is the fault eliminated after replacing the battery circulating water pump?

Yes	The system works normally.

No

Step 11	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes	The system works normally.

Next

Step 12	The diagnosis is over.

8.28.5.65 DTC: P1B0107, P1B0109.....

DTC	**DTC definition**
P1B0107	Idling of PTC coolant pump
P1B0109	Fault of PTC coolant pump
P1B0102	No speed regulation signal input of PTC coolant pump

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF18 of the PTC circulating water pump.

A Check whether the fuse LF18 is blown.

No → Go to Step 4.

Yes

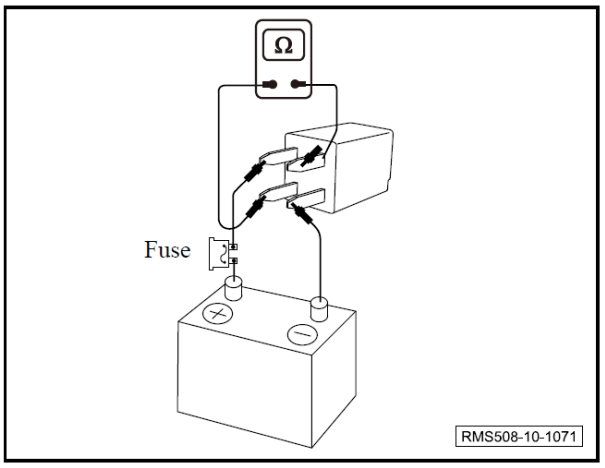
Step 3	Check and repair the circuit of fuse LF18.

A Check whether the circuit of fuse LF18 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **LF1810A**
D Confirm whether the PTC circulating water pump works normally.

Yes → The system works normally.

No

Step 4	Check the PTC circulating water pump relay.

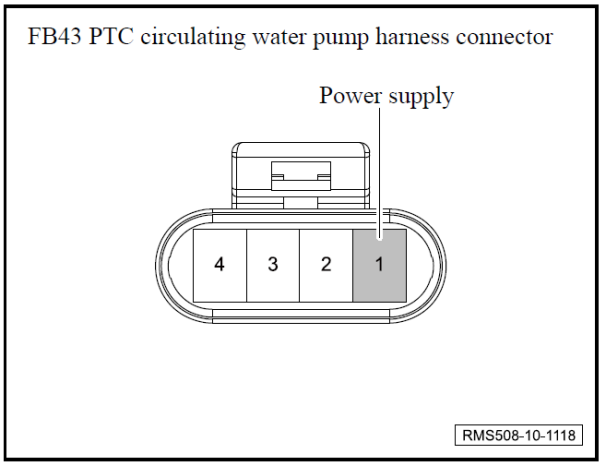


A Turn the start switch to "OFF" position.
B Remove the PTC circulating water pump relay LRP07.
C Connect one end of the PTC circulating water pump relay coil to the battery positive terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the PTC circulating water pump relay.

Yes

Step 5	Check the power circuit of the PTC circulating water pump.

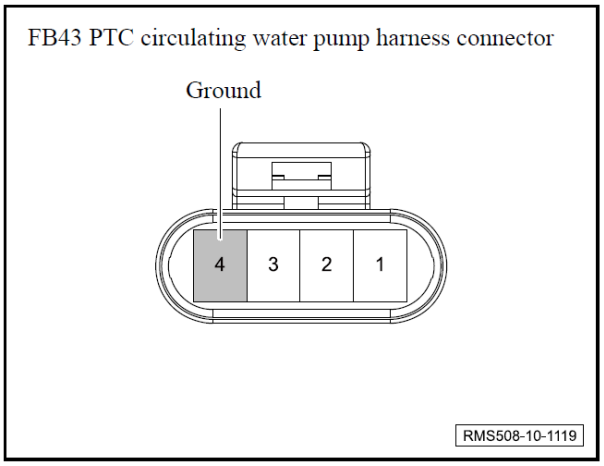


A Turn the start switch to "OFF" position.
B Disconnect the PTC circulating water pump harness connector FB43.
C Remove the PTC circulating water pump relay LRP07.
D Measure the resistance between terminal 1 of the PTC circulating water pump harness connector FB43 and slot terminal 87 of the PTC circulating water pump relay LRP07.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the PTC circulating water pump.



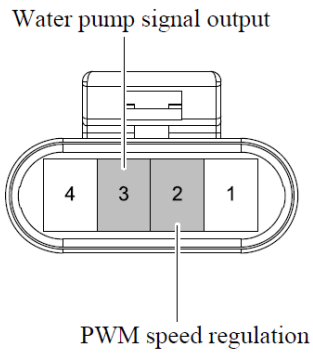
A Turn the start switch to "OFF" position.
B Disconnect the PTC circulating water pump harness connector FB43.
C Measure the resistance between terminal 4 of the PTC circulating water pump harness connector FB43 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

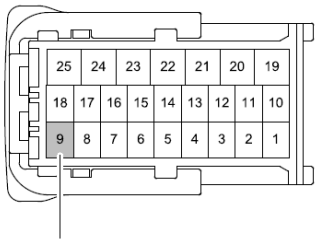
Step 7	Check whether the circuit between the PTC circulating water pump and the body controller is open-circuited.

FB43 PTC circulating water pump harness connector



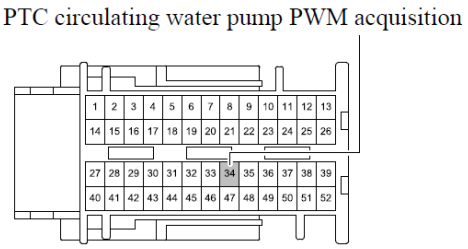
RMS508-10-1120

IP52 body controller harness connector



RMS508-10-1122

IP47 body controller harness connector



RMS508-10-1121

A Turn the start switch to "OFF" position.

B Disconnect the PTC circulating water pump harness connector FB43.

C Disconnect the body controller harness connectors IP47 and IP52.

D Measure the resistance between terminal 2 of the PTC circulating water pump harness connector FB43 and terminal 9 of the body controller harness connector IP52.

E Measure the resistance between terminal 3 of the PTC circulating water pump harness connector FB43 and terminal 34 of the body controller harness connector IP47.

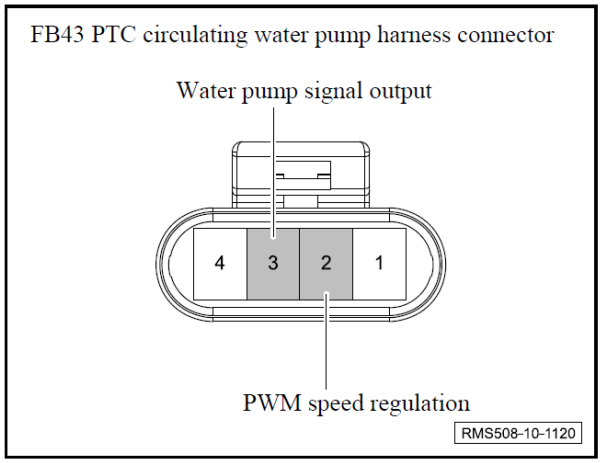
Standard resistance value: **<1Ω**

F Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.

Yes

Step 8	Check whether the circuit between the PTC circulating water pump and the body controller is short-circuited to the ground.

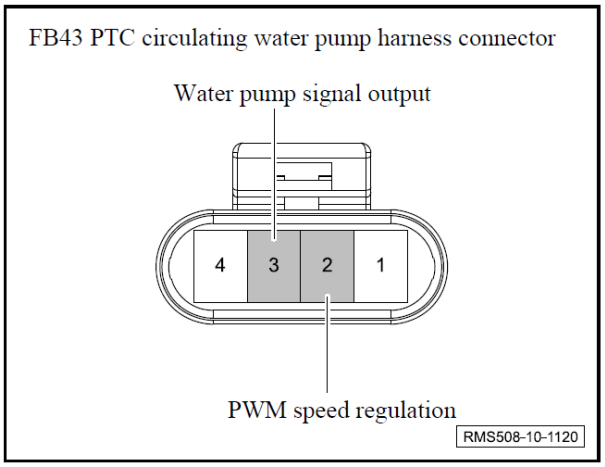


A Turn the start switch to "OFF" position.
B Disconnect the PTC circulating water pump harness connector FB43.
C Disconnect the body controller harness connectors IP47 and IP52.
D Measure the resistance between terminals 2 and 3 of the PTC circulating water pump harness connector FB43 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 9	Check whether the circuit between the PTC circulating water pump and the body controller is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the PTC circulating water pump harness connector FB43.
C Disconnect the body controller harness connectors IP47 and IP52.
D Put the Start switch to “ON” position.
E Measure the voltage between terminals 2 and 3 of the PTC circulating water pump harness connector FB43 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 10	Replace the PTC circulating water pump.

A Replace the PTC circulating water pump.
B Is the fault eliminated after replacing the PTC circulating water pump?

Yes → The system works normally.

No

Step 11	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body

controller?

Yes → The system works normally.

Next

Step 12	The diagnosis is over.

8.28.5.66 DTC: P1B0207, P1B0209.....

DTC	**DTC definition**
P1B0207	Motor water pump idling
P1B0209	Motor water pump fault
P1B0202	No speed regulation signal input of motor water pump

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF14 of the motor controller water pump.

A Check whether the fuse LF14 is blown.

No → Go to Step 4.

Yes

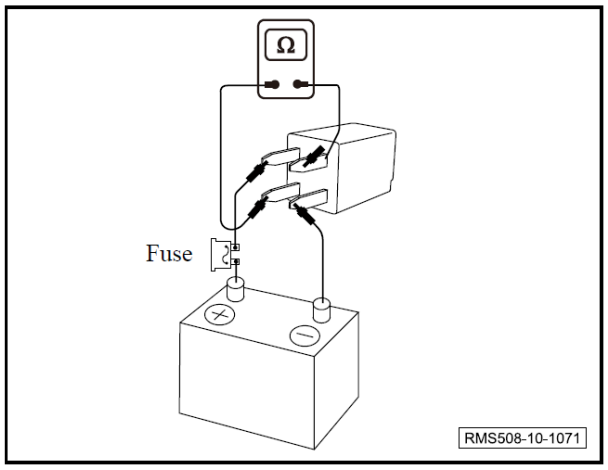
Step 3	Check and repair the circuit of fuse LF14.

A Check whether the circuit of fuse LF14 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **LF1410A**
D Confirm whether the motor controller water pump works normally.

Yes → The system works normally.

No

Step 4	Check the motor controller water pump relay.

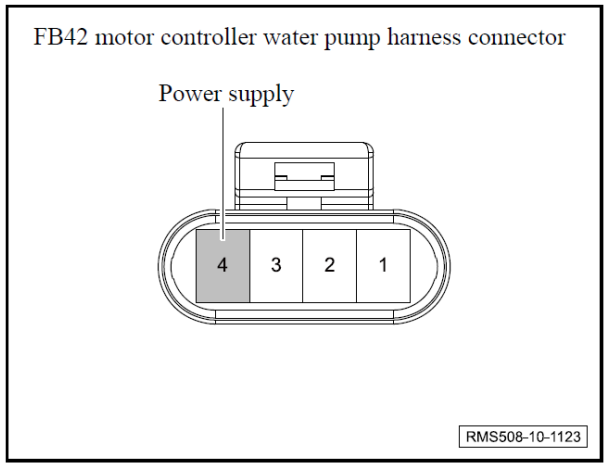


A Turn the start switch to "OFF" position.
B Remove relay LRP05 of the motor controller water pump.
C Connect one end of the motor controller water pump relay coil to the battery positive terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the motor controller water pump relay.

Yes

Step 5	Check the power circuit of the motor controller water pump.

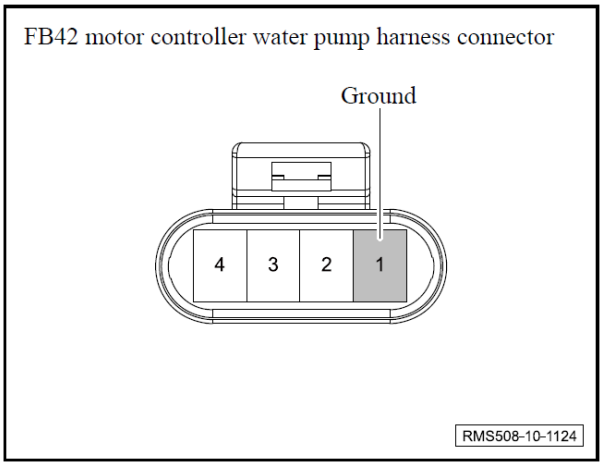


A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB42 of the motor controller water pump.
C Remove relay LRP05 of the motor controller water pump.
D Measure the resistance between terminal 4 of the motor controller water pump harness connector FB42 and slot terminal 87 of the motor controller water pump relay LRP05.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 6	Check the ground circuit of the motor controller water pump.

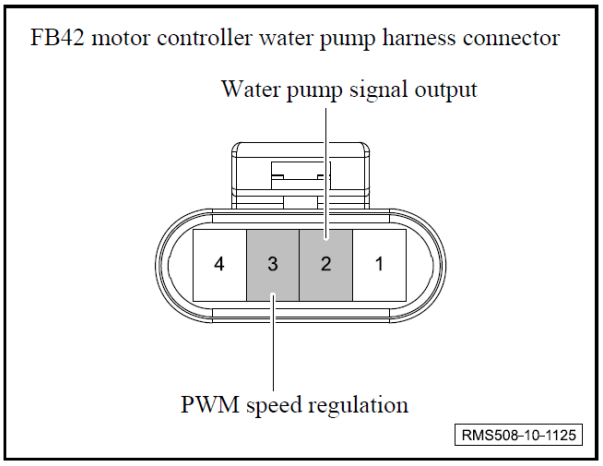


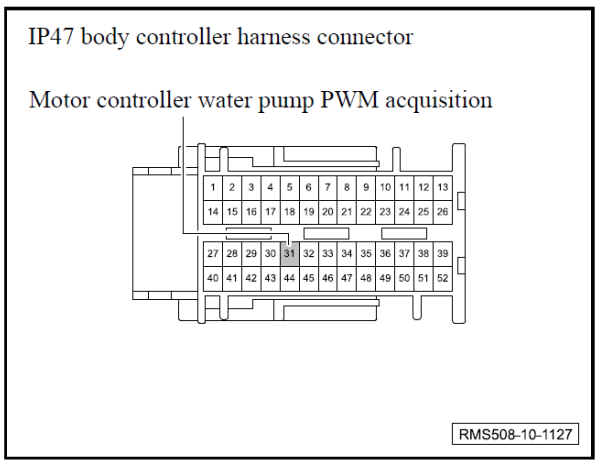
A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB42 of the motor controller water pump.
C Measure the resistance between terminal 1 of the motor controller water pump harness connector FB42 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 7	Check whether the circuit between the motor controller water pump and the body controller is open-circuited.

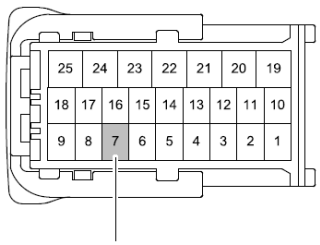




A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB42 of the motor controller water pump.
C Disconnect the body controller harness connectors IP47 and IP52.
D Measure the resistance of the circuit between terminal 2 of the motor controller water pump harness connector FB42 and terminal 31 of the body controller harness connector IP47.
E Measure the resistance of the circuit between terminal 3 of the motor controller water pump harness connector FB42 and terminal 7 of the body controller harness connector IP52.
Standard resistance value: **<1Ω**
F Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

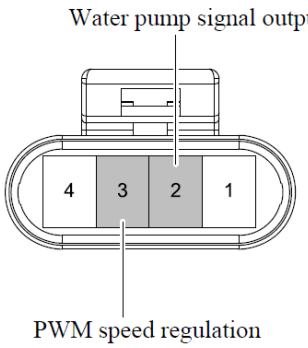
IP52 body controller harness connector



Yes

Step 8	Check whether the circuit between the motor controller water pump and the body controller is short-circuited to the ground.

FB42 motor controller water pump harness connector



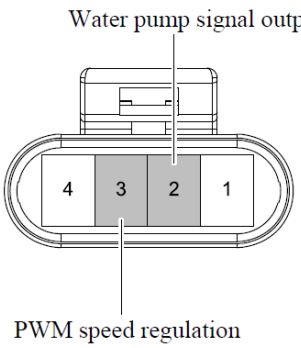
A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB42 of the motor controller water pump.
C Disconnect the body controller harness connectors IP47 and IP52.
D Measure the resistance between terminals 2 and 3 of the motor controller water pump harness connector FB42 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 9	Check whether the circuit between the motor controller water pump and the body controller is short-circuited to the power supply.

FB42 motor controller water pump harness connector



A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB42 of the motor controller water pump.
C Disconnect the body controller harness connectors IP47 and IP52.
D Put the Start switch to “ON” position.
E Measure the voltage between terminals 2 and 3 of the motor controller water pump harness connector FB42 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 10	Replace the motor controller water pump.

A Replace the motor controller water pump.
B Is the fault eliminated after replacing the motor controller water pump?

Yes → The system works normally.

No

Step 11	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 12	The diagnosis is over.

8.28.5.67 DTC: P1B0309

DTC	DTC definition
P1B0309	CCU fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the compressor assembly.

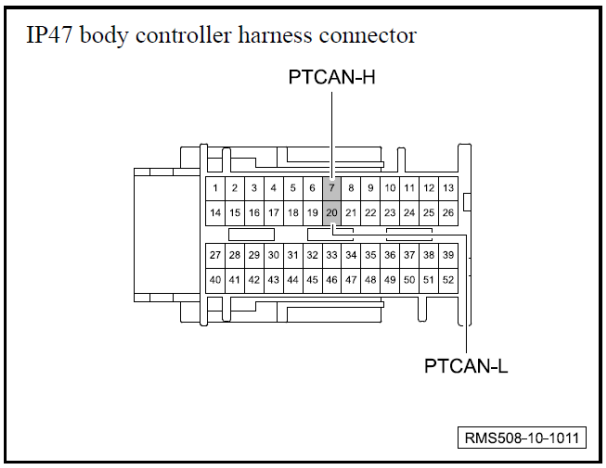
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC of the compressor assembly.

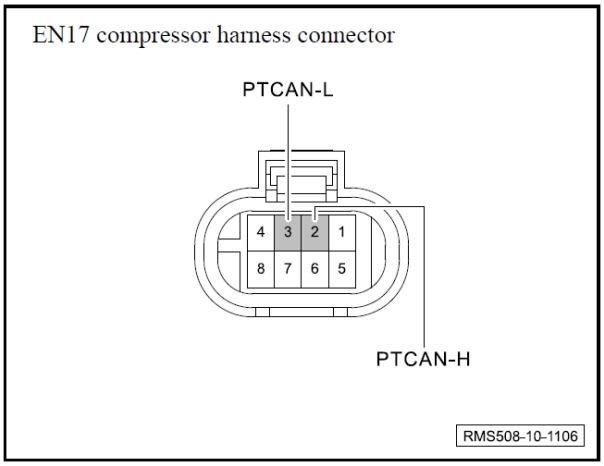
C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults of the compressor assembly.

No

Step 3	Check the CAN data communication wire between the body controller and the compressor assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the compressor assembly harness connector EN17.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 2 of the compressor assembly harness connector EN17.

E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the compressor assembly harness connector EN17.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the compressor assembly.

A Check whether the power supply ground wire of the compressor assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the compressor assembly.

A Replace the compressor assembly.

B Is the fault eliminated after replacing the compressor assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 7	The diagnosis is over.

8.28.5.68 DTC:P1B0409,P1B0414

DTC	DTC definition
P1B0409	PTC general fault
P1B0414	PTC internal short-circuit fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the PTC heater assembly.

A Connect the diagnostic scanner to OBD interface.

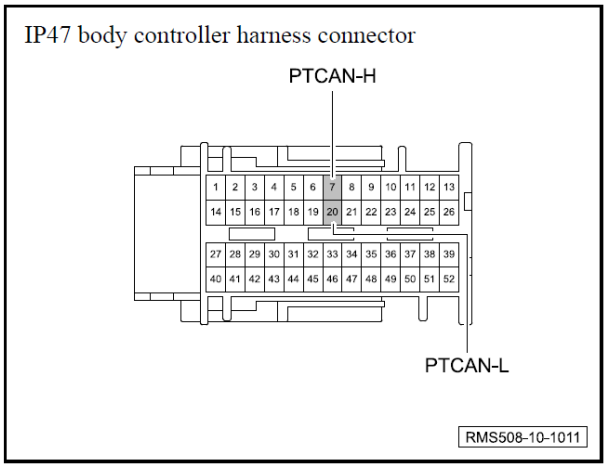
B Turn the start switch to "ON" position, read and record the DTC of the PTC heater assembly.

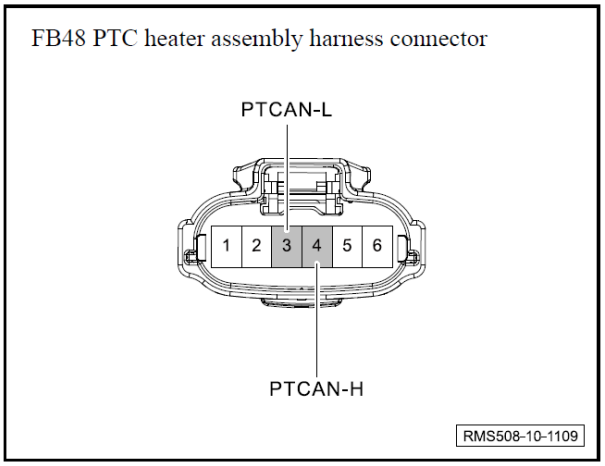
C Check whether the same DTC is displayed.

Yes → Give priority to repairing the faults related to the PTC heater assembly.

No

Step 3	Check the CAN data communication wire between the body controller and the PTC heater assembly.





A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the PTC heater assembly harness connector FB48.

D Measure the resistance between terminal 7 of the body controller harness connector IP47 and terminal 4 of the PTC heater assembly harness connector FB48.

E Measure the resistance between terminal 20 of the body controller harness connector IP47 and terminal 3 of the PTC heater assembly harness connector FB48.

Standard resistance value: **<1Ω**

F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 4	Check the power supply ground wire of the PTC heater assembly.

A Check whether the power supply ground wire of the PTC heater assembly is normal.

No → Repair or replace the harness.

Yes

Step 5	Replace the PTC heater assembly.

A Replace the PTC heater assembly.

B Is the fault eliminated after replacing the PTC heater assembly?

Yes → The system works normally.

No

Step 6	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes

Next

Step 7	The diagnosis is over.

8.28.5.69 DTC:P1B0509

DTC	**DTC definition**
P1B0509	Electronic fan fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse ANS2 of the radiator fan.

A Check whether the fuse ANS2 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse ANS2.

A Check whether the circuit of fuse ANS2 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

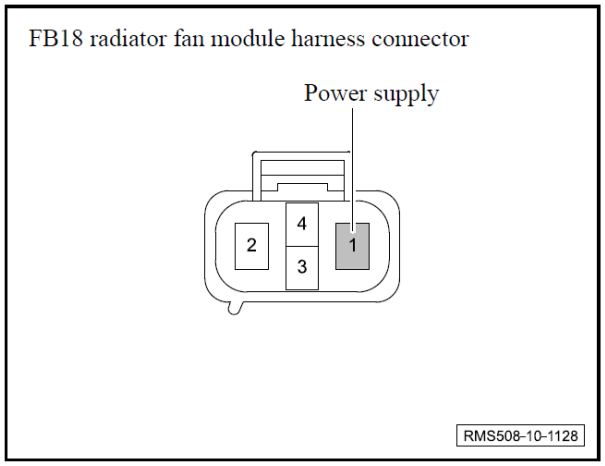
C Replace blown fuses with fuses of rated current.
Rated value of the fuse: **ANS260A**

D Confirm whether the radiator fan works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the radiator fan module.

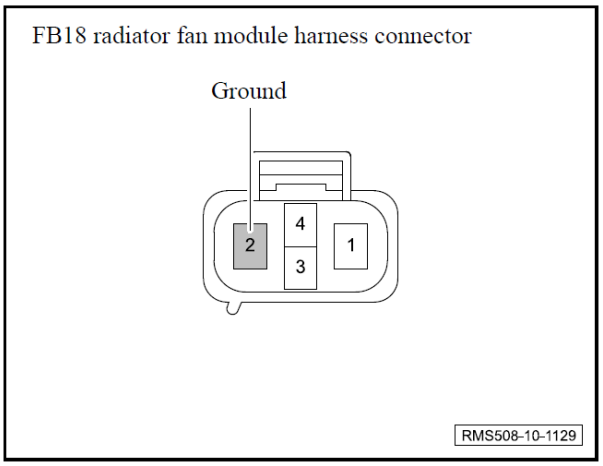


A Turn the start switch to "OFF" position.
B Disconnect the radiator fan module harness connector FB18.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 1 of the radiator fan module harness connector FB18 and the body ground.
Standard voltage value: **11~14V**
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the radiator fan module.



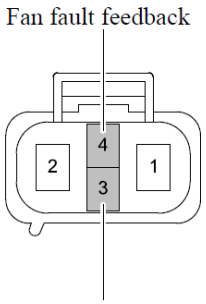
A Turn the start switch to "OFF" position.
B Disconnect the radiator fan module harness connector FB18.
C Measure the resistance between terminal 2 of the radiator fan module harness connector FB18 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

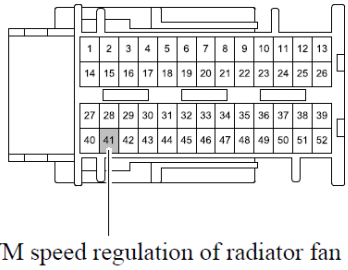
Step 6	Check whether the circuit between the radiator fan module and the body controller is open-circuited.

FB18 radiator fan module harness connector



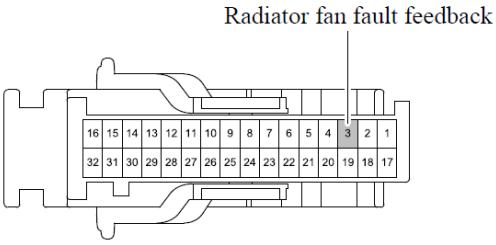
RMS508-10-1130

IP50 body controller harness connector



RMS508-10-1132

IP49 body controller harness connector



RMS508-10-1131

A Turn the start switch to "OFF" position.

B Disconnect the radiator fan module harness connector FB18.

C Disconnect the body controller harness connectors IP49 and IP50.

D Measure the resistance of the circuit between terminal 3 of the radiator fan module harness connector FB18 and terminal 41 of the body controller harness connector IP50.

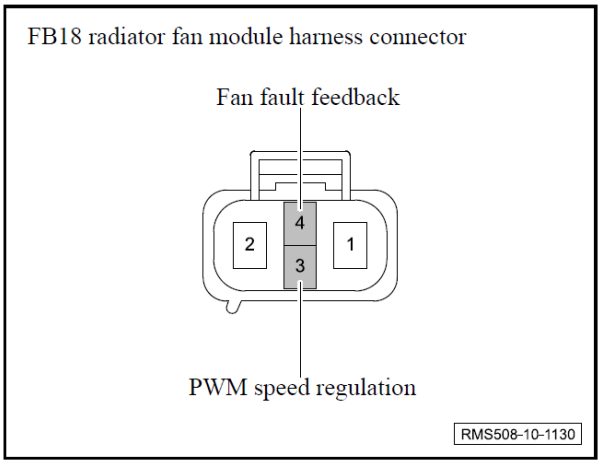
E Measure the resistance of the circuit between terminal 4 of the radiator fan module harness connector FB18 and terminal 3 of the body controller harness connector IP49.
Standard resistance value: **<1Ω**

F Confirm if the resistance conforms to the standard value

No	Replace or repair the harness or connector.

Yes

Step 7	Check whether the circuit between the radiator fan module and the body controller is short-circuited to the ground.

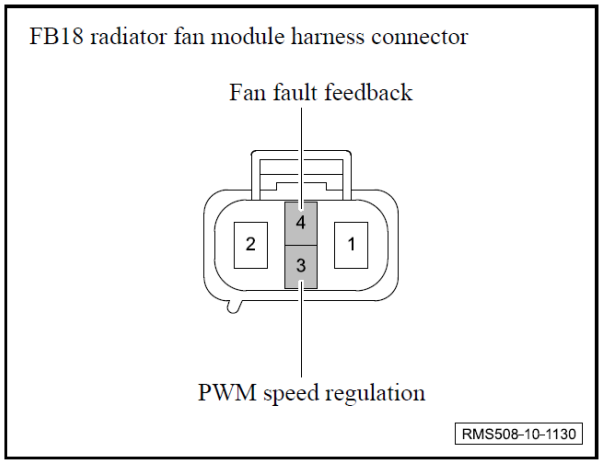


A Turn the start switch to "OFF" position.
B Disconnect the radiator fan module harness connector FB18.
C Disconnect the body controller harness connectors IP49 and IP50.
D Measure the resistance between terminals 3 and 4 of the radiator fan module harness connector FB18 and the body ground.
Standard resistance value: 10 kΩ or higher
E Confirm if the resistance conforms to the standard value

No → Replace or repair the harness or connector.

Yes

Step 8	Check whether the circuit between the radiator fan module and the body controller is short-circuited to the power supply.



A Turn the start switch to "OFF" position.
B Disconnect the radiator fan module harness connector FB18.
C Disconnect the body controller harness connectors IP49 and IP50.
D Put the Start switch to “ON” position.
E Measure the voltage between terminals 3 and 4 of the radiator fan module harness connector FB18 and the body ground.
Standard voltage value: **0V**
F Make sure that the voltage conforms to the standard value.

No → Replace or repair the harness or connector.

Yes

Step 9	Check the circuit before the radiator fan and the radiator fan module.

A Check whether the circuit before the radiator fan and the radiator fan module is normal.

No → Repair or replace the harness.

Yes

Step 10	Replace the radiator fan.

A Replace the radiator fan.
B Is the fault eliminated after replacing the radiator fan?

Yes → The system works normally.

No

Step 11	Replace the radiator fan module.

A Replace the radiator fan module.

B Is the fault eliminated after replacing the radiator fan module?

Yes → The system works normally.

No

Step 12	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 13	The diagnosis is over.

8.28.5.70 DTC: P1B0609

DTC	DTC definition
P1B0609	Cooler electronic valve fault

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.

B Turn the start switch to "ON" position, read and record the DTC.

C Clear the DTC.

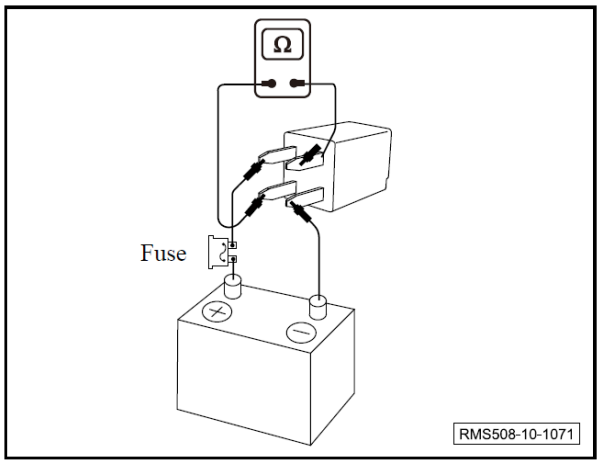
D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the accessory relay.

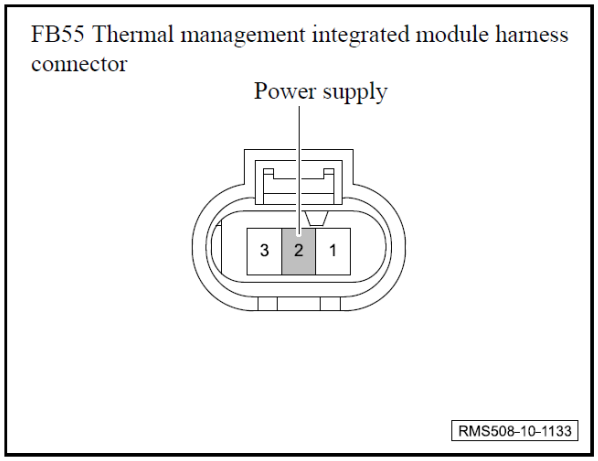


A Turn the start switch to "OFF" position.
B Remove the accessory relay LRP04.
C Connect one end of the accessory relay coil to the battery positive terminal and the other end to the ground. Check whether both ends of the relay switch contact are conductive.

No → Replace the accessory relay.

Yes

Step 3	Check the thermal management integrated module power circuit.

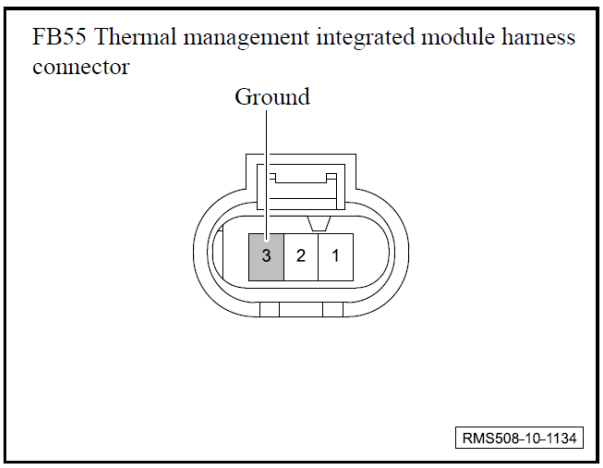


A Turn the start switch to "OFF" position.
B Disconnect the thermal management integrated module harness connector FB55.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 2 of the thermal management integrated module harness connector FB55 and the body ground.
Standard voltage value: **11~14V**
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 4	Check the ground circuit of the thermal management integrated module.



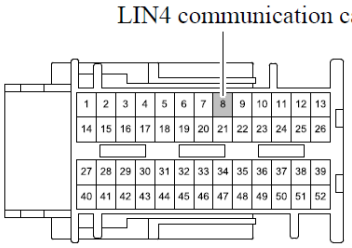
A Turn the start switch to "OFF" position.
B Disconnect the thermal management integrated module harness connector FB55.
C Measure the resistance between terminal 3 of the thermal management integrated module harness connector FB55 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

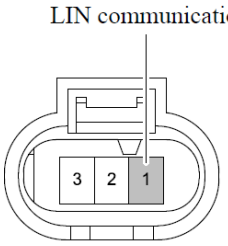
Step 5	Check the LIN communication wire between the body controller and the thermal management integrated module.

IP47 body controller harness connector



RMS508-10-1136

FB55 Thermal management integrated module harness connector



RMS508-10-1135

A Turn the start switch to "OFF" position.

B Disconnect body controller harness connector IP47

C Disconnect the thermal management integrated module harness connector FB55.

D Measure the resistance between terminal 8 of the body controller harness connector IP47 and terminal 1 of the thermal management integrated module harness connector FB55.
Standard resistance value: **<1Ω**

E Confirm if the resistance conforms to the standard value

No → Check the LIN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 6	Replace the thermal management integrated module.

A Replace the thermal management integrated module.

B Is the fault eliminated after replacing the thermal management integrated module?

Yes → The system works normally.

No

Step 7	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 8	The diagnosis is over.

8.28.5.71 DTC:P1B0709

DTC	DTC definition
P1B0709	HVAC three-way valve

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF07 of the HVAC three-way valve.

A Check whether the fuse LF07 is blown.

No → Go to Step 4.

Yes

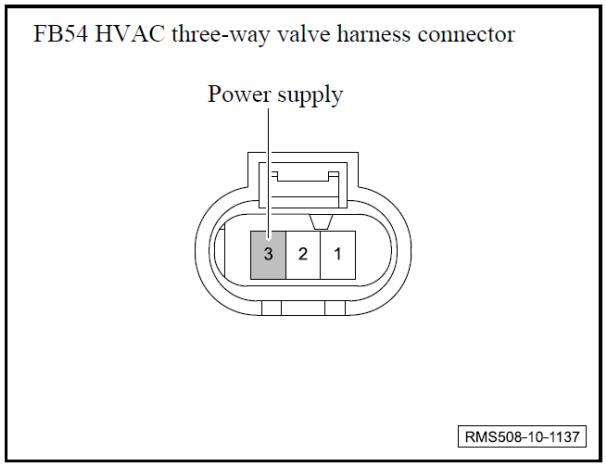
Step 3	Check and repair the circuit of fuse LF07.

A Check whether the circuit of fuse LF07 is short-circuited.
B Repair the circuit and make sure there is no short circuit.
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **LF0715A**
D Confirm whether the HVAC three-way valve works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the HVAC three-way valve.

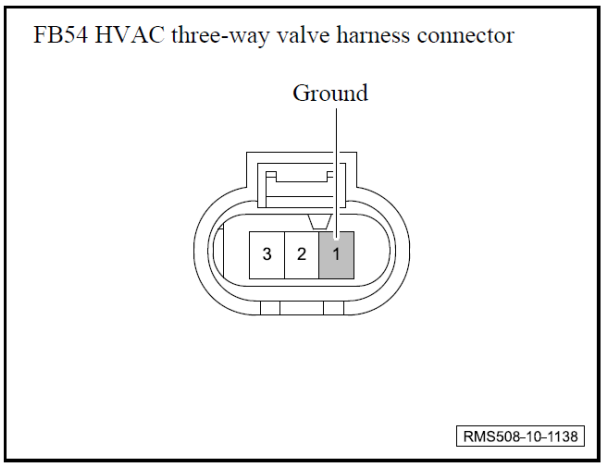


A Turn the start switch to "OFF" position.
B Disconnect the HVAC three-way valve harness connector FB54.
C Put the Start switch to “ON” position.
D Measure the voltage between terminal 3 of the HVAC three-way valve harness connector FB54 and the body ground.
Standard voltage value: **11~14V**
E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the HVAC three-way valve.

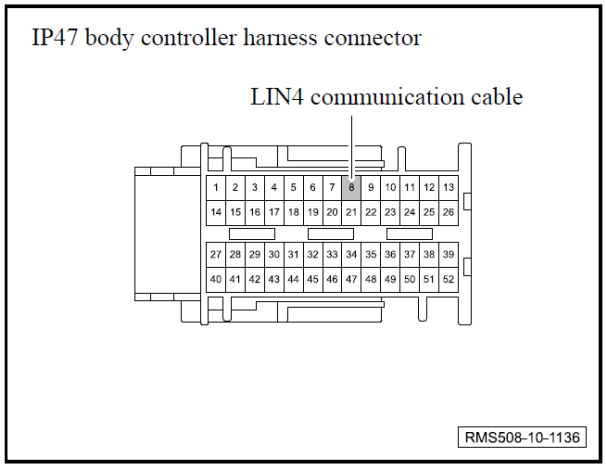


A Turn the start switch to "OFF" position.
B Disconnect the HVAC three-way valve harness connector FB54.
C Measure the resistance between terminal 1 of the HVAC three-way valve harness connector FB54 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

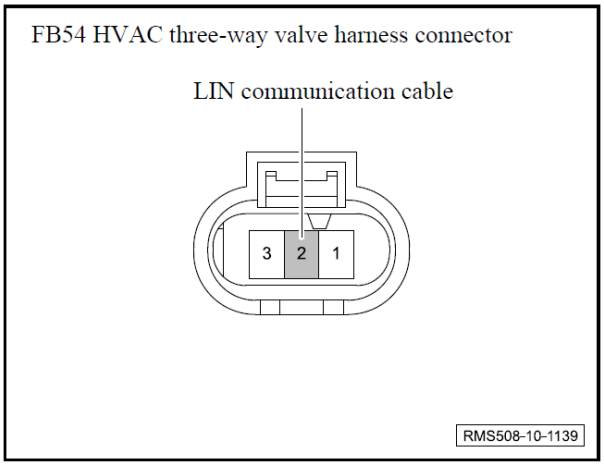
Step 6	Check the LIN communication wire between the body controller and the HVAC three-way valve.



A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the HVAC three-way valve harness connector FB54.
D Measure the resistance between terminal 8 of the body controller harness connector IP47 and terminal 2 of the HVAC three-way valve harness connector FB54.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Check the LIN data communication wire for possible short circuit, open circuit and virtual connection, or

replace the harness.



Yes

Step 7	Replace the HVAC three-way valve.

A Replace the HVAC three-way valve.
B Is the fault eliminated after replacing the HVAC three-way valve?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.28.5.72 DTC: P1B0809

DTC	DTC definition
P1B0809	Battery three-way valve

1. Diagnosis steps

Step 1	Check the DTCs.

A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.

D Read the DTC again.

E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the fuse LF07 of the battery three-way valve.

A Check whether the fuse LF07 is blown.

No → Go to Step 4.

Yes

Step 3	Check and repair the circuit of fuse LF07.

A Check whether the circuit of fuse LF07 is short-circuited.

B Repair the circuit and make sure there is no short circuit.

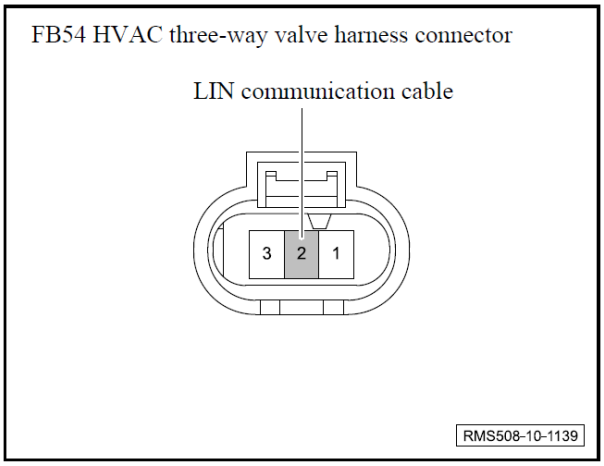
C Replace blown fuses with fuses of rated current.
Rated value of fuse: **LF0715A**

D Confirm whether the battery three-way valve works normally.

Yes → The system works normally.

No

Step 4	Check the power circuit of the battery three-way valve.



A Turn the start switch to "OFF" position.

B Disconnect the harness connector FB56 of the battery three-way valve.

C Put the Start switch to “ON” position.

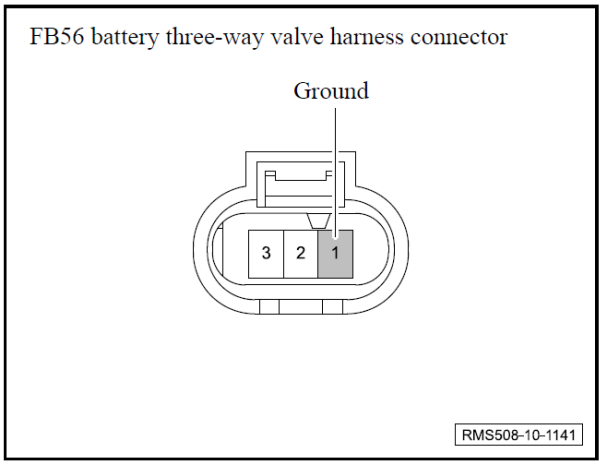
D Measure the voltage between terminal 3 of the battery three-way valve harness connector FB56 and the body ground.
Standard voltage value: **11~14V**

E Make sure that the voltage conforms to the standard value.

No → Repair or replace the harness.

Yes

Step 5	Check the ground circuit of the battery three-way valve.

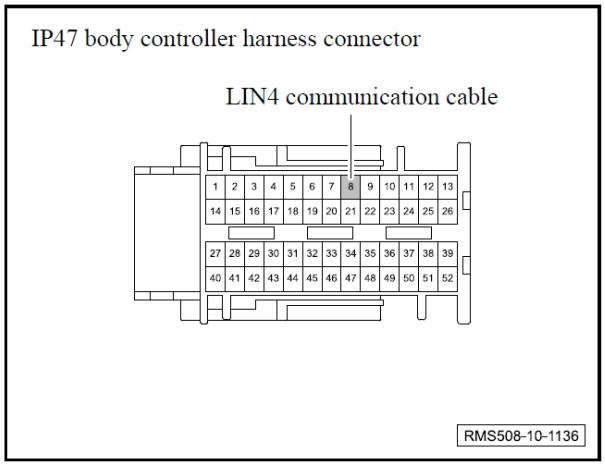


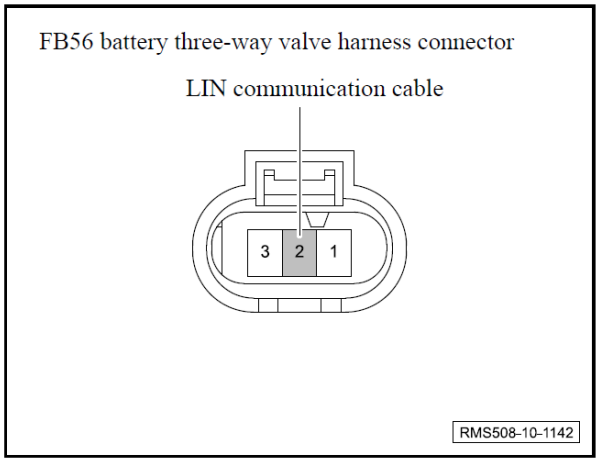
A Turn the start switch to "OFF" position.
B Disconnect the harness connector FB56 of the battery three-way valve.
C Measure the resistance between terminal 1 of the battery three-way valve harness connector FB56 and the body ground.
Standard resistance value: **<1Ω**
D Confirm if the resistance conforms to the standard value

No → Repair or replace the harness.

Yes

Step 6	Check the LIN communication wire between the body controller and the battery three-way valve.





A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the harness connector FB56 of the battery three-way valve.
D Measure the resistance between terminal 8 of the body controller harness connector IP47 and terminal 2 of the battery three-way valve harness connector FB56.
Standard resistance value: **<1Ω**
E Confirm if the resistance conforms to the standard value

No → Check the LIN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 7	Replace the battery three-way valve.

A Replace the battery three-way valve.
B Is the fault eliminated after replacing the battery three-way valve?

Yes → The system works normally.

No

Step 8	Replace the body controller.

A Replace the body controller.
B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 9	The diagnosis is over.

8.28.5.73 DTC: U019887

DTC	DTC definition
U019887	Lost communication with TBOX

1. Diagnosis steps

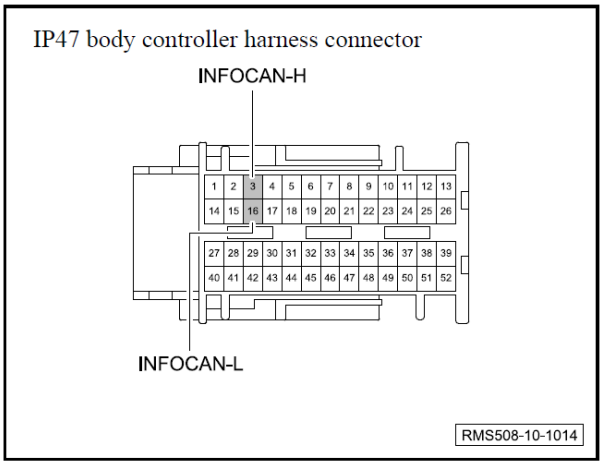
Step 1	Check the DTCs.

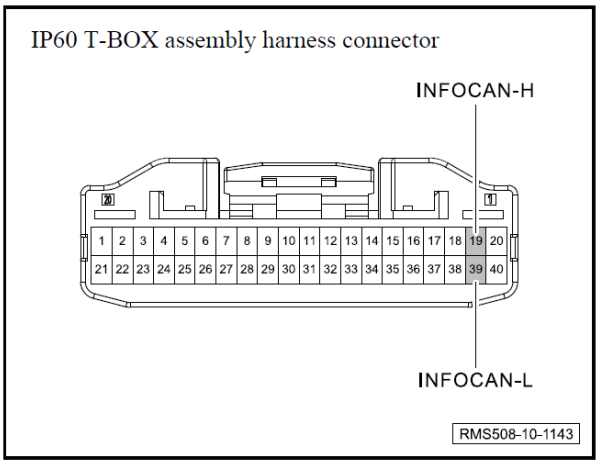
A Connect the diagnostic scanner to OBD interface.
B Turn the start switch to "ON" position, read and record the DTC.
C Clear the DTC.
D Read the DTC again.
E Check whether the same DTC is displayed.

No → As the DTCs may be triggered by intermittent fault, check for intermittent fault.

Yes

Step 2	Check the CAN data communication wire between the body controller and the T-BOX assembly.





A Turn the start switch to "OFF" position.
B Disconnect body controller harness connector IP47
C Disconnect the T-BOX assembly harness connector IP60.
D Measure the resistance between terminal 3 of body controller harness connector IP47 and terminal 19 of T-BOX assembly harness connector IP60.
E Measure the resistance between terminal 16 of body controller harness connector IP47 and terminal 39 of T-BOX assembly harness connector IP60.
Standard resistance value: **<1Ω**
F Confirm whether the resistance conforms to the standard.

No → Check the CAN data communication wire for possible short circuit, open circuit and virtual connection, or replace the harness.

Yes

Step 3	Check the power supply and ground wires of the T-BOX assembly.

A Check whether the power supply ground wire of the T-BOX assembly is normal.

No → Repair or replace the harness.

Yes

Step 4	Replace the T-BOX assembly.

A Replace the T-BOX assembly.
B Is the fault eliminated after replacing the T-BOX assembly?

Yes → The system works normally.

No

Step 5	Replace the body controller.

A Replace the body controller.

B Is the fault eliminated after replacing the body controller?

Yes → The system works normally.

Next

Step 4	The diagnosis is over.

8.28.6 Removal and installation

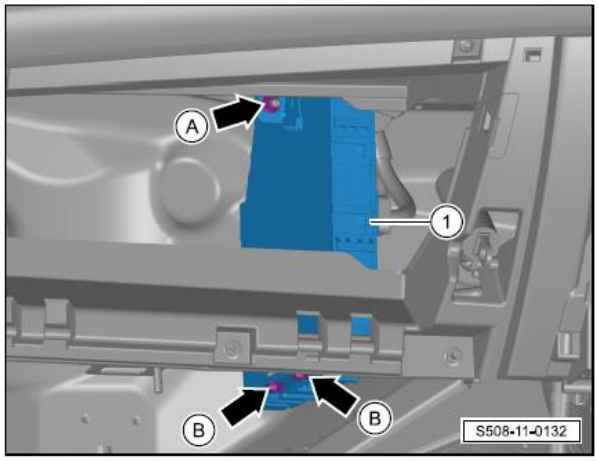
8.28.6.1 Removal and installation of body controller

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly

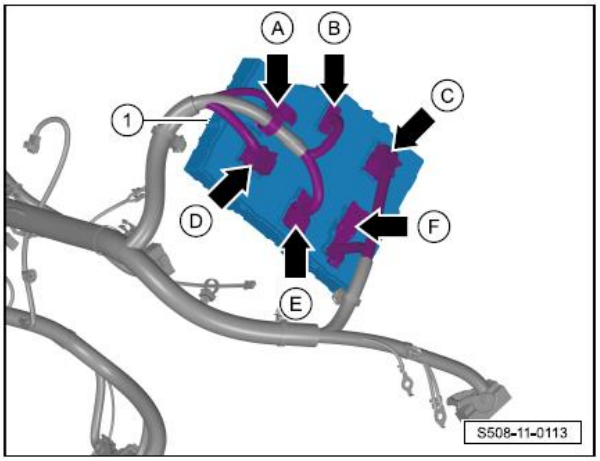


4 Remove the body controller

a. Unscrew the fixing nut (see arrow A) and bolts (see arrow B) of the body controller ①.

b. Remove the body controller ①.

- Tightening torque of nut (see arrow **A**): **6±1 N·m**
- Tightening torque of bolt (see arrow **B**): **6±1Nm**



c. Disconnect the connectors (see arrows A, B, C, D, E and F) and take out the body controller ①.

Installation procedures

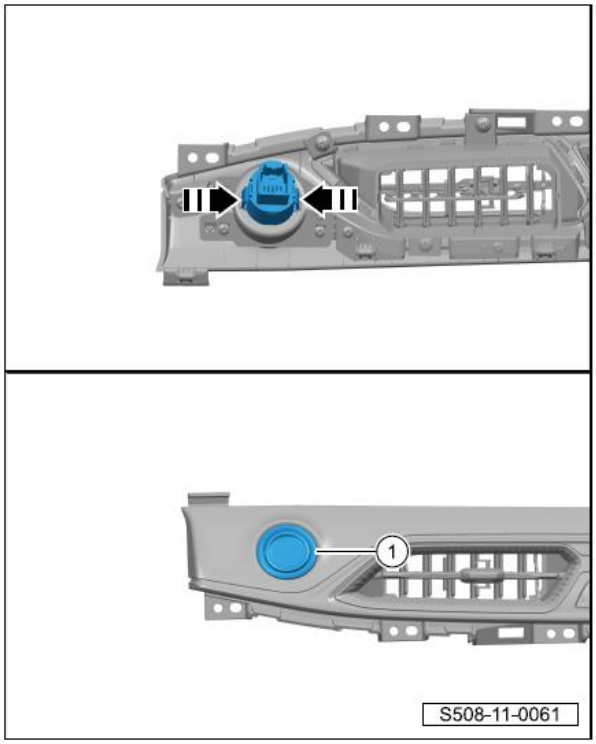
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation is completed, match the body controller. Refer to 1.4.2.6 After-sales matching operation after module replacement.

8.28.6.2 Removal and installation of ENGINE START STOP button

Disassembly procedures

1 Remove the instrument panel central trim strip assembly (right). Refer to 9.8.3.12 Removal and installation of instrument panel central trim strip assembly (right)



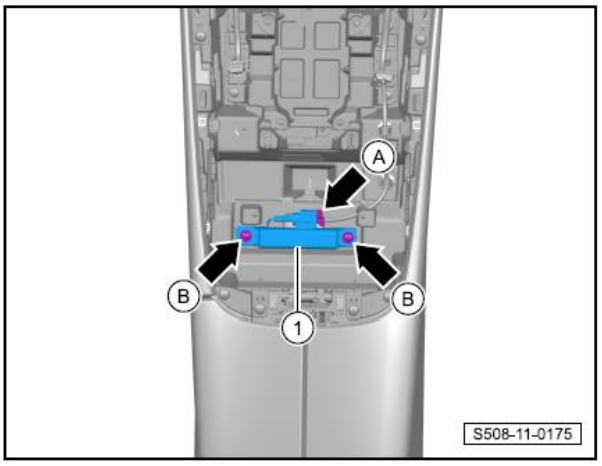
2 Remove the ENGINE START/STOP button

a. Press and fix the clip in the direction of the arrow and remove the ENGINE START STOP button ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the start switch.



8.28.6.3 Removal and installation of IMMO antenna

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly

2 Remove the IMMO antenna

a. Disconnect the connector (see arrow A) of the IMMO antenna ①.

b. Unscrew the fixing screws (see arrow B) and take out the IMMO antenna ①.

- Tightening torque of screw (see arrow **B**): **2±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation is completed, perform a function test on the IMMO antenna.

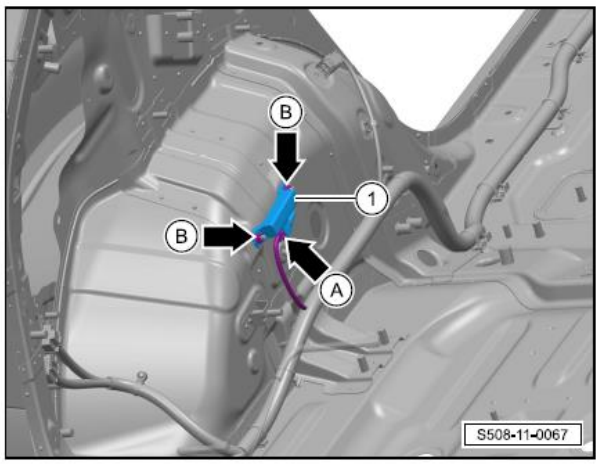
8.28.6.4 Removal and installation of PS antenna (rear side wall)

Disassembly procedures

Tip:

Here are removal and installation procedures for the left PS antenna (rear side wall), which can be basically referred to for the right one.

1 Remove the rear side wall lower interior trim panel assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly



2 Remove the PS antenna (rear side wall).

a. Disconnect the connector (see arrow A) of the PS antenna ①.

b. Unscrew the fixing nuts (see arrow B) and take out the PS antenna ①.

• Tightening torque of nut (see arrow **B**): **6±1 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation is completed, perform a function test on the PS antenna.

8.28.6.5 Removal and installation of PS antenna (rear bumper side)

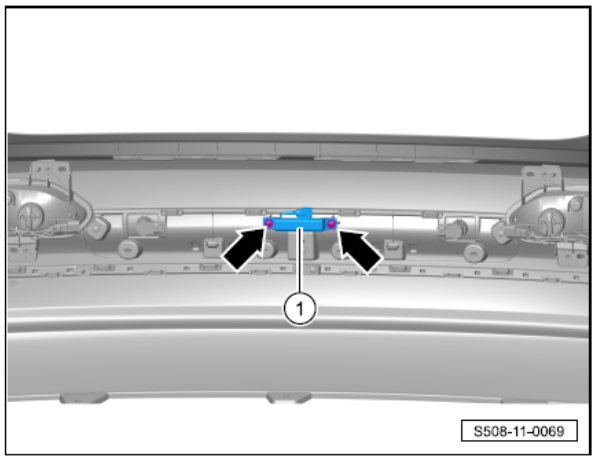
Disassembly procedures

1 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories

2 Remove the PS antenna (rear bumper side)

a. Unscrew the fixing screws (see the arrows) and take out the PS antenna ①.

- Tightening torque of screw: **3±1 N·m**



Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation is completed, perform a function test on the PS antenna.

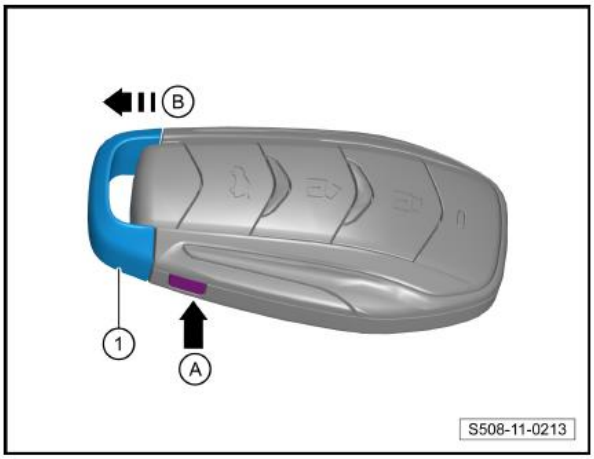
8.28.6.6 Removal and installation of smart key battery

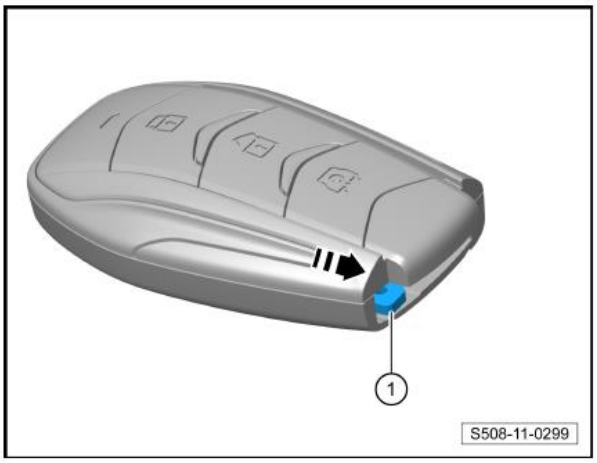
Disassembly procedures

1 Remove the battery of the smart remote control key

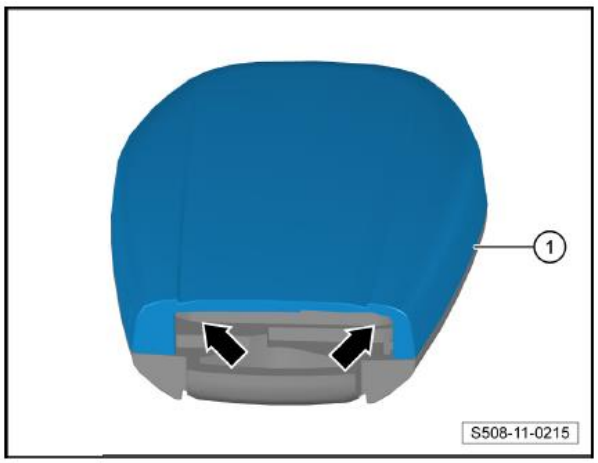
a. Press the safety catch of the key (see arrow A).

b. Take out the emergency metal key cover ① in the direction of (arrow B).

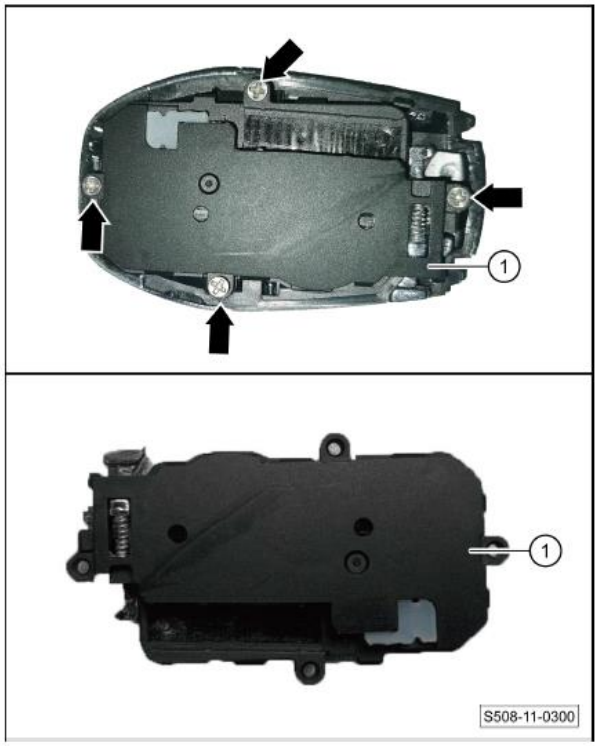




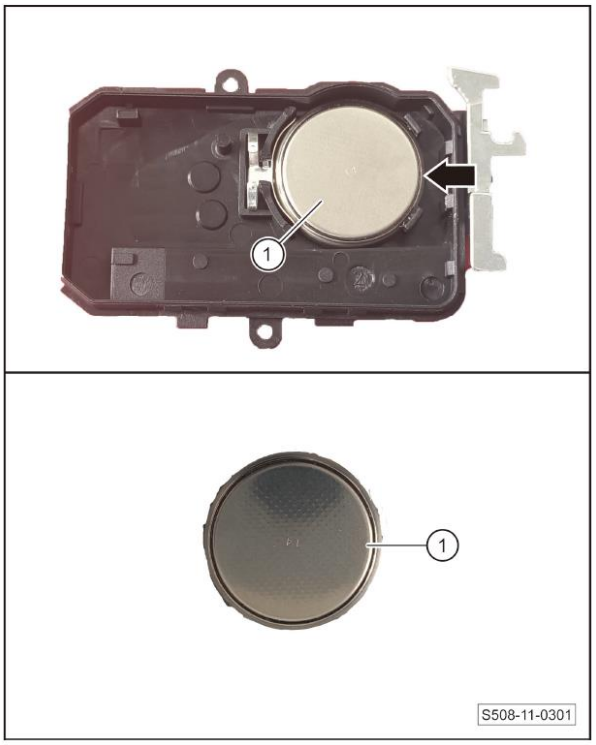
c. Take out the emergency mechanical key ① in the direction of the arrow.



d. Use a mini straight screwdriver to prise out the rear panel ① of the smart remote control key (see the arrow).



e. Use a mini straight screwdriver to unscrew the fixing screws (see the arrow) and take out the fixed rear shell ①



f. Remove battery for smart key ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After the installation, perform a function test on the smart key.

8.29 LV power supply system

8.29.1 Specification

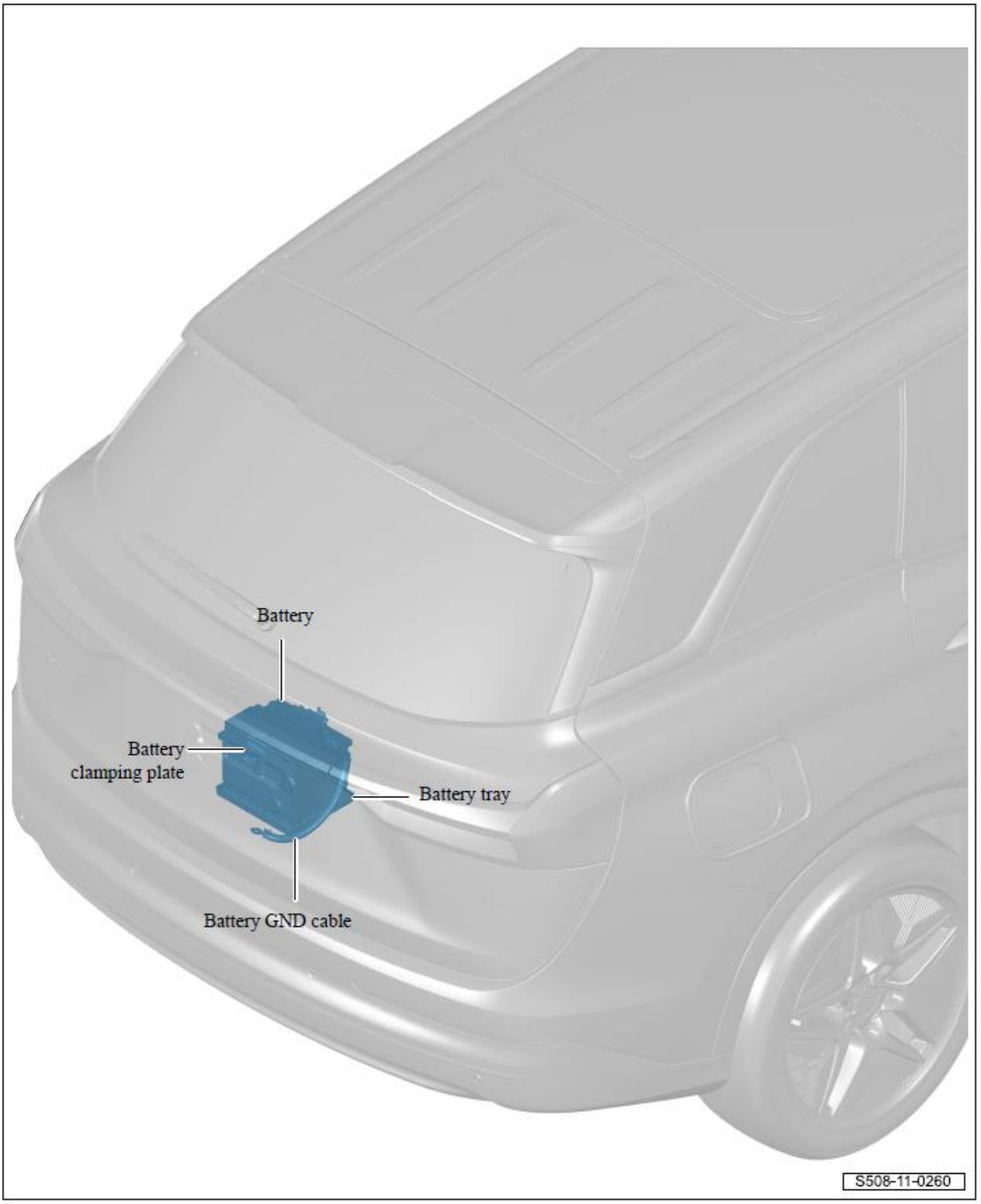
8.29.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connect the battery clamping plate to the battery fixing screw	Hexagon flange nut M6	4±1
Connect the battery ground wire to the battery	Provided by the supplier	10±1
Connect the battery ground wire to the vehicle body	Hexagon head bolt c/w plain washer cluster	10±1
Connect the battery positive wiring harness to the battery	Provided by the supplier	10±1

8.29.2 Component position

8.29.2.1 Component position

Component position



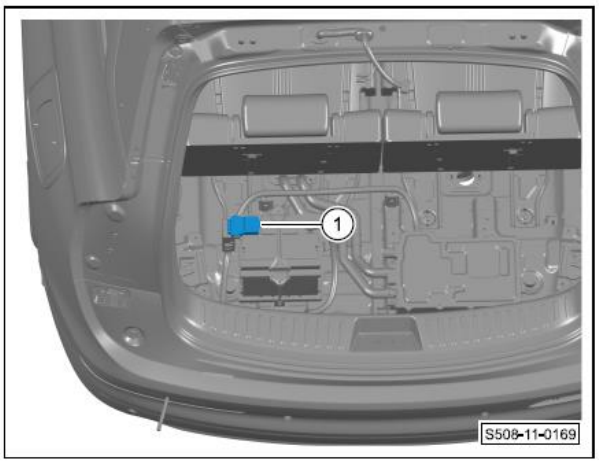
8.29.3 Removal and installation

8.29.3.1 Removal and installation of battery

Disassembly procedures

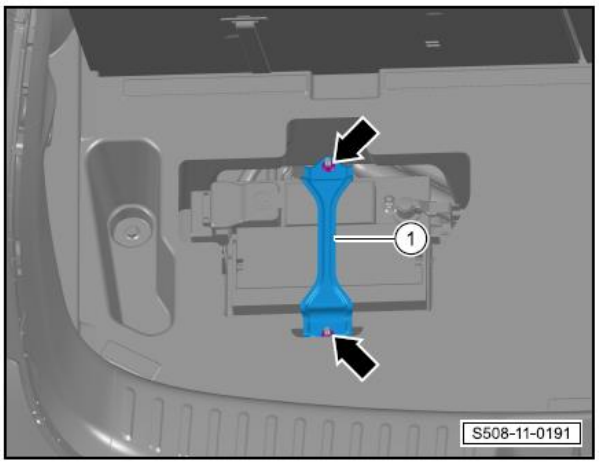
1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body



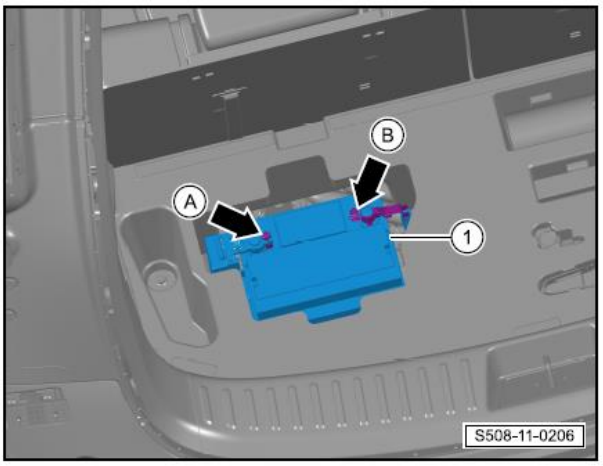
3 Remove the battery

a. Open the protective cover ① on the positive terminal of the battery.



b. Loosen the fixing nut (see the arrow), and take out the battery clamping plate with bolt ①.

- Tightening torque of nut: 4±1 N·m



c. Loosen the fixing nut (see arrow A) and disengage the battery negative wiring harness from the battery ①.

d. Loosen the fixing nut (see arrow B) and disengage the battery negative wiring harness from the battery ①.

e. Take out the battery ①.

- Tightening torque of nut (see arrow A): 10±1N·m
- Tightening torque of nut (see arrow B): 10±1 N·m

Installation procedures

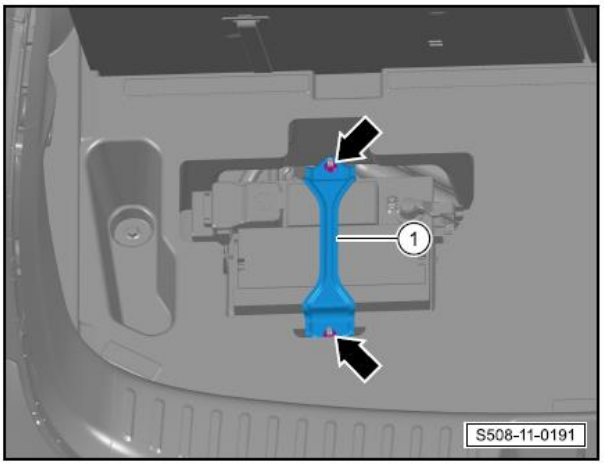
The installation procedure is to be performed basically in the reverse order:

8.29.3.2 Removal and installation of battery clamping plate

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body



3 Remove the battery clamping plate

a. Loosen the fixing nut (see the arrow) and take out the battery clamping plate ①.

- Tightening torque of nut: 4±1 N·m

Installation procedures

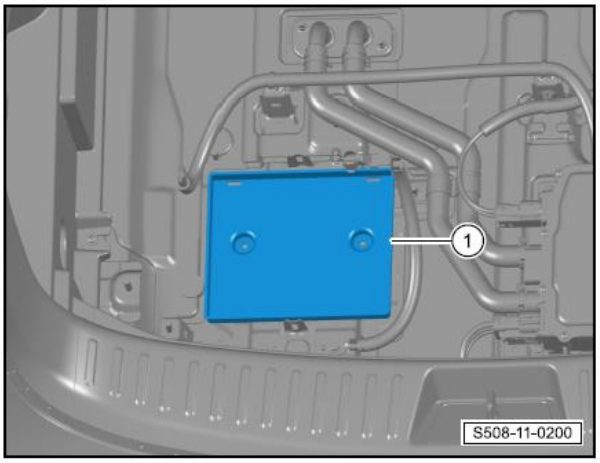
The installation procedure is to be performed basically in the reverse order:

8.29.3.3 Removal and installation of battery tray

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the battery. Refer to 8.29.3.1 Removal and installation of battery



3 Remove the battery tray

a. Take out the battery tray ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

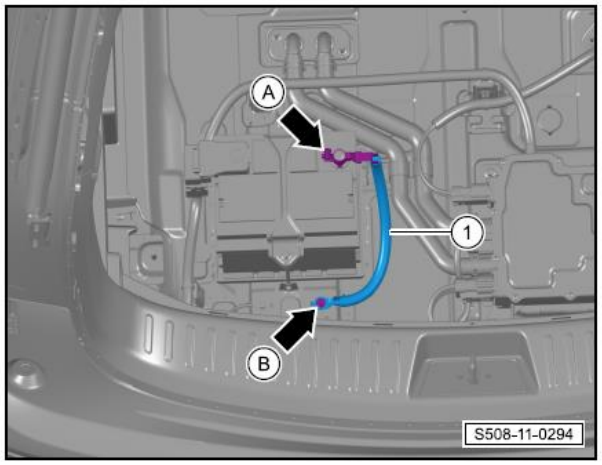
8.29.3.4 Removal and installation of battery ground wire

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

2 Remove the driver's tool box. Refer to 9.14.2.26 Removal and installation of driver's tool box.



3 Remove the battery ground wire

a. Unscrew the fixing nut (see arrow A) and disconnect the battery ground wire ① from the battery.

b. Unscrew the fixing bolt (see arrow B) and remove the battery ground wire ①.

- Tightening torque of nut (see arrow A): 4±1 N·m
- Tightening torque of bolt (see arrow **B**): **10±1 N·m**

Installation procedures

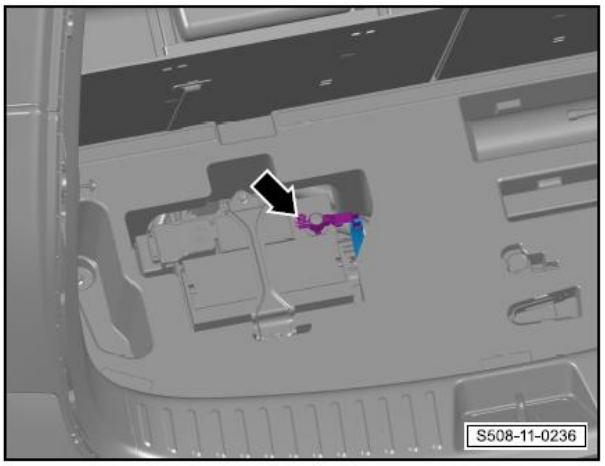
The installation procedure is to be performed basically in the reverse order:

8.29.3.5 Disconnecting battery negative terminal

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body



3 Disconnect the battery negative terminal

a. Loosen the fixing nut (see the arrow) and disconnect the battery negative terminal ① from the battery.

- Tightening torque of nut: 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

Vehicle Body

9.1 Warnings and notes 6
9.1.1 Warnings and notes 6
9.1.1.1 Warnings for operations related to HV electric control system.....6
9.1.1.2 Preparations for operations related to HV electric control system.....6
9.1.1.3 Warnings and notes.....7
9.2 Front end of body.....8
9.2.1 Specification 8
9.2.1.1 Fastener specifications 8
9.2.2 Component position..... 9
9.2.2.1 Exploded view 9
9.2.3 Removal and installation 10
9.2.3.1 Removal and installation of front hood sealing strip 10
9.2.3.2 Removal and installation of front hood peripheral sealing strip 10
9.2.3.3 Removal and installation of engine compartment trim panel assembly (front) ..10
9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)11
9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left) .12
9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)13
9.2.3.7 Removal and installation of engine compartment trim panel assembly.....13
9.2.3.8 Removal and installation of front hood trim component.....14
9.2.3.9 Removal and installation of front hood welding assembly.....15
9.2.3.10 Removal and installation of front hood hinge assembly.....16
9.2.3.11 Removal and installation of front hood lock 17
9.2.3.12 Removal and installation of front hood lock release cable 18
9.2.3.13 Removal and installation of front hood lock cable handle 19
9.2.3.14 Removal and installation of engine compartment cushion 19
9.2.3.15 Removal and installation of engine hood heat insulation pad 20
9.2.3.16 Removal and installation of front hood stay rod 21
9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component 21
9.2.3.18 Removal and installation of water tank upper crossmember middle section assembly 22
9.2.3.19 Removal and installation of fender component.....24
9.2.3.20 Adjustment of fender component 26
9.2.3.21 Adjustment of front hood 27
9.2.3.22 Adjustment of front hood lock..... 29
9.3 Rear end of body.....30
9.3.1 Specification 30
9.3.1.1 Fastener specifications..... 30
9.3.2 Component position..... 31
9.3.2.1 Exploded view 31
9.3.3 Removal and installation 32
9.3.3.1 Removal and installation of lift gate welding assembly 32
9.3.3.2 Removal and installation of lift gate hinge assembly 33
9.3.3.3 Removal and installation of lift gate stay rod 34
9.3.3.4 Removal and installation of lift gate stay rod (electric) 35
9.3.3.5 Removal and installation of upper mounting bracket assembly of lift gate stay rod 37
9.3.3.6 Removal and installation of lower mounting bracket assembly of lift gate stay rod 38
9.3.3.7 Removal and installation of lift gate checkstrap on body 39
9.3.3.8 Removal and installation of lift gate checkstrap on door..... 40
9.3.3.9 Removal and installation of lift gate lower cushion pad (adjustable) 40
9.3.3.10 Removal and installation of lift gate lower cushion pad..... 41
9.3.3.11 Removal and installation of lift gate frame sealing strip..... 42
9.3.3.12 Removal and installation of lift gate frame upper interior trim panel assembly 42
9.3.3.13 Removal and installation of lift gate frame pillar interior trim panel assembly 43
9.3.3.14 Removal and installation of lift gate interior trim panel assembly 44
9.3.3.15 Removal and installation of fuel filler cap assembly 45
9.3.3.16 Removal and installation of charging port cover assembly 45
9.3.3.17 Adjustment of lift gate assembly 46
9.4 Front bumper 49
9.4.1 Specification 49
9.4.1.1 Fastener specifications..... 49
9.4.2 Exploded view 50
9.4.2.1 Exploded view 50
9.4.3 Removal and installation 51
9.4.3.1 Removal and installation of front bumper assembly with accessories 51
9.4.3.2 Removal and installation of grille assembly 53
9.4.3.3 Removal and installation of the front bumper upper trim 54
9.4.3.4 Removal and installation of middle trim

cover of front bumper lower grille 55
9.4.3.5 Removal and installation of front towing hook blank cover 55
9.4.3.6 Removal and installation of front bumper upper moulding 56
9.4.3.7 Removal and installation of front bumper lower moulding 57
9.4.3.8 Removal and installation of front fog light hole trim cover 58
9.4.3.9 Removal and installation of front bumper air duct 58
9.4.3.10 Removal and installation of front bumper deflector 59
9.4.3.11 Removal and installation of front bumper upper deflector 60
9.4.3.12 Removal and installation of front bumper mounting bracket 61
9.4.3.13 Removal and installation of vertical I beam 62
9.4.3.14 Removal and installation of frame front crossmember assembly 62
9.5 Rear bumper 65
9.5.1 Specification 65
9.5.1.1 Fastener specifications 65
9.5.2 Exploded view 66
9.5.2.1 Exploded view 66
9.5.3 Removal and installation 67
9.5.3.1 Removal and installation of rear bumper assembly with accessories 67
9.5.3.2 Removal and installation of rear bumper mounting bracket 69
9.5.3.3 Removal and installation of rear bumper upper moulding 69
9.5.3.4 Removal and installation of rear bumper lower moulding 70
9.5.3.5 Removal and installation of rear bumper lower trim inserts 71
9.5.3.6 Removal and installation of frame rear crossmember assembly 72
9.5.3.7 Removal and installation of rear towing hook blank cover 73
9.6 Front door 74
9.6.1 Specification 74
9.6.1.1 Fastener specifications 74
9.6.2 Exploded view 75
9.6.2.1 Exploded view 75
9.6.3 Removal and installation 77
9.6.3.1 Removal and installation of front door assembly 77
9.6.3.2 Removal and installation of front door upper hinge 77
9.6.3.3 Removal and installation of front door opening checkstrap 78
9.6.3.4 Removal and installation of front door lock cylinder assembly 79
9.6.3.5 Removal and installation of front left exterior door handle 80
9.6.3.6 Removal and installation of front exterior door handle bracket 82
9.6.3.7 Removal and installation of front door interior handle assembly 83
9.6.3.8 Removal and installation of exterior weatherstrip of front door glass 83
9.6.3.9 Removal and installation of interior weatherstrip of front door glass 84
9.6.3.10 Removal and installation of front door frame sealing strip 85
9.6.3.11 Removal and installation of front door sealing strip 85
9.6.3.12 Removal and installation of front door lower mudguard rubber strip 86
9.6.3.13 Removal and installation of front door bright trim strip 87
9.6.3.14 Removal and installation of front door lower trim assembly 88
9.6.3.15 Removal and installation of front door lower trim (strip) 89
9.6.3.16 Removal and installation of front door triangular trim assembly 90
9.6.3.17 Removal and installation of front door interior trim panel assembly 90
9.6.3.18 Removal and installation of front door waterproof film 94
9.6.3.19 Adjustment of front door assembly 94
9.7 Rear door 96
9.7.1 Specification 96
9.7.1.1 Fastener specifications 96
9.7.2 Exploded view 97
9.7.2.1 Exploded view 97
9.7.3 Removal and installation 99
9.7.3.1 Removal and installation of rear door assembly 99
9.7.3.2 Removal and installation of rear door hinge 100
9.7.3.3 Removal and installation of rear door opening checkstrap 101
9.7.3.4 Removal and installation of rear exterior door handle 101
9.7.3.5 Removal and installation of rear door exterior handle bracket 103
9.7.3.6 Removal and installation of rear door interior handle assembly 104
9.7.3.7 Removal and installation of exterior weatherstrip of rear door glass 105
9.7.3.8 Removal and installation of interior weatherstrip of rear door glass 105
9.7.3.9 Removal and installation of rear door frame sealing strip 106
9.7.3.10 Removal and installation of rear door sealing strip 107
9.7.3.11 Removal and installation of rear door lower mudguard rubber strip 108
9.7.3.12 Removal and installation of rear door lower trim assembly 109
9.7.3.13 Removal and installation of rear door lower

trim (strip) 110
9.7.3.14 Removal and installation of rear door bright trim strip 110
9.7.3.15 Removal and installation of rear door interior trim panel assembly 111
9.7.3.16 Removal and installation of rear door waterproof film 114
9.7.3.17 Adjustment of rear door assembly 115
9.8 Instrument panel 117
9.8.1 Specification 117
9.8.1.1 Fastener specifications 117
9.8.2 Exploded view 119
9.8.2.1 Exploded view 119
9.8.3 Removal and installation 120
9.8.3.1 Removal and installation of instrument panel subassembly 120
9.8.3.2 Removal and installation of instrument panel lower moulding assembly 122
9.8.3.3 Removal and installation of toolbox assembly 123
9.8.3.4 Removal and installation of toolbox guard 124
9.8.3.5 Removal and installation of instrument panel end cover assembly 124
9.8.3.6 Removal and installation of instrument panel left lower cover plate assembly 125
9.8.3.7 Removal and installation of combination switch upper cover assembly 126
9.8.3.8 Removal and installation of combination switch lower cover 128
9.8.3.10 Removal and installation of instrument panel middle trim panel assembly (left) 130
9.8.3.11 Removal and installation of instrument panel central trim strip (middle) 131
9.8.3.12 Removal and installation of instrument panel central trim strip large assembly (right) 131
9.8.3.13 Removal and installation of instrument panel central trim strip assembly (right) 133
9.8.3.14 Removal and installation of instrument panel middle trim panel assembly (right) 134
9.8.3.15 Removal and installation of toolbox damper 134
9.8.3.16 Removal and installation of steering support structure assembly 135
9.9 Control box 139
9.9.1 Specification 139
9.9.1.1 Fastener specifications 139
9.9.2 Exploded view 140
9.9.2.1 Exploded view 140
9.9.3 Removal and installation 142
9.9.3.1 Removal and installation of control box connecting plate 142
9.9.3.2 Removal and installation of control box assembly 142
9.9.3.3 Removal and installation of control box large panel assembly 145
9.9.3.4 Removal and installation of control box rear cover assembly 148
9.9.3.5 Removal and installation of control box trim assembly 150
9.9.3.6 Removal and installation of control box guard assembly 151
9.9.3.7 Removal and installation of control box rear mounting bracket 152
9.9.3.8 Removal and installation of electronic gearshift mounting bracket 153
9.9.3.9 Removal and installation of control box cup holder assembly 153
9.9.3.10 Removal and installation of control box front storage box assembly 154
9.9.3.11 Removal and installation of USB mounting base 155
9.9.3.12 Removal and installation of control box large panel 155
9.9.3.14 Removal and installation of control box sub-storage box assembly 158
9.9.3.15 Removal and installation of control box rear storage box 160
9.10 Front seat 162
9.10.1 Specification 162
9.10.1.1 Fastener specifications 162
9.10.2 Exploded view 163
9.10.2.1 Exploded view 163
9.10.3 Removal and installation 164
9.10.3.1 Removal and installation of front seat and seat backrest assembly 164
9.10.3.2 Removal and installation of front seat headrest assembly 165
9.10.3.3 Removal and installation of plastic pipe for front seat headrest 166
9.10.3.4 Removal and installation of driver's seat trim cover (left) (6-way electric adjustment) 167
9.10.3.5 Removal and installation of driver manual large guard 168
9.10.3.6 Removal and installation of driver's seat inner guard 169
9.10.3.7 Removal and installation of seat backrest foam covering assembly 170
9.10.3.8 Removal and installation of seat backrest foam covering 171
9.10.3.9 Removal and installation of seat cushion foam covering assembly 172
9.10.3.10 Removal and installation of seat cushion foam covering 173
9.11 Second-row seat 175
9.11.1 Specification 175
9.11.1.1 Fastener specifications 175
9.11.2 Exploded view 176
9.11.2.1 Exploded view 176
9.11.3 Removal and installation 177
9.11.3.1 Removal and installation of rear seat backrest assembly 177
9.11.3.2 Removal and installation of rear seat cushion assembly 177

9.11.3.3 Removal and installation of second-row left seat headrest assembly 178
9.11.3.4 Removal and installation of headrest plastic pipe 178
9.11.3.5 Removal and installation of second-row left seat backrest foam and foam covering assembly..... 180
9.11.3.6 Removal and installation of second-row left seat backrest foam covering assembly 181
9.11.3.7 Removal and installation of second-row seat foam and foam covering assembly..... 182
9.11.3.8 Removal and installation of second-row seat foam covering assembly..... 183
9.11.3.9 Removal and installation of second-row 40 split seat side cover (left) 184
9.12 Second-row seat (60/40 split) 185
9.12.1 Specification 185
9.12.1.1 Fastener specifications 185
9.12.2 Exploded view 186
9.12.2.1 Exploded view 186
9.12.3 Removal and installation 187
9.12.3.1 Removal and installation of 60 split seat assembly..... 187
9.12.3.2 Removal and installation of 60 split seat cushion foam covering assembly 188
9.12.3.3 Removal and installation of 60 split seat cushion covering assembly..... 189
9.12.3.4 Removal and installation of 60 split seat backrest foam covering assembly..... 190
9.12.3.5 Removal and installation of 60 split seat headrest plastic pipe 191
9.12.3.6 Removal and installation of 60 split seat large protective cover 193
9.12.3.7 Removal and installation of 60 split seat small protective cover 194
9.13 Third-row seat 196
9.13.1 Specification 196
9.13.1.1 Fastener specifications 196
9.13.2 Exploded view 197
9.13.2.1 Exploded view 197
9.13.3 Removal and installation 198
9.13.3.1 Removal and installation of third-row split seat assembly 198
9.13.3.2 Removal and installation of third-row split seat foam and foam covering assembly.... 198
9.13.3.3 Removal and installation of third-row split seat cushion foam covering assembly 199
9.13.3.4 Removal and installation of third-row split seat headrest assembly 200
9.13.3.5 Removal and installation of third-row split seat headrest plastic pipe..... 201
9.13.3.6 Removal and installation of third-row split seat backrest foam and foam covering assembly..... 202
9.13.3.7 Removal and installation of third-row split seat backrest foam covering assembly 203
9.14 Interior trim.....205
9.14.1 Specification 205
9.14.1.1 Fastener specifications..... 205
9.14.2 Removal and installation 206
9.14.2.1 Removal and installation of front windshield mirror base trim cover I 206
9.14.2.2 Removal and installation of front windshield mirror base trim cover II..... 206
9.14.2.3 Removal and installation of panel roof lining assembly (model with panoramic sunroof).... 206
9.14.2.4 Removal and installation of panel roof lining assembly (general sunroof)..... 208
9.14.2.5 Removal and installation of safety handle 209
9.14.2.6 Removal and installation of sun visor assembly 210
9.14.2.7 Removal and installation of sun visor hook 211
9.14.2.8 Removal and installation of A-pillar interior trim panel assembly..... 212
9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly 213
9.14.2.10 Removal and installation of B-pillar upper interior trim panel assembly 214
9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly 215
9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly... 216
9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly... 218
9.14.2.14 Removal and installation of rear side window roof strip assembly..... 219
9.14.2.15 Removal and installation of rear side wall lower interior trim panel cladding.... 220
9.14.2.16 Removal and installation of rear side wall ventilation cover (left) 221
9.14.2.17 Removal and installation of rear side wall cup holder box 222
9.14.2.18 Removal and installation of front door sill assembly 222
9.14.2.19 Removal and installation of rear door sill assembly 223
9.14.2.20 Removal and installation of lift gate sill assembly 224
9.14.2.21 Removal and installation of air guide 224
9.14.2.22 Removal and installation of front floor carpet 225
9.14.2.23 Removal and installation of rear floor carpet 227
9.14.2.24 Removal and installation of storage box cover body 228
9.14.2.25 Removal and installation of driver's tools 229
9.14.2.26 Removal and installation of driver's tools box 229

9.1 Warnings and notes

9.1.1 Warnings and notes

9.1.1.1 Warnings for operations related to HV electric control system

Warning!

The vehicle is a hybrid power system and is equipped with 393.1V HV power battery.

Be sure to operate the system correctly according to the instructions in this Manual. Otherwise, serious injury or electrocution may be caused.

Do not touch any HV cable and HV component. If necessary, follow the instructions below:

- Do wear HV protective articles such as: HV insulated gloves, insulated shoes and special insulated tools for HV operation.
- Insulate the removed cable with insulating tapes.

When the HV system is repaired, the following precautions must be noted to prevent possible personal injuries:

Turn off all the electrical appliances and turn off the Start switch.

Disconnect the 12V battery negative terminal.

During operation of the HV system, HV protective articles such as HV insulated gloves, insulated shoes and special tools for HV insulation must be worn.

The HV electrician shall put the smart key in place.

HV electricians shall ensure that the power supply is cut off and wait for 10min before operation.

Relevant HV electricians shall be consulted in case of any doubt. Before performing any operation of the HV system and repairing the vehicle body, HV electricians must cut off the power supply of the system.

If the power supply of the HV system cannot be cut off, only professional electricians can carry out the maintenance.

Notes for inspection and repair of HV circuit:

Technicians must be professionally trained before they can repair and inspect HV systems.

The "Warning: High Voltage! Do Not Touch" sign shall be used to inform other technicians of that the HV system is being inspected or repaired.

All HV harnesses and connectors shall be orange. Power battery and other HV parts are provided with "High Voltage" warning labels.

Please do not touch these harnesses or parts without permission. Do not lean your body or put the tools against any HV circuit and its components.

Never use any cutting-formed and sharp tools near HV components and circuits.

Do not use any power supply, such as those for fusion welding, brazing, thermal bonding and operations with hot air, near HV components and circuits.

Do not seriously twist or bend the HV circuits. In case of any abnormality or doubt, consult the HV electrician or professional electrician.

No attempt shall be made to repair any harness or connector if such harness or connector of the HV circuit is faulty. Please directly replace the damaged or faulty HV cable or connector.

The one wearing an artificial cardiopulmonary aid is not allowed to work on vehicles equipped with HV systems. Artificial cardiopulmonary aids include built-in analgesic pump, implantable defibrillator, cardiac pacemaker, insulin pump, hearing-aid, etc.

9.1.1.2 Preparations for operations related to HV electric control system

Personal preparations:

- •Before operation of the HV system, do wear HV protective articles such as HV insulated gloves, insulated shoes, etc.
- Do not carry metal articles during operation.
- Confirm breakage before using 1000V durable insulated gloves.

Site inspections:

- Put a triangular warning sign "warning: high voltage, do not touch" in a visible position (such as vehicle roof) to warn other personnel.
- Before parking the vehicle to be repaired in the repair work area, make sure that there is no water on the ground, and do not operate in humid environment.
- Make sure that the work area is equipped with carbon dioxide fire extinguishers.

Preparation of maintenance tools:

- Use special insulated tools for HV operation or the tools with insulation treatment.

Cutting off power supply of HV system:

- Turn off all the electrical appliances and turn off the Start switch.
- Disconnect the 12V battery negative terminal.

9.1.1.3 Warnings and notes

Warnings for road test

Warning!

Carry out road test on the premise of ensuring safety and observe all traffic regulations. Do not try any operation that may endanger vehicle control. Violation of the above safety instructions will cause serious personal injury and damage to the vehicle.

Notes for lifting

Warning!

When the engine is lifted or supported for any reason, do not place the jack underneath the oil pan or crankshaft belt pulley. Improper lifting of the engine or the transmission will cause damage to the components.

Cautions for fasteners

Warning!

Please use proper fasteners in proper positions, and ensure that the part No. of the fastener for replacement is correct. Unless otherwise stated, do not apply paint, lubricating oil or corrosion inhibitor to the fastener or the joint surface of fastener as such application may affect the torque and clamping force of the fastener and damage the fastener. During fastener installation, please employ correct tightening sequence and tightening torque to avoid damage to the parts.

Warnings for moving components and hot surface

Warning!

When working around the engine in service, avoid contacting moving components and hot surface to avoid personal injury.

9.2 Front end of body

9.2.1 Specification

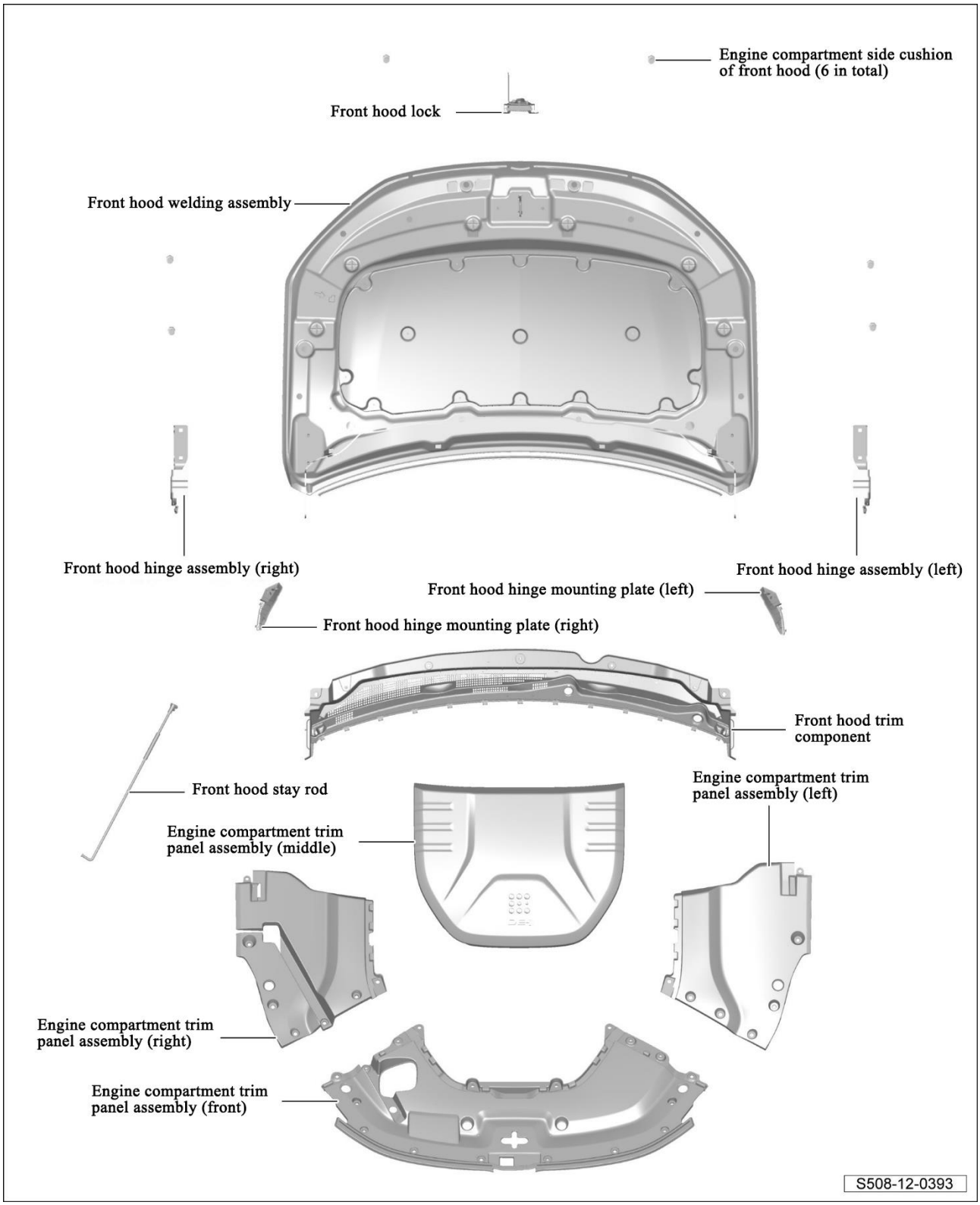
9.2.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between front hood hinge and body	Hexagon head bolt c/w spring washer and big washer cluster M8×25	28±2
Connection between front hood hinge and front hood	Hexagon nut and conical spring washer cluster M8	28±2
Connection between front hood and water tank upper crossmember	Cross recessed hexagon head bolt and big washer cluster M6×16	10±1
Connection between front hood stay rod and body	Hexagon head flange bolt M6×1.0×12	10±1
Connection between engine hood release cable handle assembly and body sheet metal	Cross recessed hexagon head bolt and big washer cluster M6×16	6±1
Water tank upper crossmember middle section and engine compartment front pillar assembly (left/right)	Hexagon head bolt c/w spring washer and big washer cluster M8×25	25±2
Connection of upper mounting bracket of radiator and water tank beam	Hexagon head flange bolt M6×16	10±1
Connection of motor kettle and water tank crossmember	Cross recessed hexagon head flange bolt M6×16	8±1
Connection of cleaner water reservoir and motor to water tank upper crossmember (right)	Cross recessed hexagon head flange bolt M6×16	6±1

9.2.2 Component position

9.2.2.1 Exploded view

Exploded view

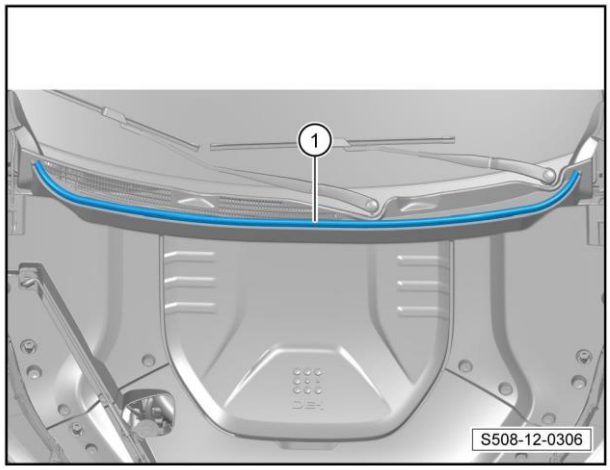


9.2.3 Removal and installation

9.2.3.1 Removal and installation of front hood sealing strip

Disassembly procedures

1 Open the front hood.



2 Remove the front hood sealing strip

a. Remove the front hood sealing strip.

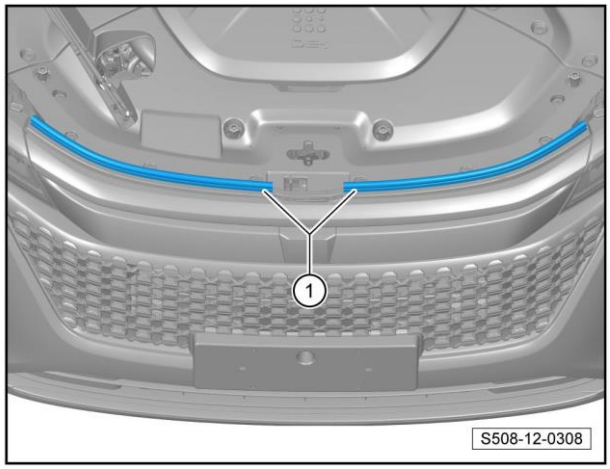
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.2.3.2 Removal and installation of front hood peripheral sealing strip

Disassembly procedures

1 Open the front hood.



2 Remove the front hood peripheral sealing strip

a. Remove the front hood peripheral sealing strip.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

Disassembly procedures

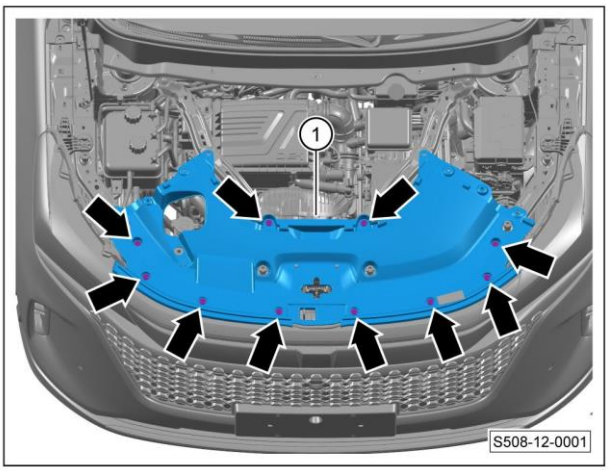
1 Open the front hood.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the front hood peripheral sealing strip. Refer to 9.2.3.2 Removal and installation of front hood peripheral sealing strip



6 Remove the engine compartment trim panel assembly (front)

a. Disengage the fixing clips (see the arrows) and remove the engine compartment trim panel assembly (front) ①.

Installation procedures

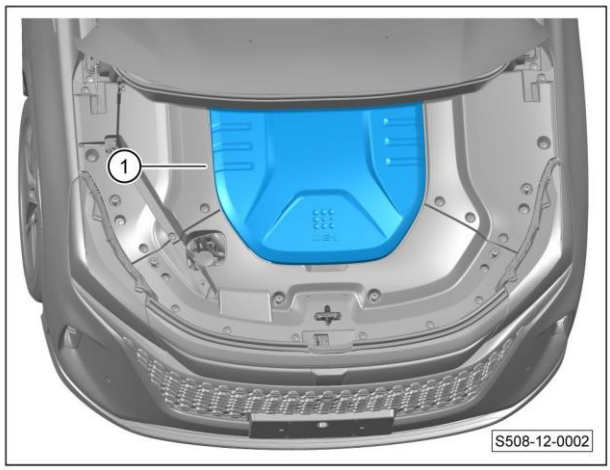
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

Disassembly procedures

1 Open the front hood.



2 Remove engine compartment trim panel assembly (middle)

a. Remove the engine compartment trim panel assembly (middle) ① upward with force.

Installation procedures

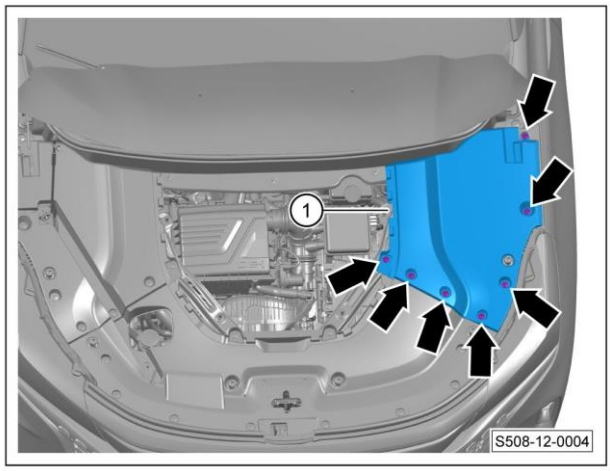
The installation procedure is to be performed basically in the reverse order:

9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

Disassembly procedures

1 Open the front hood.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)



3 Remove engine compartment trim panel assembly II (left)

a. Disengage the fixing clips (see the arrow) and remove the engine compartment trim panel assembly II (left) ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

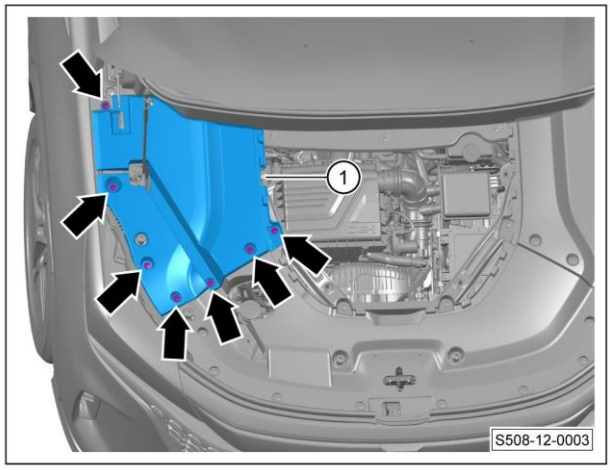
- Check whether the fixing clips are damaged and replace them if necessary.

9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

Disassembly procedures

1 Open the front hood.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)



3 Remove engine compartment trim panel assembly II (right)

a. Disengage the fixing clips (see the arrow) and remove the engine compartment trim panel assembly II (right) ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Check if the fixing clips are damaged and replace them if necessary.

9.2.3.7 Removal and installation of engine compartment trim panel assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the left engine compartment trim panel assembly, which can be basically referred to for the right one.

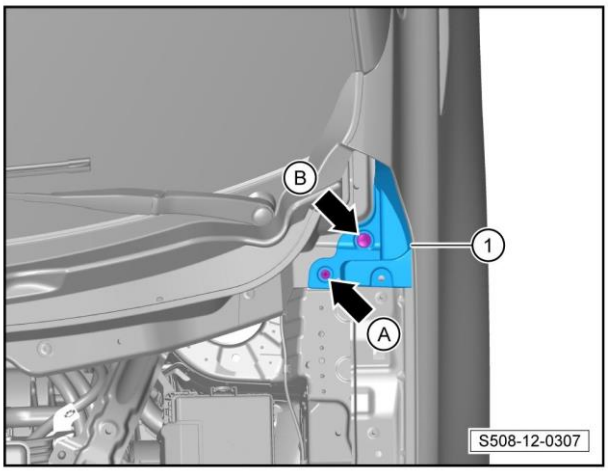
1 Open the front hood.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and

installation of engine compartment trim panel assembly II (right)



5 Remove the engine compartment trimming panel assembly

a. Unscrew the fixing bolt (see arrow A) of engine compartment trim panel assembly.

b. Disengage the fixing clip (see arrow B) and remove the engine compartment trim panel assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.2.3.8 Removal and installation of front hood trim component

Disassembly procedures

1 Open the front hood.

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

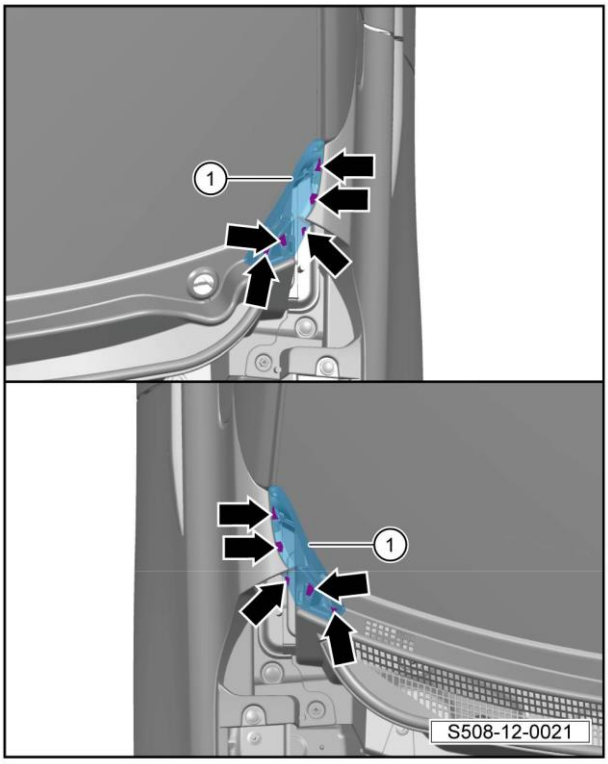
4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

5 Remove the front hood sealing strip. Refer to 9.2.3.1 Removal and installation of front hood sealing strip

6 Remove the left/right engine compartment trim panel assembly. Refer to 9.2.3.7 Removal and installation of engine compartment trim panel assembly

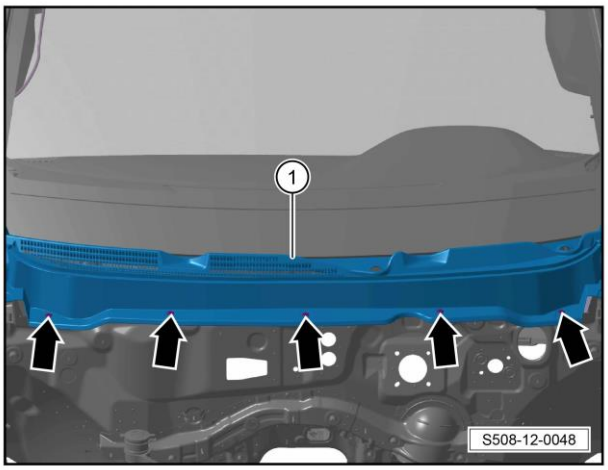
7 Remove the front wiper arm and blade component.

Refer to 8.7.6.5 Removal and installation of front wiper arm and blade component



8 Remove the front hood trim component

a. Disengage the fixing clips (see the arrows) and remove the side trim panel ① of the left and right front hoods.



b. Disengage the fixing clips (see the arrows) and remove the front hood trim assembly ①.

Tip:

Other accessories shall be disassembled after the front hood trim component is removed

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.2.3.9 Removal and installation of front hood welding assembly

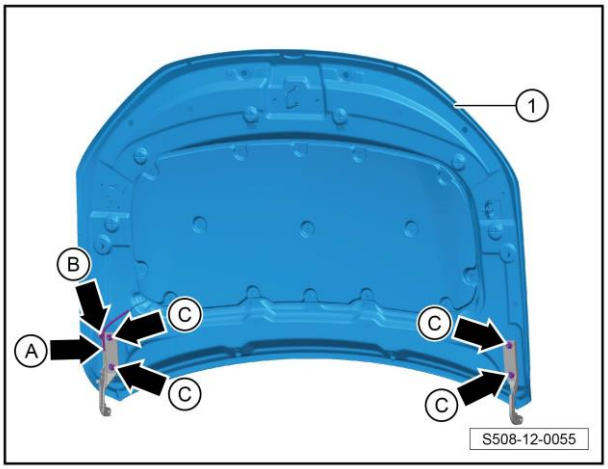
Disassembly procedures

Tip:

The removal and installation shall be done with the assistance of another technician.

When unscrewing the fixing nut of front hood, must closely cooperate with another technician to prevent damage to the front windshield.

1 Open the front hood.



2 Remove the front hood welding assembly

a. Disengage the front washer hose 1 from the front washer hose 2 (see arrow A), and disengage the hose fixing clip (see arrow B).

b. Unscrew the fixing nuts (see arrow C) and remove the front hood welding assembly ①.

- Tightening torque of nut (see arrow **C**): **28±2 N·m**

Tip:

Other accessories shall be disassembled after the front hood welding assembly is removed

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the front hood assembly. Refer to 9.2.3.21 Adjustment of front hood

9.2.3.10 Removal and installation of front hood hinge assembly

Disassembly procedures

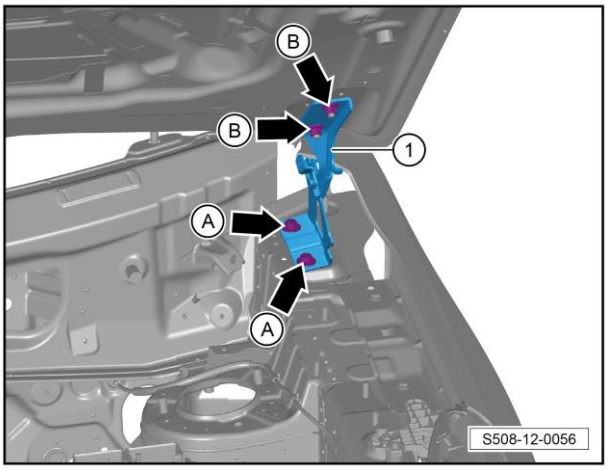
Tip:

The removal and installation procedures are only for the front left hood hinge assembly, which can be basically referred to for the right one.

The removal and installation shall be done with the assistance of another technician.

When unscrewing the fixing nut of front hood, must closely cooperate with another technician to prevent damage to the front windshield.

1 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component



2 Remove the front hood hinge assembly

a. Unscrew the fixing bolts (see arrow A) and nuts (see arrow B) and remove the front hood hinge assembly ①.

- Tightening torque of bolt (see arrow **A**): **28±2 N·m**
- Tightening torque of nut (see arrow **B**): **28±2 N·m**

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the front hood assembly. Refer to 9.2.3.21 Adjustment of front hood

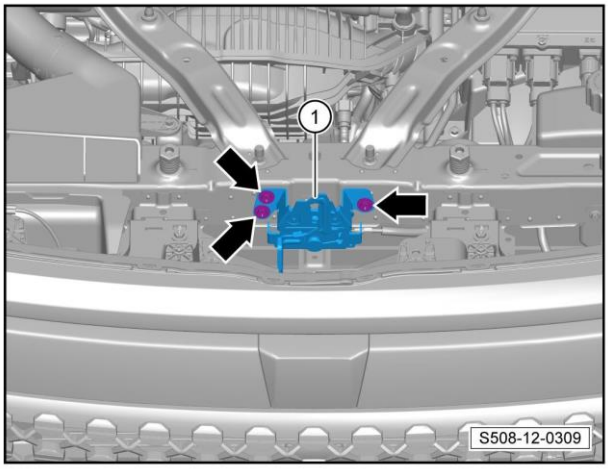
9.2.3.11 Removal and installation of front hood lock

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

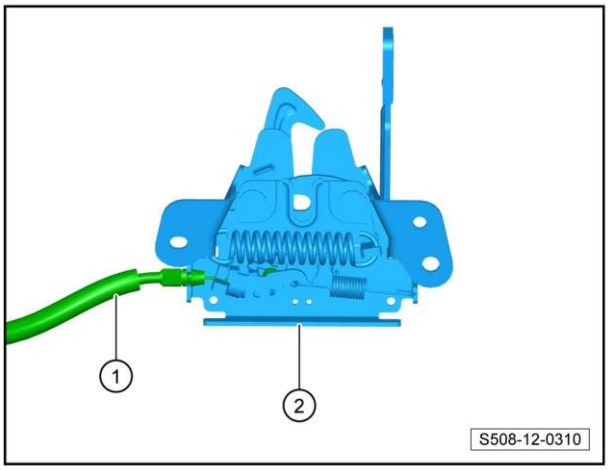
3 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



4 Remove the front hood lock

a. Unscrew the fixing bolts (see the arrows) and take out the front hood lock ①.

- Tightening torque of bolt: 10±1 N·m



b. Disengage the cable ① from the front hood lock ②, and take out the front hood lock ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the front hood lock assembly. Refer to 9.2.3.22 Adjustment of front hood lock

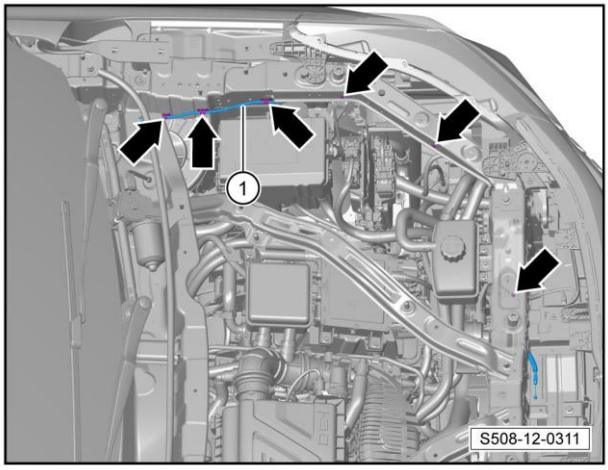
9.2.3.12 Removal and installation of front hood lock release cable

Disassembly procedures

1 Remove the front hood lock. Refer to 9.2.3.11 Removal and installation of front hood lock

2 Remove the front hood lock cable handle. Refer to 9.2.3.13 Removal and installation of front hood lock cable handle

3 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component



4 Remove the front hood lock release cable

a. Disengage the fixing clips (see the arrows) and remove the front hood cable handle ①.

Installation procedures

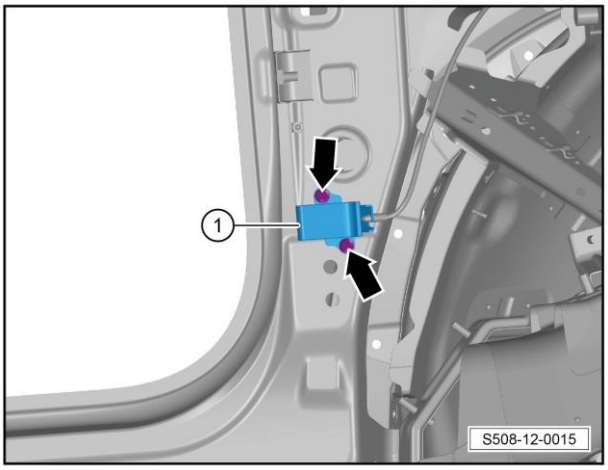
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the front hood lock assembly. Refer to 9.2.3.22 Adjustment of front hood lock

9.2.3.13 Removal and installation of front hood lock cable handle

Disassembly procedures

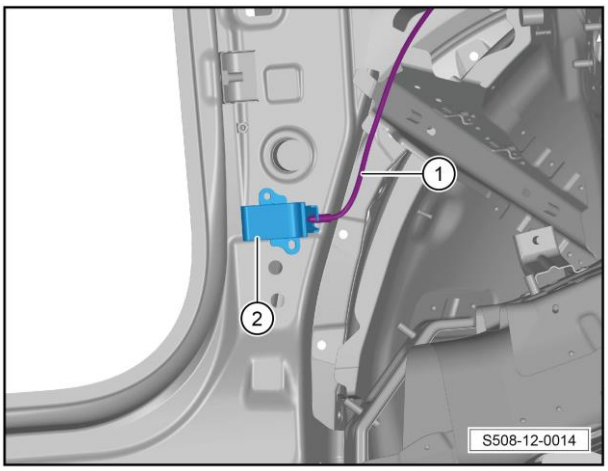
1 Remove the A-pillar lower interior trim panel assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly



2 Remove the front hood lock cable handle

a. Unscrew the fixing bolts (see the arrows) of the front hood lock cable handle ①.

- Tightening torque of bolt: 6±1 N·m



b. Disengage the cable ① from the front hood lock cable handle ②, and take out the front hood lock cable handle ②.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.2.3.14 Removal and installation of engine

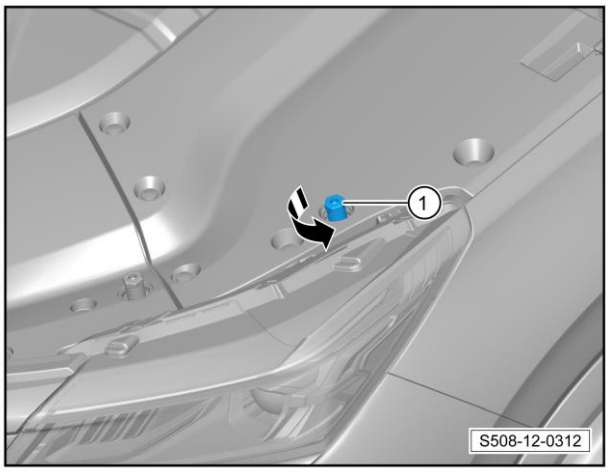
compartment cushion

Disassembly procedures

Tip:

The removal and installation procedures are only for the left engine compartment cushion, which can be basically referred to for the other one.

1 Open the front hood.



2 Remove the engine compartment cushion

a. Unscrew the engine compartment cushion ① in the arrow direction.

Installation procedures

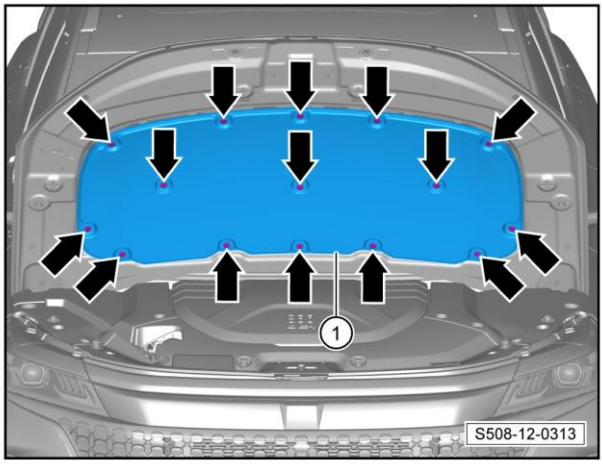
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After the installation, adjust the engine compartment cushion. Refer to 9.2.3.21 Adjustment of front hood

9.2.3.15 Removal and installation of engine hood heat insulation pad

Disassembly procedures

1 Open the front hood.



2 Remove the engine hood heat insulation pad

a. Disengage the fixing clips (see the arrows) and remove the engine hood heat insulation pad ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

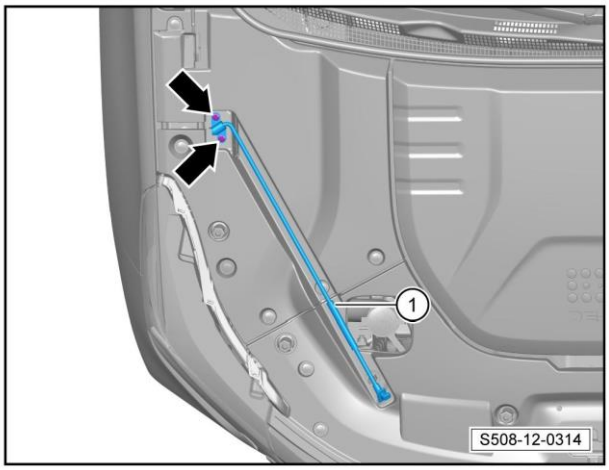
- Check whether the fixing clips are damaged and replace them if necessary.

9.2.3.16 Removal and installation of front hood stay rod

Disassembly procedures

Tip:

When removing the front hood stay rod, something needs to support the front hood to prevent parts from being damaged or personal injury.



1 Remove the front hood stay rod

a. Unscrew the fixing bolts (see the arrows) and remove the front hood support bar ①.

- Tightening torque of bolt: 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.2.3.17 Removal and installation of engine compartment fully-wrapped cover support plate component

Disassembly procedures

Tip:

The removal and installation procedures are only for the left engine compartment fully-wrapped cover support plate component, which can be basically referred to for the right one.

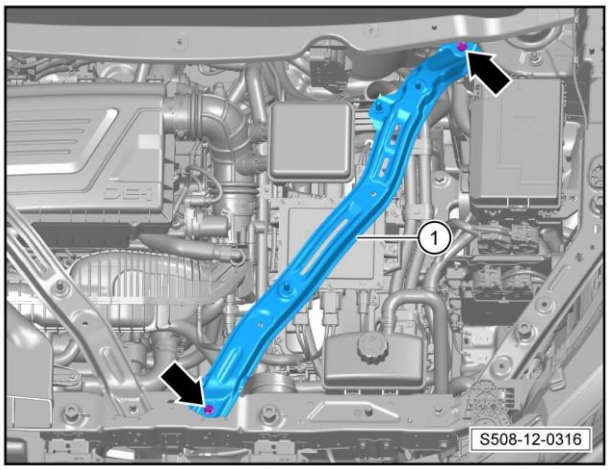
1 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel

assembly (middle)

2 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

3 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

4 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)



5 Remove the engine compartment fully-wrapped cover support plate component (left)

a. Unscrew the fixing bolts (see the arrow) and remove the engine compartment fully-wrapped cover support plate component (left) ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.2.3.18 Removal and installation of water tank upper crossmember middle section assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 Remove the front hood lock. Refer to 9.2.3.11 Removal and installation of front hood lock

5 Remove the high-pitch electric horn. Refer to 8.14.5.1 Removal and installation of high-pitch

electric horn

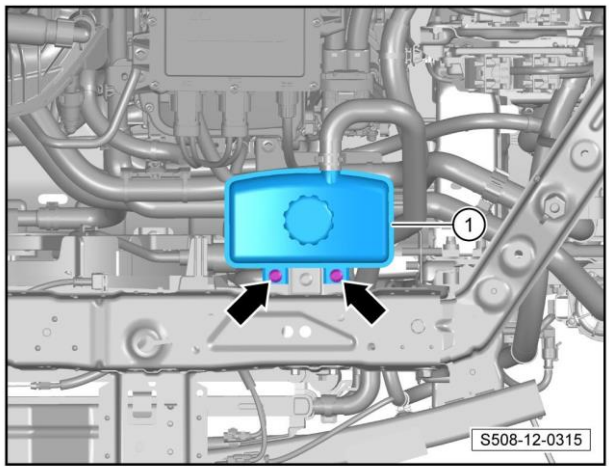
6 Remove the low-pitch electric horn. Refer to 8.14.5.2 Removal and installation of low-pitch electric horn

7 Remove the left/right combination headlamp assembly. Refer to 8.3.5.1 Removal and installation of combination headlamp assembly

8 Remove the air filter intake pipe assembly. Refer to 2.6.7.3 Removal and installation of air filter intake pipe assembly

9 Remove the engine compartment cushion. Refer to 9.2.3.14 Removal and installation of engine compartment cushion

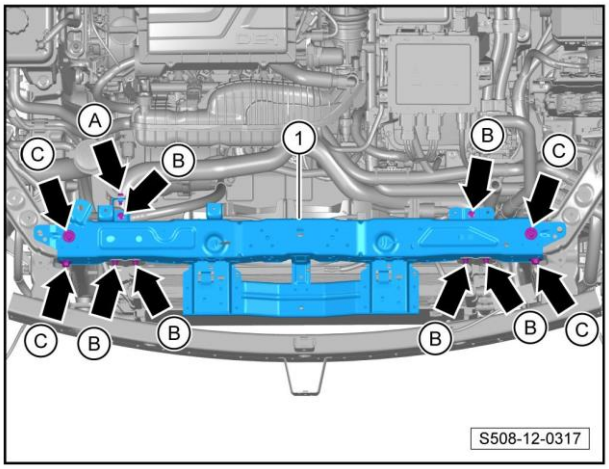
10 Remove the vertical I-beam. Refer to 9.4.3.13 Removal and installation of vertical I-beam



11 Remove the water tank upper crossmember middle section assembly

a. Unscrew the fixing bolts (see the arrow) and disengage the auxiliary water reservoir assembly ① from the water tank upper crossmember middle section assembly.

- Tightening torque of bolt: 8±1 N·m

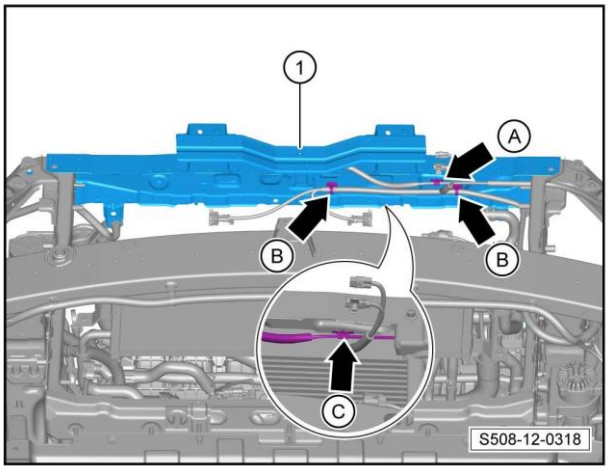


b. Unscrew the fixing bolt (see arrow A) of the washer body.

c. Unscrew the fixing bolts (see arrow B) of the water tank mounting bracket.

d. Unscrew the fixing bolts (see arrow C) of the water tank upper beam middle section assembly and remove the water tank upper beam middle section assembly ①.

- Tightening torque of bolt (see arrow A): 6±1 N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m
- Tightening torque of bolt (see arrow **C**): **25±2 N·m**



d. Disengage the harness fixing clips (see arrows A and B), the front hood release cable fixing clip (see arrow C), and remove the water tank upper crossmember middle section assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.2.3.19 Removal and installation of fender component

Disassembly procedures

Tip:

The removal and installation procedures are only for the left fender component, which can be basically referred to for the right one.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Remove the front hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

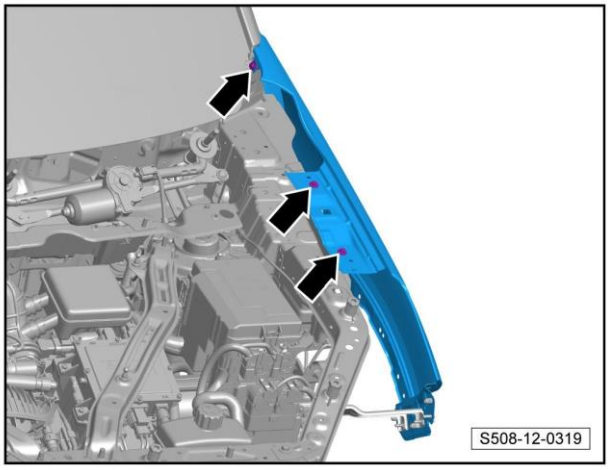
3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component

5 Remove the front bumper mounting bracket (left). Refer to 9.4.3.12 Removal and installation of front bumper mounting bracket

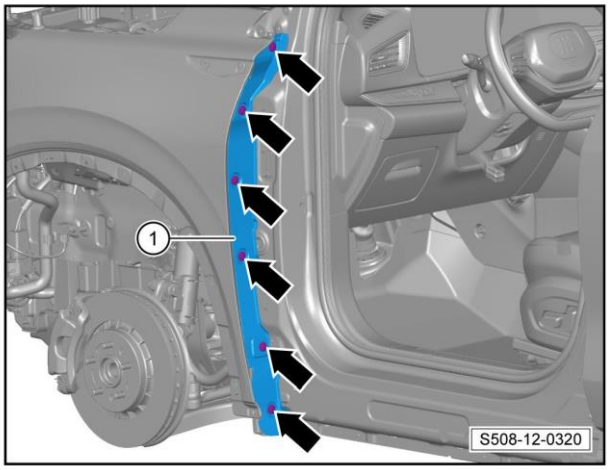
7 Remove the fender exterior trim assembly. Refer to 9.15.2.13 Removal and installation of fender exterior trim assembly

8 Remove the front quarter window trim assembly. Refer to 9.15.2.12 Removal and installation of front quarter window trim assembly



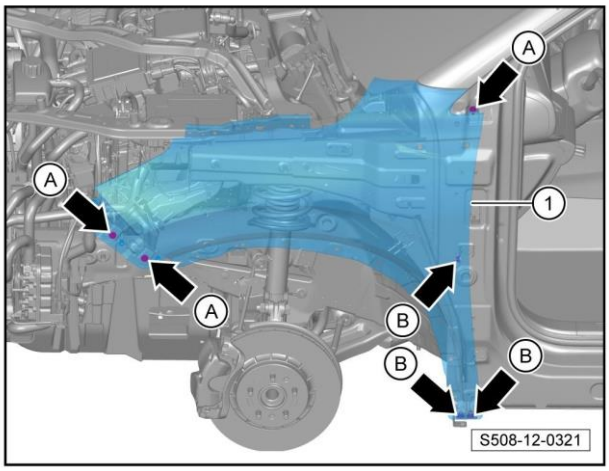
9 Remove the fender component

a. Unscrew the fixing bolts (see the arrows) on the fender component.



b. Open the front door at an appropriate angle, and note that it is not necessary to open it completely.

c. Disengage the fixing clips (see the arrows) and remove the fender rear trim panel (left) ①.



d. Unscrew the fixing bolts (see arrow A) and nuts (see arrow B) and remove the front fender component ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the fender component. Refer to 9.2.3.20 Adjustment of fender component

9.2.3.20 Adjustment of fender component

Adjustment procedure

Tip:

The adjustment procedures are only for the left fender component, which can be basically referred to for the right one.

1 Remove the front left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly

2 Remove the front hub trim. Refer to 9.15.2.3 Removal and installation of front hub trim

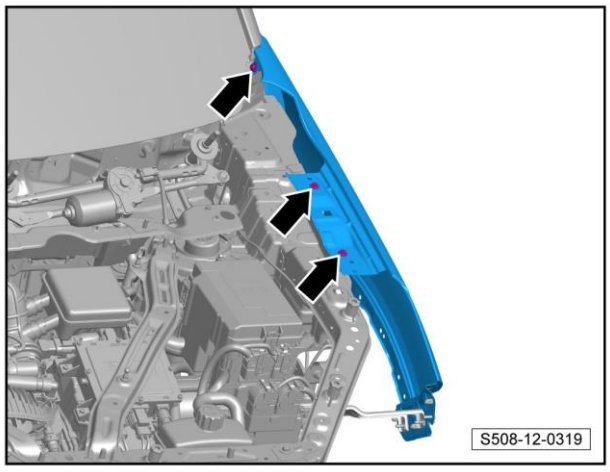
3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component

5 Remove the front bumper mounting bracket (left). Refer to 9.4.3.12 Removal and installation of front bumper mounting bracket

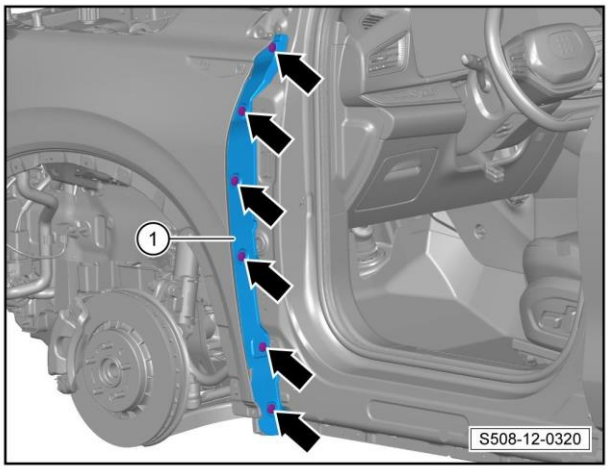
7 Remove the fender exterior trim assembly. Refer to 9.15.2.13 Removal and installation of fender exterior trim assembly

8 Remove the front quarter window trim assembly. Refer to 9.15.2.12 Removal and installation of front quarter window trim assembly



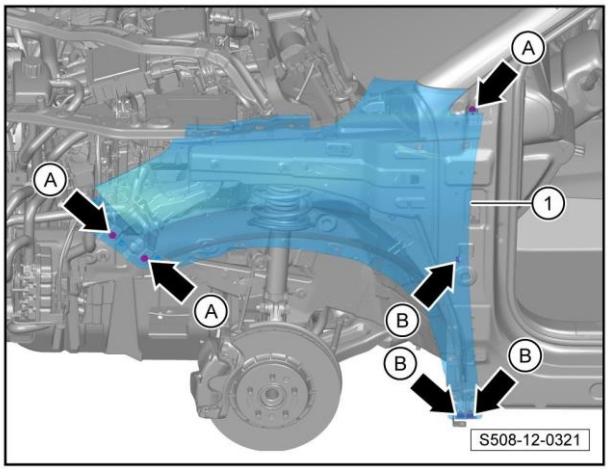
9 Adjust the fender component

a. Loosen (do not unscrew) the fixing bolts (see the arrows) of the front fender.



b. Open the front door at an appropriate angle, and note that it is not necessary to open it completely.

c. Disengage the fixing clips (see the arrows) and remove the fender rear trim panel (left) ①.



d. Loosen (do not unscrew) the fixing bolt (see arrow A) and nut (see arrow B) of the front fender.

e. Adjust the fender component ① up, down, left and right, so that the gap size of the fender component ① is uniform everywhere, without concave or convex, and the contour is aligned, which means that the fender component ① has been adjusted correctly.

f. Tighten the fixing bolt (see arrow A) and nut (see arrow B) of the fender component.

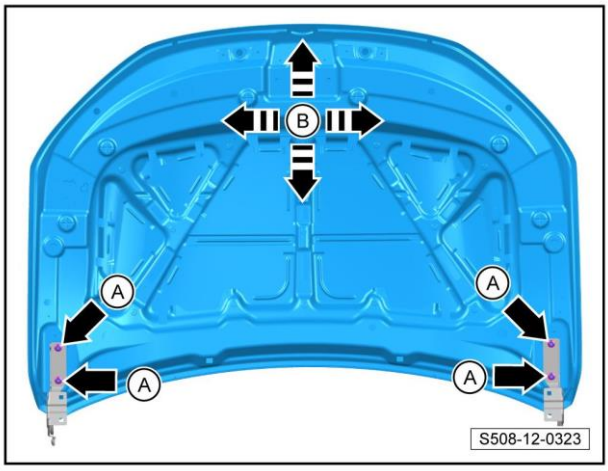
9.2.3.21 Adjustment of front hood

Adjustment procedure

Tip:

The vehicle must be parked on flat ground for adjustment of front hood. Adjust the front door assembly with another assistance of a technician.

1 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component



2 Adjust the clearance and position of the front hood surface

a. Loosen (do not unscrew) the left and right hinge fixing nuts of the front hood (see arrow A).

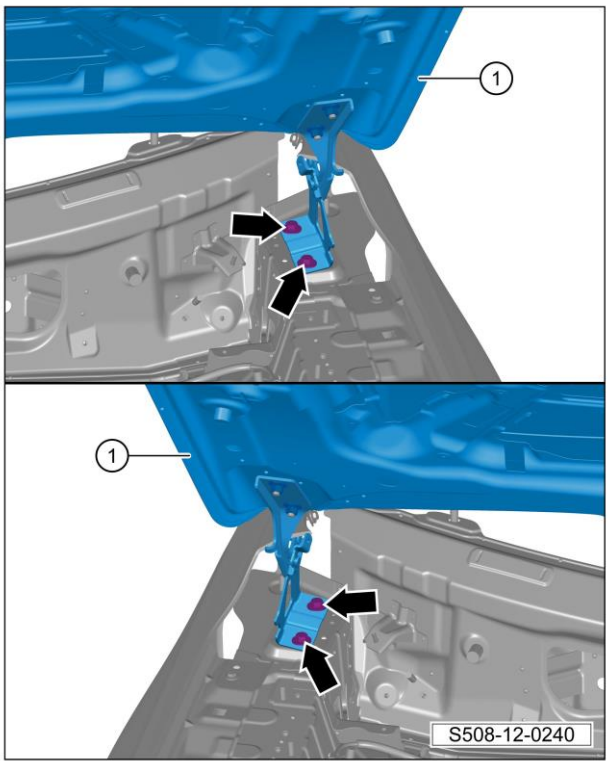
b. Adjust the front hood up, down, left and right in the direction of arrow B so that the gap size is uniform everywhere when the front hood is closed, without concave or convex, and the contour is aligned, which means that the front hood has been adjusted correctly.

c. Tighten the hinge nut (see arrow A).

- Tightening torque of nut (see arrow **A**): **28±2 N·m**

Tip:

After the above-mentioned adjustment steps are completed, if the gaps at all parts of the front hood still cannot reach the standard, the next adjustment step is carried out.

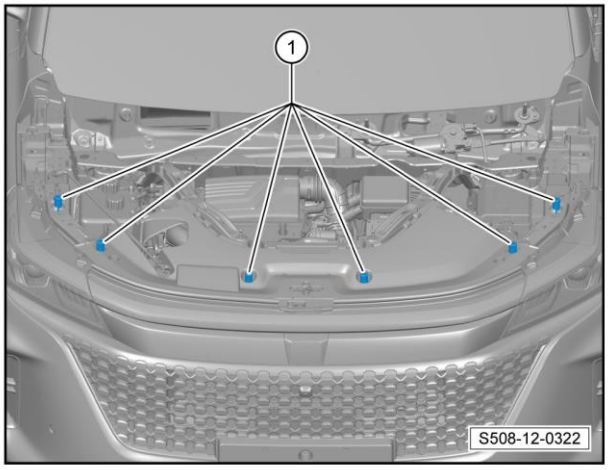


3 a. Loosen (do not unscrew) the fixing bolts (see the arrows) of the engine hood left and right hinges.

b. Adjust the front hood ① back, forth, left and right, so that the gap size is uniform everywhere when the front hood ① is closed, which means that the front hood ① has been adjusted correctly.

c. Tighten the hinge bolt (see the arrow).

- Tightening torque of bolt: **28±2 N·m**



4 Adjust the height of the front hood

a. Rotate the engine compartment cushion ① left and right to adjust the height of the front area of the front hood.

9.2.3.22 Adjustment of front hood lock

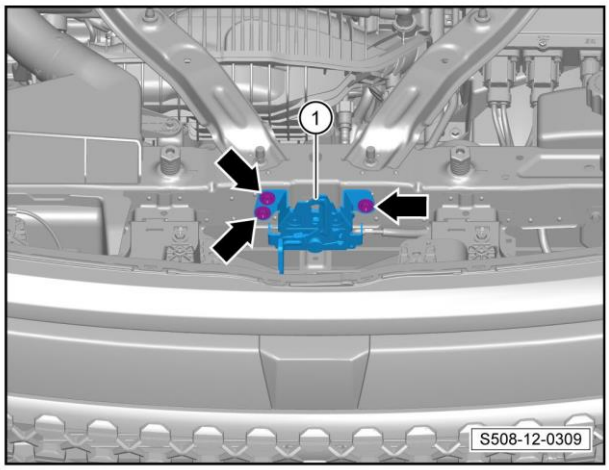
Adjustment procedure

1 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

2 Remove the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal and installation of engine compartment trim panel assembly (middle)

3 Remove the engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

4 Remove the engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)



5 Adjust the front hood lock

a. Loosen (do not unscrew) the fixing bolts (see the arrows) of the front hood lock ①.

b. Adjust the position of the front hood lock ① up, down, left and right until the front hood can be locked normally.

c. Tighten the fixing bolts (see the arrows) of the front hood lock ①.

- Tightening torque of bolt: 10±1 N·m

9.3 Rear end of body

9.3.1 Specification

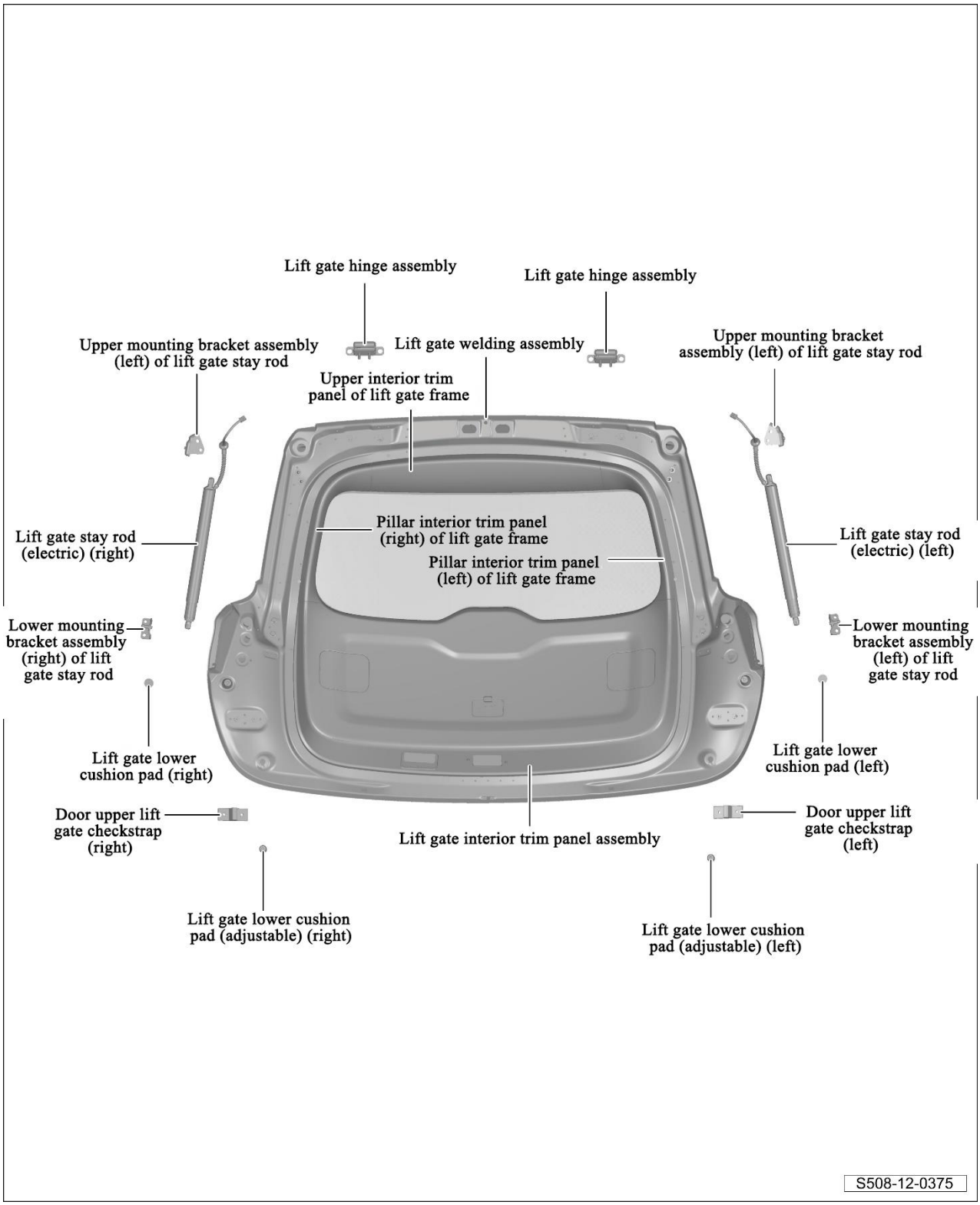
9.3.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Connection between lift gate hinge and body	Hexagon head bolt c/w spring washer and plain washer cluster M8×25	28±2
Connection between lift gate hinge and lift gate	Glued and enlarged hexagon head flange nut M8	28±2
Connection of lift gate stay rod bracket and vehicle body	Glued hexagon head flange bolt M8×16	28±2

9.3.2 Component position

9.3.2.1 Exploded view

Exploded view



9.3.3 Removal and installation

9.3.3.1 Removal and installation of lift gate welding assembly

Disassembly procedures

Tip:

The removal and installation shall be done with the assistance of another technician.

1 Open the lift gate.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly

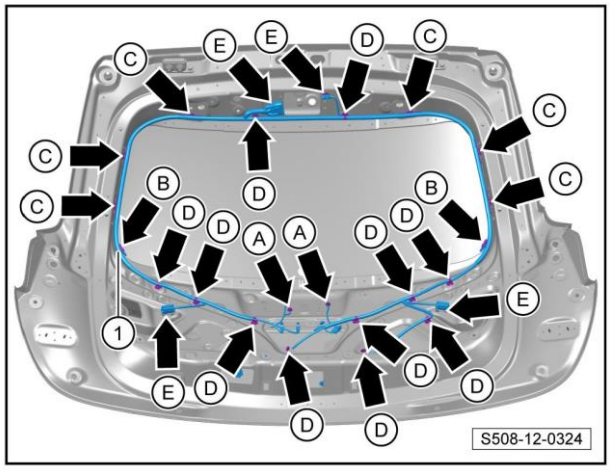
5 Remove the left/right lift gate rear combination light assembly. Refer to 8.3.5.3 Removal and installation of lift gate rear combination light assembly

6 Remove the lift gate light assembly. Refer to 8.3.5.5 Removal and installation of lift gate light assembly

7 Remove the spoiler assembly. Refer to 9.15.2.9 Removal and installation of spoiler assembly

8 Remove the lift gate lock body assembly. Refer to 8.11.5.5 Removal and installation of lift gate lock body assembly (power lift gate)

9 Remove the rear wiper motor and bracket assembly. Refer to 8.7.6.10 Removal and installation of the rear wiper motor and bracket assembly



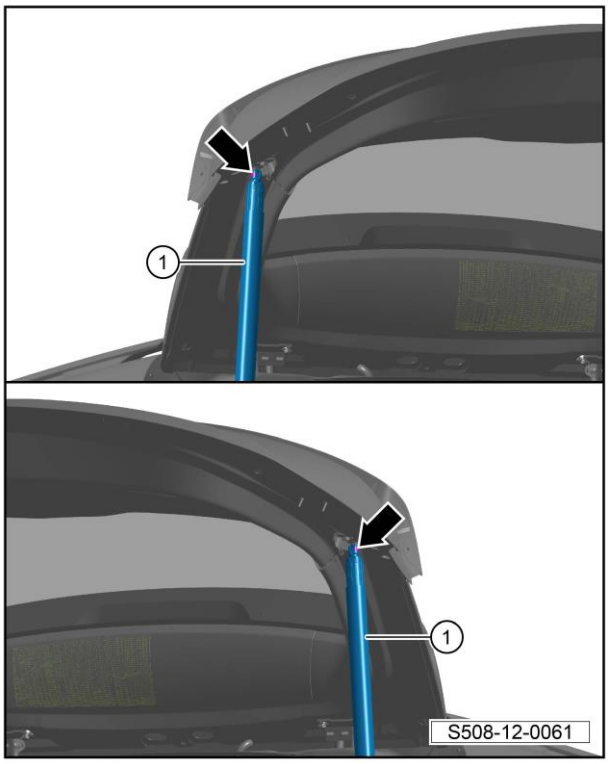
10 Remove the lift gate welding assembly

a. Unscrew the grounding bolts (see arrow A) of lift gate harness.

b. Disconnect the connector (see arrow B) of the lift gate glass heating wire.

c. Disengage the lift gate harness fixing clips (see arrows C and D).

d. Disengage the lift gate harness connector fixing clips (see arrow E) and remove the lift gate harness ①.

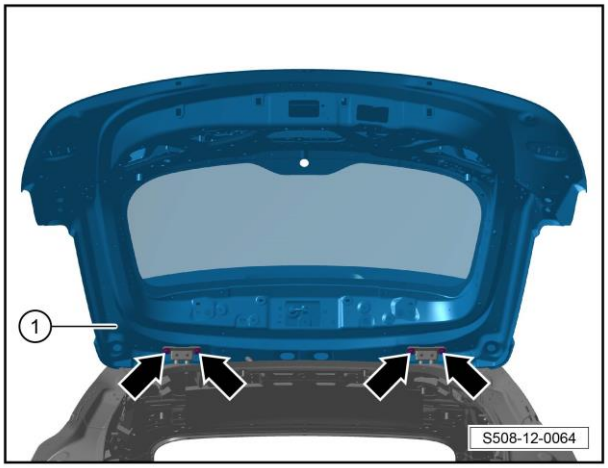


e. Use a mini straight screwdriver to pry up the fixing clips (see the arrows) of the lift gate left and right stay rods ①.

f. Disengage the lift gate stay rod ① from the lift gate stay rod upper mounting bracket assembly.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod cannot be fixed. The lift gate stay rod may pop up from the ball pin, damaging parts or injuring people.



g. Unscrew the fixing bolts (see the arrows) and remove the lift gate welding assembly ①.

- Tightening torque of bolt: **28±2 N·m**

Notes

When unscrewing the fixing bolts of lift gate hinge, it is required to closely cooperate with another technician to prevent damage to the rear windshield assembly.

Other accessories shall be removed after the lift gate welding assembly is removed.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the lift gate. Refer to 9.3.3.17 Adjustment of lift gate assembly

9.3.3.2 Removal and installation of lift gate hinge assembly

Disassembly procedures

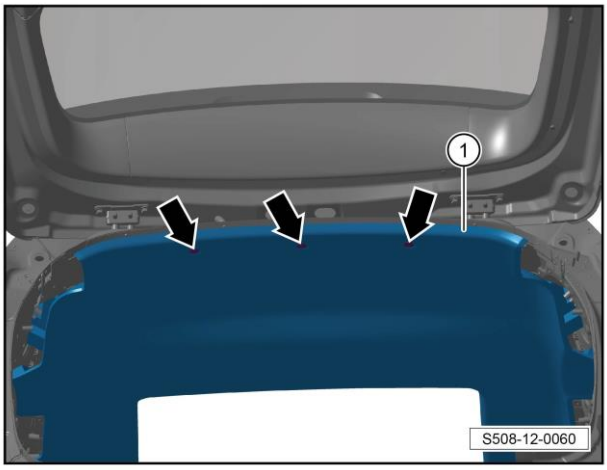
Tip:

The removal and installation procedures are only for

the left lift gate hinge assembly, which can be basically referred to for the right one.

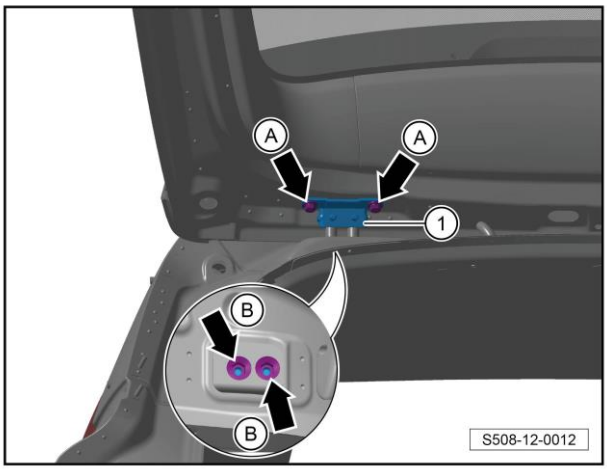
The removal and installation shall be done with the assistance of another technician.

1 Remove the rear left/right side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly



2 Remove the lift gate hinge assembly

a. Disengage the rear end fixing clip (see the arrow) and lift up one corner of the panel roof lining assembly ①.



b. Unscrew the fixing bolts (see arrow A) and nuts (see arrow B), and remove the lift gate hinge assembly ①.

- Tightening torque of bolt (see arrow **A**): **28±2 N·m**
- Tightening torque of nut (see arrow B): 28±2 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the lift gate assembly. Refer to 9.3.3.17 Adjustment of lift gate assembly

9.3.3.3 Removal and installation of lift gate stay rod

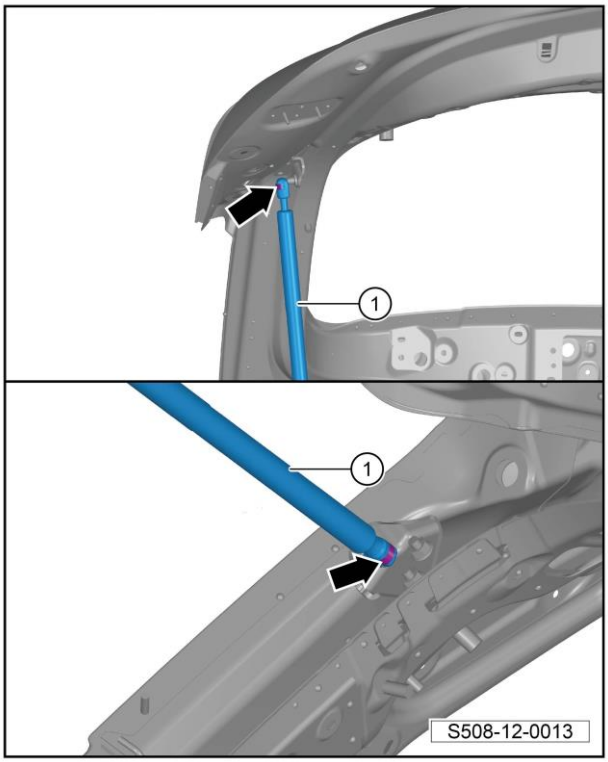
Disassembly procedures

Tip:

The removal and installation procedures are only for the left lift gate stay rod, which can be basically referred to for the right one.

The lift gate must be supported by something when removing the lift gate stay rod. Otherwise, a single lift gate drive component cannot keep the lift gate open.

1 Open the lift gate.



2 Remove the lift gate stay rod

a. Use a mini straight screwdriver to pry up the fixing clips (see the arrows) of the lift gate stay rod.

b. Remove the lift gate stay rod ①.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod cannot be fixed. The lift gate stay rod may pop up from the ball pin, damaging parts or injuring people.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.3.3.4 Removal and installation of lift gate stay rod (electric)

Disassembly procedures

Tip:

The removal and installation procedures are only for the left lift gate stay rod (power), which can be basically referred to for the right one.

The lift gate must be supported by something when removing the lift gate stay rod (electric). Otherwise, a single lift gate drive component cannot keep the lift gate open.

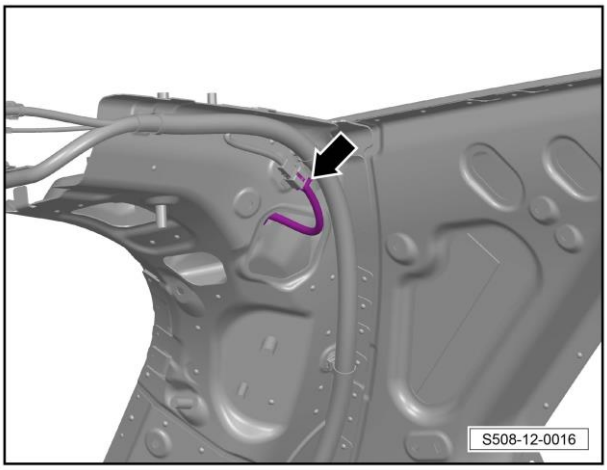
1 Turn off all the electrical appliances and turn off the

Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

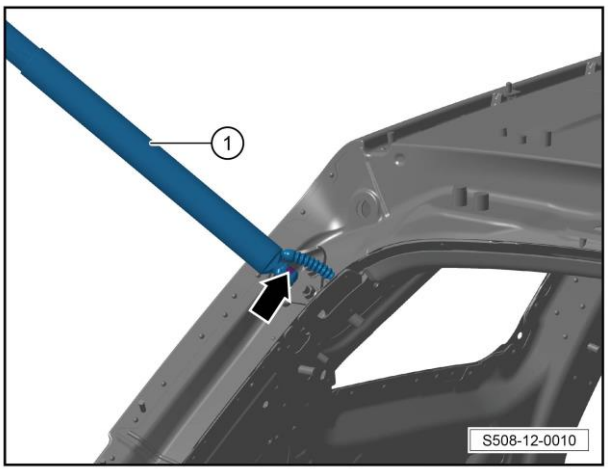
3 Remove the rear side wall lower interior trim panel assembly (left). Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

4 Remove the rear side wall upper interior trim panel assembly (left). Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly



5 Remove the lift gate stay rod (electric)

a. Disconnect the connector of the lift gate stay rod (electric) (see the arrow).

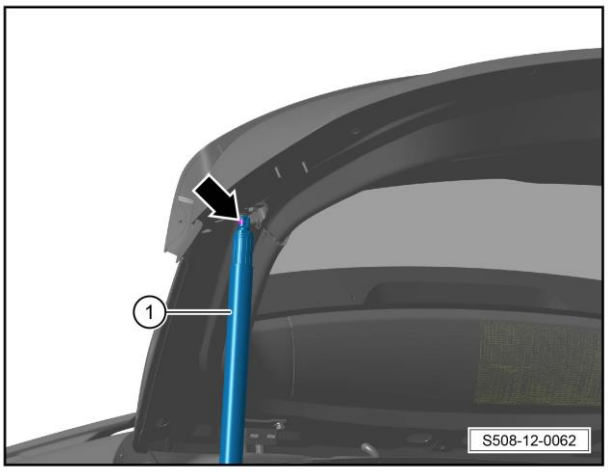


b. Use a mini straight screwdriver to pry up the fixing clip of the lift gate stay rod (electric) (see the arrow).

c. Disengage the lift gate stay rod (electric) ① from the lift gate stay rod upper mounting bracket assembly.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod (electric) completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod (electric) cannot be fixed. The lift gate stay rod (power) may pop up from the ball pin, damaging parts or injuring people.



d. Use a mini straight screwdriver to pry up the fixing clip of the lift gate stay rod (electric) ① (see the arrow).

e. Disconnect the lift gate stay rod (power) from the lift gate stay rod lower mounting bracket assembly, and take out the lift gate stay rod (power) ①.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod (electric) completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod (electric) cannot be fixed. The lift gate stay rod (power) may pop up from the ball pin, damaging parts or injuring people.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.3.3.5 Removal and installation of upper mounting bracket assembly of lift gate stay rod

Disassembly procedures

Tip:

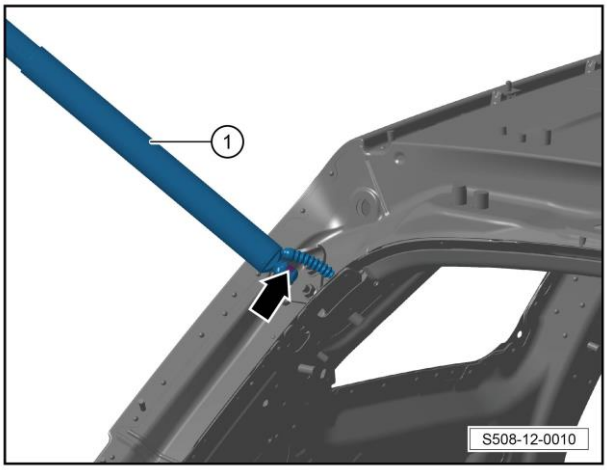
The removal and installation procedures are only for the left lift gate stay rod upper mounting bracket assembly, which can be basically referred to for the right one.

The lift gate must be supported by something when removing the upper mounting bracket assembly of the lift gate stay rod. Otherwise, a single lift gate stay rod cannot keep the lift gate open.

1 Open the lift gate.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



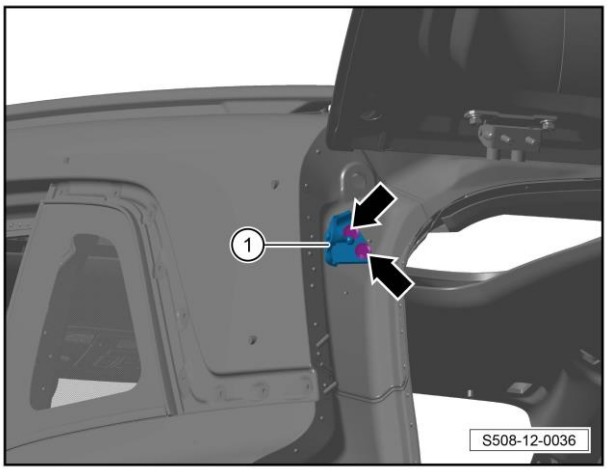
4 Remove the upper mounting bracket assembly of the lift gate stay rod

a. Use a mini straight screwdriver to pry up the fixing clips (see the arrows) of the lift gate stay rod ①.

b. Disengage the lift gate stay rod ① from the lift gate stay rod upper mounting bracket assembly.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod cannot be fixed. The lift gate stay rod may pop up from the ball pin, damaging parts or injuring people.



c. Unscrew the fixing bolt (see the arrow) and remove the upper mounting bracket assembly ① of the lift gate stay rod.

- Tightening torque of bolt: **28±2 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.3.3.6 Removal and installation of lower mounting bracket assembly of lift gate stay rod

Disassembly procedures

Tip:

The removal and installation procedures are only for the left lift gate stay rod lower mounting bracket assembly, which can be basically referred to for the right one.

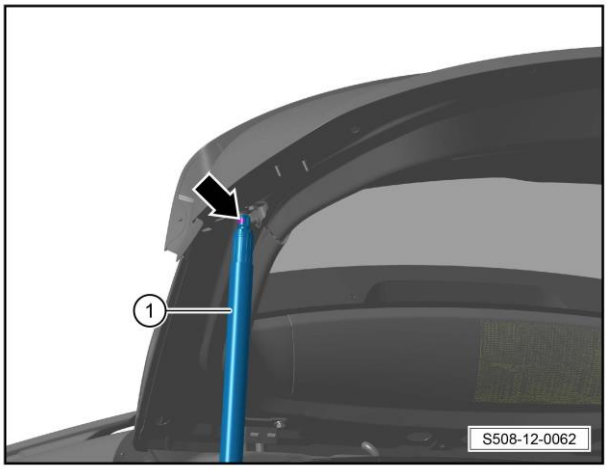
The lift gate must be supported by something when removing the lower mounting bracket assembly of lift gate stay rod. Otherwise, a single lift gate stay rod cannot keep the lift gate open.

1 Open the lift gate.

2 Turn off all the electrical appliances and turn off the

Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



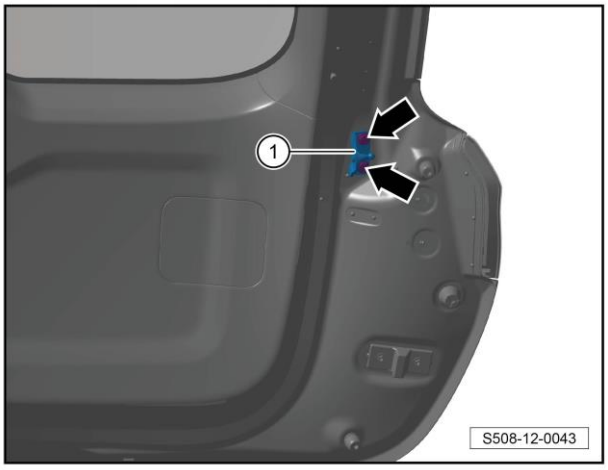
4 Remove the lower mounting bracket assembly of lift gate stay rod

a. Use a mini straight screwdriver to pry up the fixing clips (see the arrows) of the lift gate stay rod ①.

b. Disengage the lift gate stay rod ① from the lift gate stay rod lower mounting bracket assembly.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod cannot be fixed. The lift gate stay rod may pop up from the ball pin, damaging parts or injuring people.



c. Unscrew the fixing bolt (see the arrow) and remove the lower mounting bracket assembly ① of the lift gate stay rod.

- Tightening torque of bolt: **28±2 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

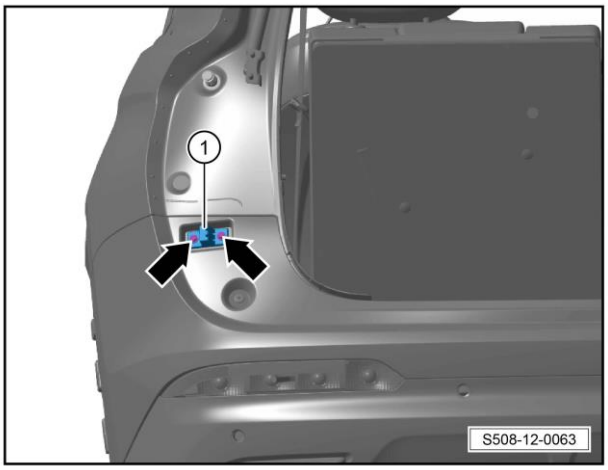
9.3.3.7 Removal and installation of lift gate checkstrap on body

Disassembly procedures

Tip:

The removal and installation procedures are only for the left body upper lift gate checkstrap, which can be basically referred to for the right one.

1 Open the lift gate.



2 Remove the body upper lift gate checkstrap

a. Unscrew the fixing bolt (see the arrow) and remove the lift gate checkstrap ① on body.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

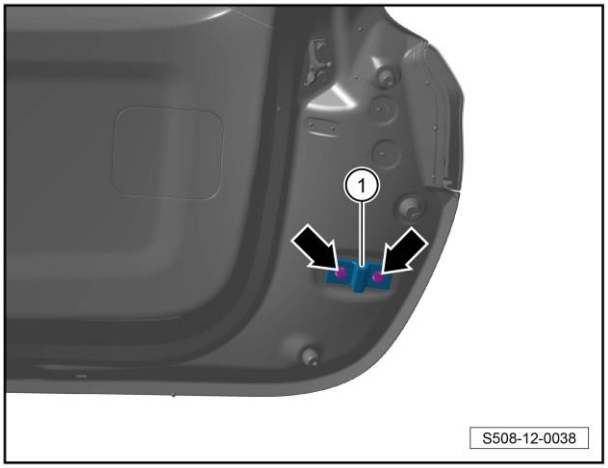
9.3.3.8 Removal and installation of lift gate checkstrap on door

Disassembly procedures

Tip:

The removal and installation procedures are only for the left body upper lift gate checkstrap, which can be basically referred to for the right one.

1 Open the lift gate.



2 Remove the door upper lift gate checkstrap

a. Unscrew the fixing bolt (see the arrow) and remove the lift gate checkstrap ① on door.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

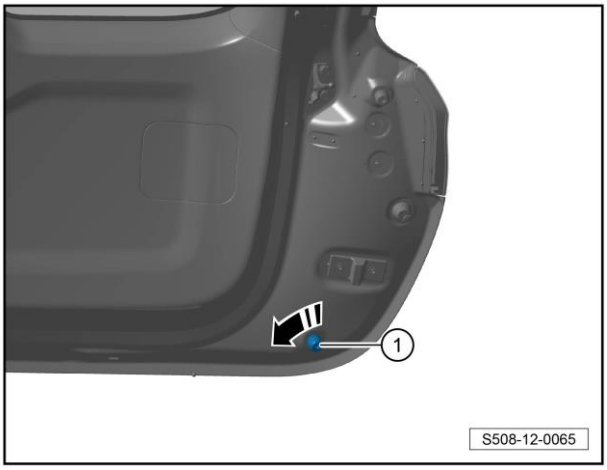
9.3.3.9 Removal and installation of lift gate lower cushion pad (adjustable)

Disassembly procedures

Tip:

The removal and installation procedures are only for the left lift gate lower cushion pad (adjustable), which can be basically referred to for the other one.

1 Open the lift gate.



2 Remove the lift gate lower cushion pad (adjustable)

a. Unscrew the lift gate lower cushion pad (adjustable) ① in the arrow direction.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, adjust the lift gate lower cushion pad (adjustable). Refer to 9.3.3.17 Adjustment of lift gate assembly

9.3.3.10 Removal and installation of lift gate lower cushion pad

Disassembly procedures

Tip:

The removal and installation procedures are only for the left lift gate lower cushion pad, which can be basically referred to for the right one.

1 Open the lift gate.

2 Remove the lift gate lower cushion pad

a. Remove the lift gate lower cushion pad ①.

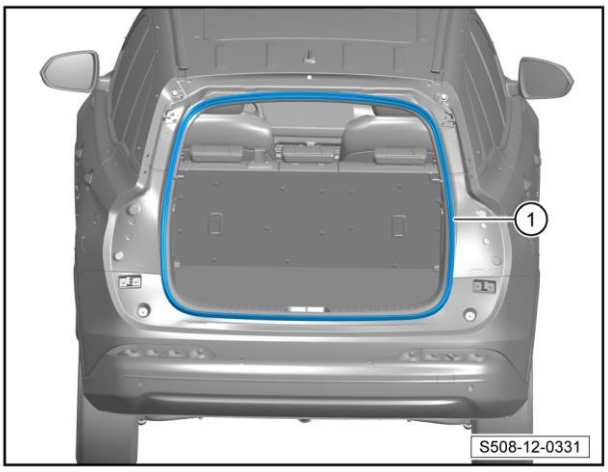
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.3.3.11 Removal and installation of lift gate frame sealing strip

Disassembly procedures

1 Open the lift gate.



2 Remove the sealing strip of lift gate

a. Remove the lift gate sealing strip ① from the protruding edge of the body.

Installation procedures

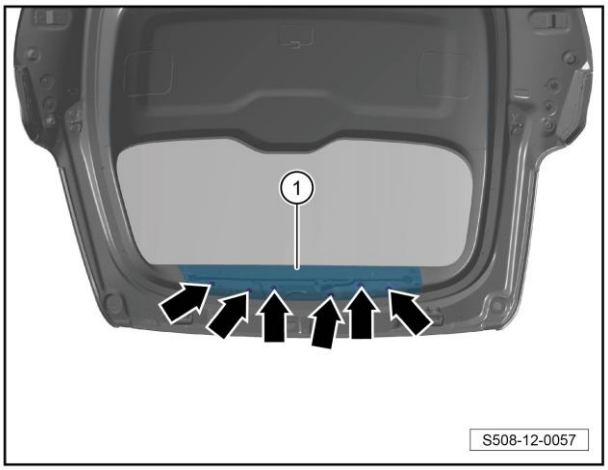
The installation procedure is to be performed basically in the reverse order:

9.3.3.12 Removal and installation of lift gate frame upper interior trim panel assembly

Disassembly procedures

1 Open the lift gate.

2 Turn off all the electrical appliances and turn off the Start switch.



3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the lift gate frame upper interior trim panel assembly

a. Disengage the fixing clips (see the arrow) and remove the lift gate frame upper interior trim panel assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.3.3.13 Removal and installation of lift gate frame pillar interior trim panel assembly

Disassembly procedures

Tip:

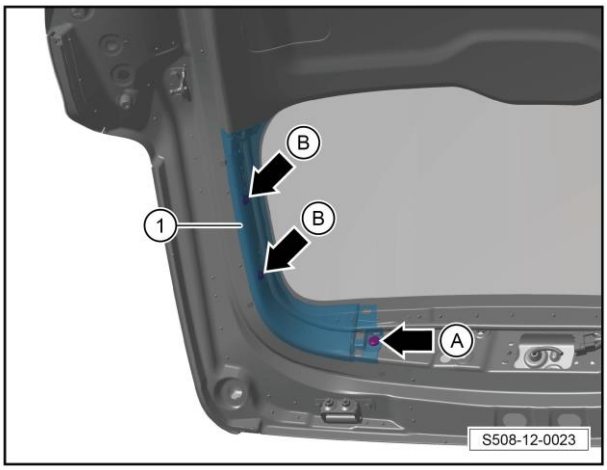
The removal and installation procedures are only for the left lift gate frame pillar interior trim panel assembly, which can be basically referred to for the right one.

1 Open the lift gate.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the lift gate frame upper interior trim panel assembly. Refer to 9.3.3.12 Removal and installation of lift gate frame upper interior trim panel assembly



5 Remove the lift gate frame pillar interior trim panel assembly

b. Disengage the fixing clips (see arrows A and B) and remove the lift gate frame pillar interior trim panel assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.3.3.14 Removal and installation of lift gate interior trim panel assembly

Disassembly procedures

1 Open the lift gate.

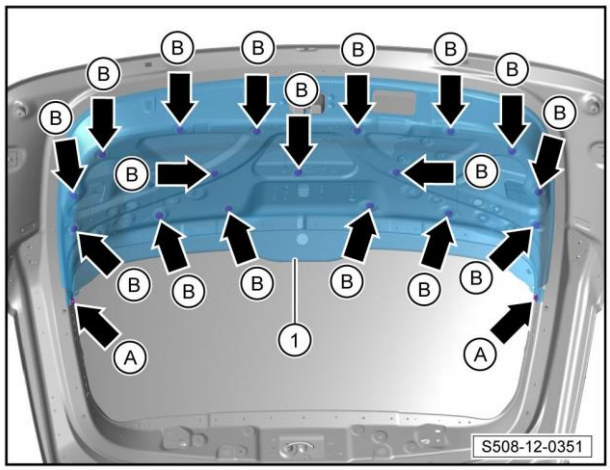
2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the power lift gate closing switch assembly (optional). Refer to 8.18.6.1 Removal and installation of the power lift gate closing switch assembly (optional)

5 Remove the lift gate frame upper interior trim panel assembly. Refer to 9.3.3.12 Removal and installation of lift gate frame upper interior trim panel assembly

6 Remove the left and right lift gate pillar interior trim panel assemblies. Refer to 9.3.3.13 Removal and installation of lift gate pillar interior panel assembly



7 Remove the lift gate trim panel assembly

a. Unscrew the fixing screws (see arrow A) of lift gate interior trim panel assembly.

b. Disengage the fixing clips (see arrow B) and remove the lift gate interior trim panel assembly ①.

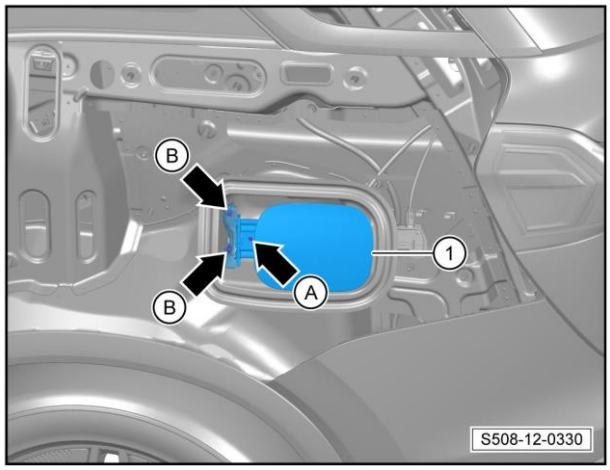
Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.3.3.15 Removal and installation of fuel filler cap assembly

Disassembly procedures



1 Remove the fuel filler cap assembly

a. Open the fuel filler cap assembly.

b. Disengage the fuel filler cap assembly ① fixing clip (see arrow A).

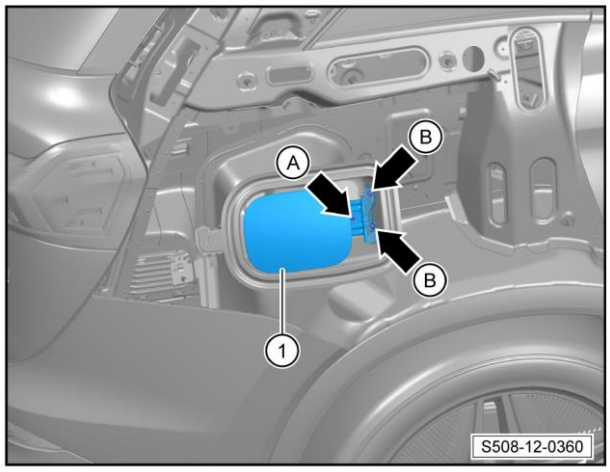
c. Unscrew the fixing bolts (see arrow B) and remove the fuel filler cap assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.3.3.16 Removal and installation of charging port cover assembly

Disassembly procedures



1 Remove the charging port cover assembly

a. Open the charging port cover assembly.

b. Disengage the charging port cover assembly ① fixing clip (see arrow A).

c. Unscrew the fixing bolts (see arrow B) and remove the charging port cover assembly ①.

Installation procedures

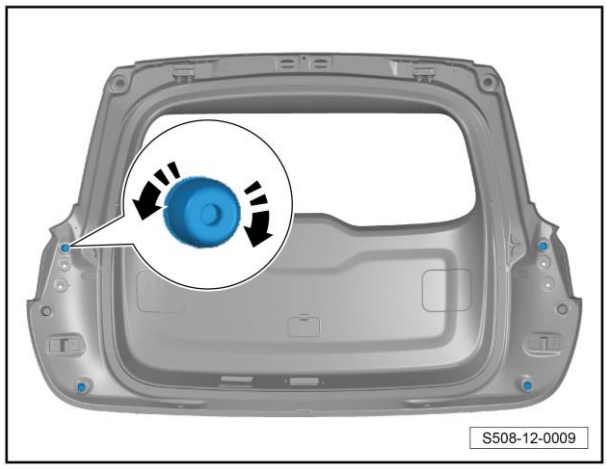
The installation procedure is to be performed basically in the reverse order:

9.3.3.17 Adjustment of lift gate assembly

Disassembly procedures

Tip:

The vehicle must be parked on flat ground for adjustment of lift gate. Adjust the front door assembly with another assistance of a technician.

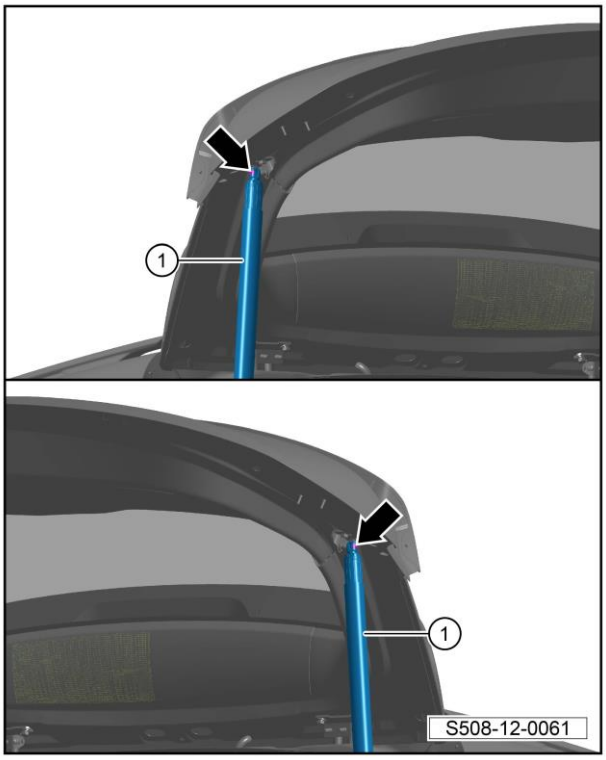


1 Adjust the lift gate lower cushion pad

a. Rotate the lift gate lower cushion pad left and right in the arrow direction to adjust the horizontal alignment and clearance between the lift gate and body.

Tip:

If not, perform further adjustment according to the following steps.

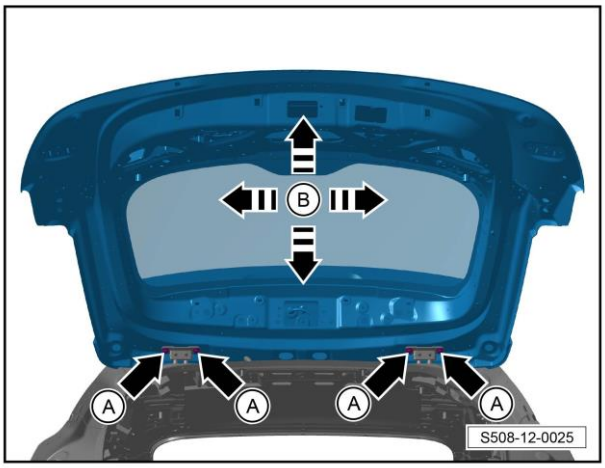


2 Adjust the lift gate

a. Use a mini straight screwdriver to pry up the fixing clips (see the arrows) of the lift gate stay rod ①.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod cannot be fixed. The lift gate stay rod may pop up from the ball pin, damaging parts or injuring people.



b. Loosen (do not unscrew) the left and right hinge fixing bolts at the lift gate (see arrow A) and move the lift gate back and forth, left and right in the direction of arrow B so that the gap size is uniform everywhere when the lift gate is closed, without concave or convex, and the contour is aligned, which means that the lift gate has been adjusted correctly.

c. Tighten the hinge bolt (see arrow A).

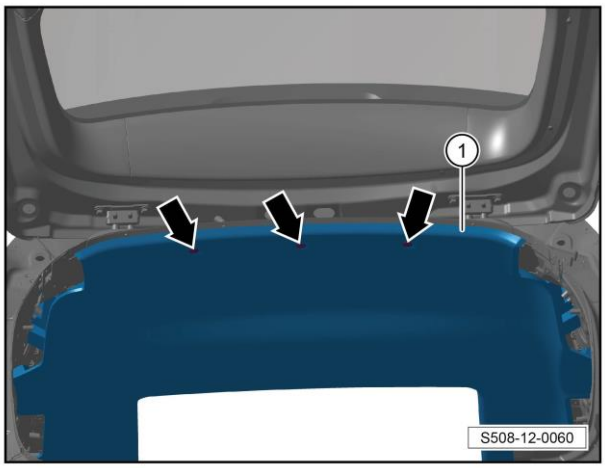
d. Install the lift gate stay rod.

- Tightening torque of bolt (see arrow **A**): **28±2 N·m**

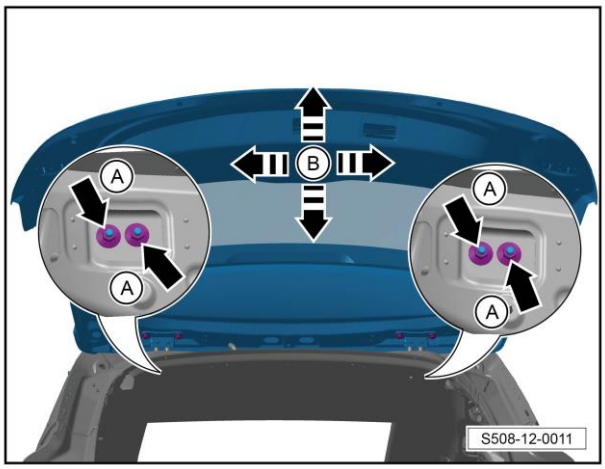
Tip:

If not, perform further adjustment according to the following steps.

3 Remove the rear left/right side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly

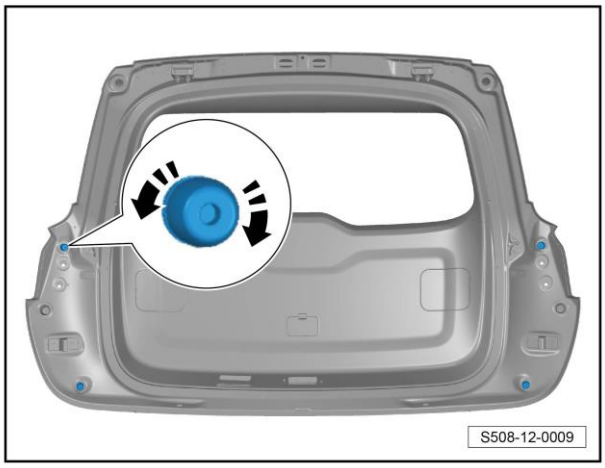


4 a. Disengage the lift gate seal and the rear fixing clip (see the arrow) of the roof panel lining assembly ①.



b. Loosen (do not unscrew) the fixing nut of the lift gate hinge and the body (see arrow A), and move the lift gate forward, backward, left and right (see arrow B) so that the gap is uniform everywhere when the lift gate is closed. At this time, tighten the lift gate hinge nuts (see arrow A).

- Tightening torque of nut (see arrow **A**): **28±2 N·m**



c. Rotate and adjust the cushion pad under the lift gate in the arrow direction. When the lift gate is closed, it is not concave or convex and the outline is aligned, which means that the lift gate has been adjusted correctly.

d. Install the lift gate stay rod.

9.4 Front bumper

9.4.1 Specification

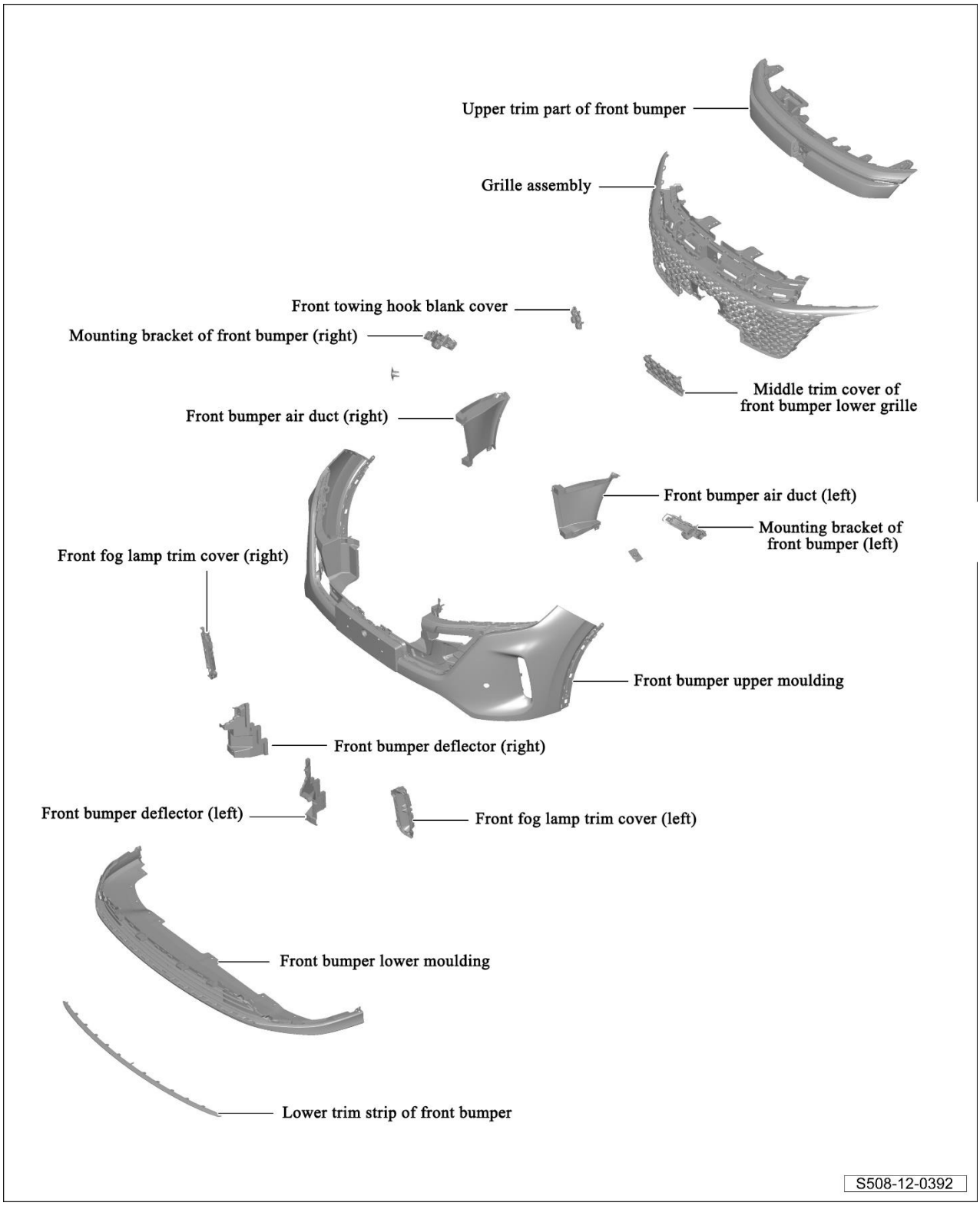
9.4.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Front bumper mounting bracket	Cross recessed hexagon head flange bolt M6×20	6±1
Vertical I-beam	Hexagon flange nut M8×25	25±2

9.4.2 Exploded view

9.4.2.1 Exploded view

Exploded view



9.4.3 Removal and installation

9.4.3.1 Removal and installation of front bumper assembly with accessories

Disassembly procedures

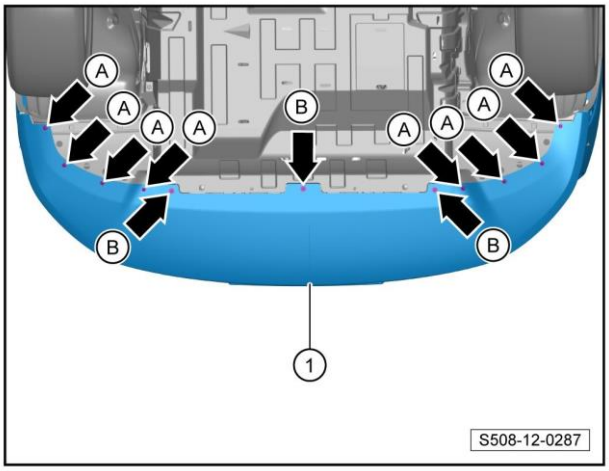
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

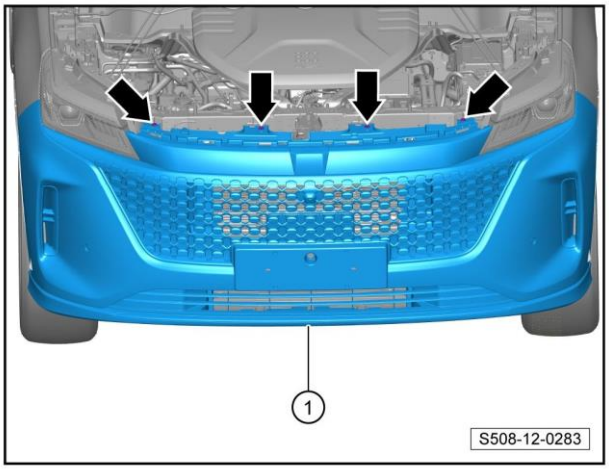
4 Remove the front left/right wheel arch trim. Refer to 9.15.2.1 Removal and installation of front wheel arch trim assembly

5 Remove the grille light strip assembly. Refer to 8.3.5.2 Removal and installation of grille light strip assembly

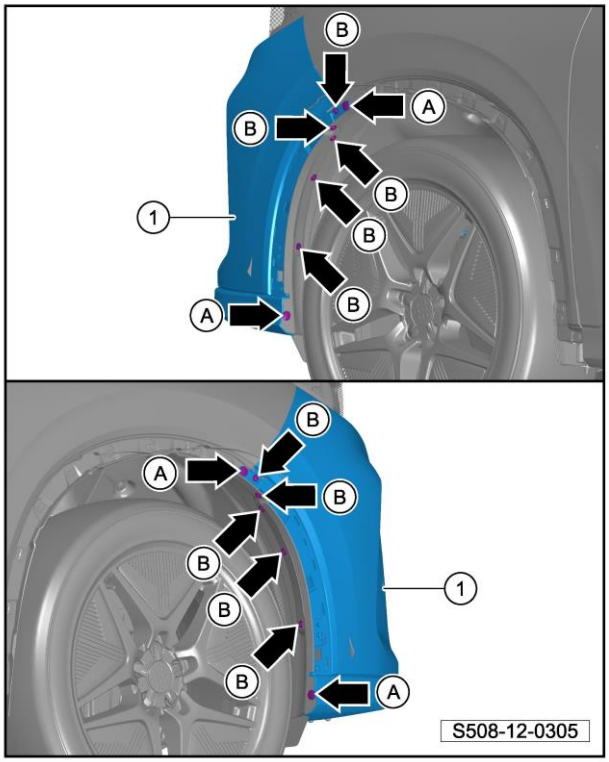


6 Remove the front bumper assembly with accessories

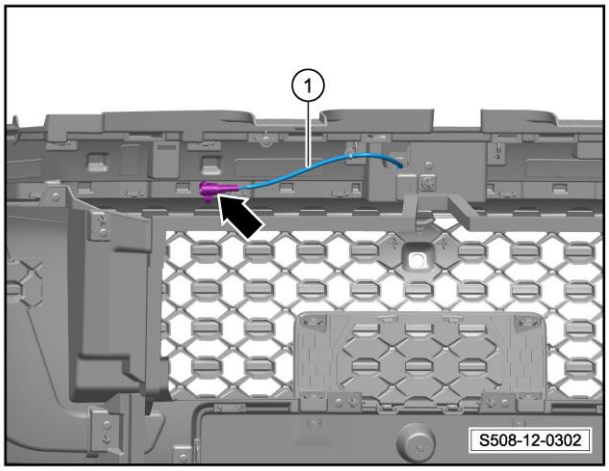
a. Unscrew the fixing screw (see arrow A) and bolt (see arrow B) at the bottom of the front bumper assembly ①.



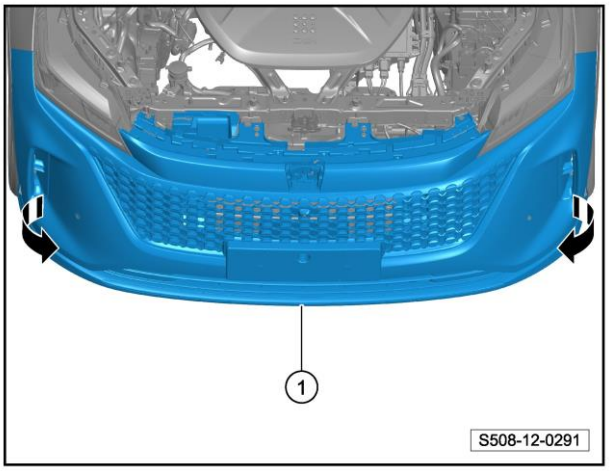
b. Unscrew the fixing bolts (see the arrows) of the front bumper assembly ①.



c. Disengage the fixing clips (see arrow A) on the left and right sides of the front bumper assembly ① and unscrew the front bumper assembly ① fixing screws (see arrow B).



d. Disconnect the logo front assembly ① harness fixing clips (see the arrow).

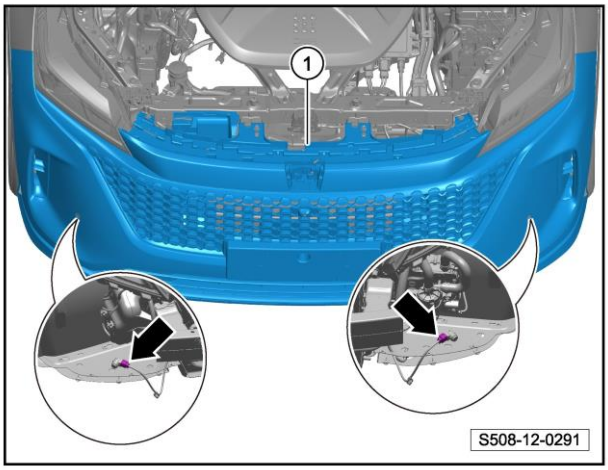


e. With the assistance of another technician, disengage the front bumper assembly from the clamping devices of the left and right mounting brackets in the direction of the arrow.

f. Move out the front bumper assembly with accessories ①.

Tip:

Do not use excessive force during disassembly to avoid damaging the front bumper connecting harness.



g. Disconnect the ultrasonic radar connector (see the arrow) and remove the front bumper assembly with accessories ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.2 Removal and installation of grille assembly

Disassembly procedures

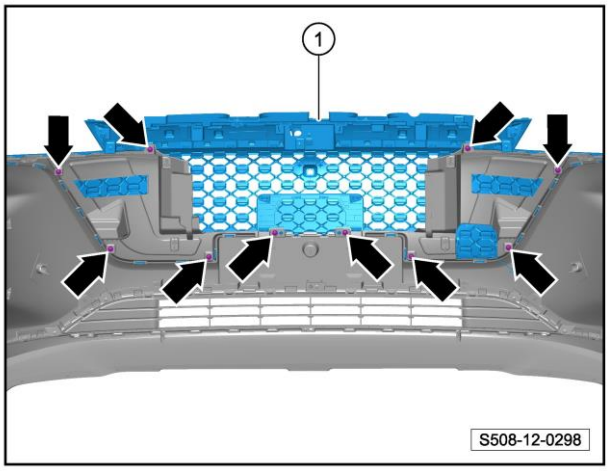
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

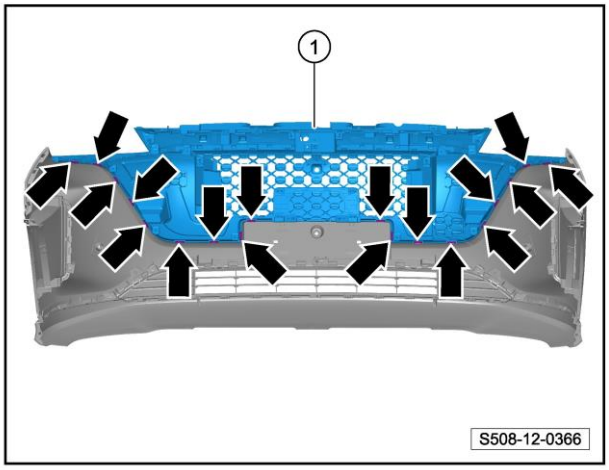
4 Remove the grille light strip assembly. Refer to 8.3.5.3 Removal and installation of grille light strip assembly

5 Remove the front bumper upper deflector. Refer to 9.4.3.11 Removal and installation of front bumper upper deflector



6 Remove the grille assembly

a. Unscrew the grille assembly ① fixing screw (see the arrow).



b. Disengage the fixing clip (see the arrow) and remove the grille assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.3 Removal and installation of the front bumper upper trim

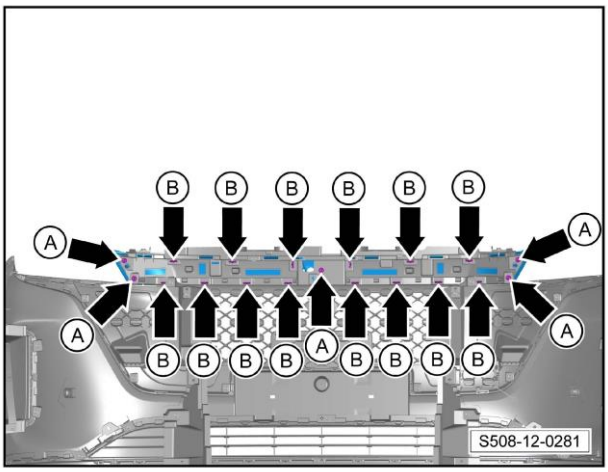
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 Remove the front bumper upper deflector. Refer to 9.4.3.11 Removal and installation of front bumper upper deflector



5 Remove the front bumper upper trim

a. Unscrew the front bumper upper trim fixing screws (see arrow A) and disengage the fixing clips (see arrow B).

b. Remove the front bumper upper trim.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

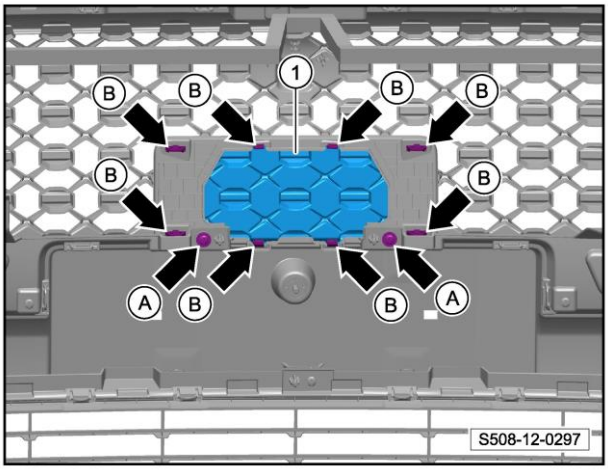
9.4.3.4 Removal and installation of middle trim cover of front bumper lower grille

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the middle trim cover of front bumper lower grille

a. Unscrew the fixing screws (see arrow A), disengage the fixing clips (see arrow B), and remove the middle trim cover of the lower front grille ①.

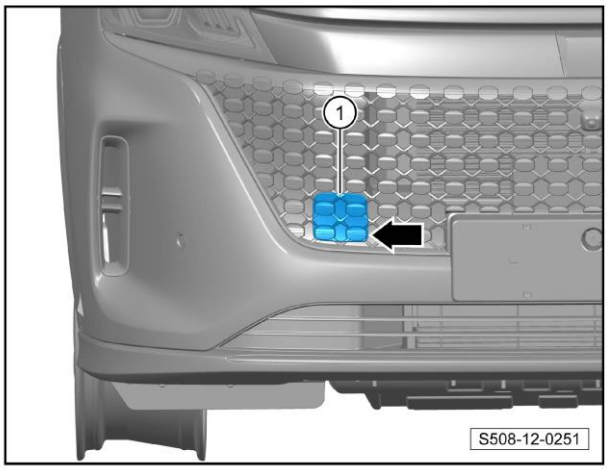
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.5 Removal and installation of front

towing hook blank cover

Disassembly procedures



1 Remove the front towing hook blank cover

a. Disengage the fixing clip at the arrow position, and remove the front towing hook blank cover ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.6 Removal and installation of front bumper upper moulding

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

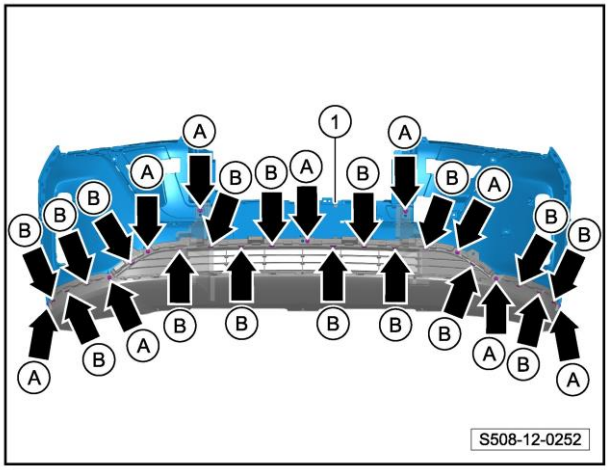
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 Remove the front left/right bumper air duct. Refer to 9.4.3.9 Removal and installation of front bumper air duct

5 Remove the left/right fog light hole trim cover. Refer to 9.4.3.8 Removal and installation of front fog light hole trim cover

6 Remove the grille assembly. Refer to 9.4.3.2 Removal and installation of grille assembly



7 Remove the front bumper upper moulding

a. Unscrew the fixing screws (see arrow A) of the front bumper upper moulding ①.

b. Disengage the fixing clips (see arrow B) and remove the front bumper upper moulding ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.7 Removal and installation of front bumper lower moulding

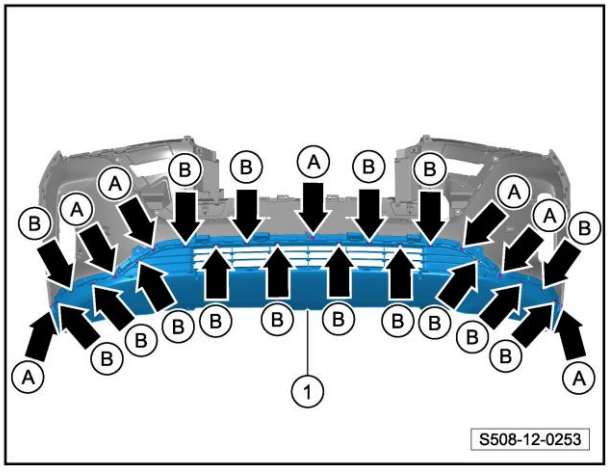
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front left/right bumper deflector. Refer to 9.4.3.10 Removal and installation of front bumper deflector

4 Remove the front bumper lower grille middle trim cover. Refer to 9.4.3.4 Removal and installation of front bumper lower grille middle trim cover



5 Remove the front bumper lower moulding

a. Unscrew the fixing screws (see arrow A) of the front bumper lower moulding ①.

b. Disengage the fixing clips (see arrow B) and remove the front bumper lower moulding ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.8 Removal and installation of front fog light hole trim cover

Disassembly procedures

Tip:

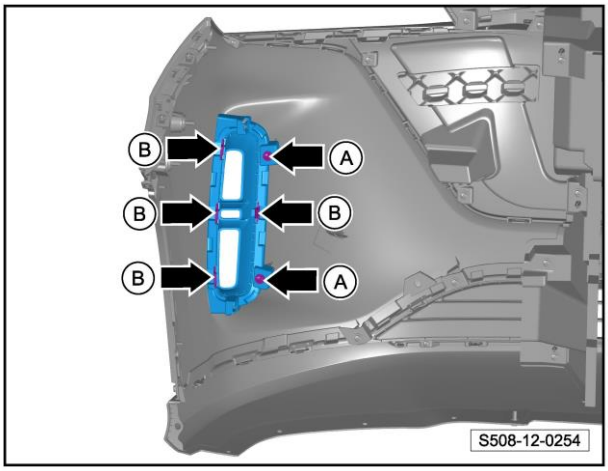
The removal and installation procedures are only for the front left fog light hole trim cover, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

4 Remove the front bumper air duct. Refer to 9.4.3.9 Removal and installation of front bumper air duct



5 Remove the front fog light hole trim cover

a. Unscrew the fixing screws of the front fog light hole trim cover (see arrow A).

b. Disengage the fixing clip (see arrow B) and remove the front fog light trim cover.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.9 Removal and installation of front bumper air duct

Disassembly procedures

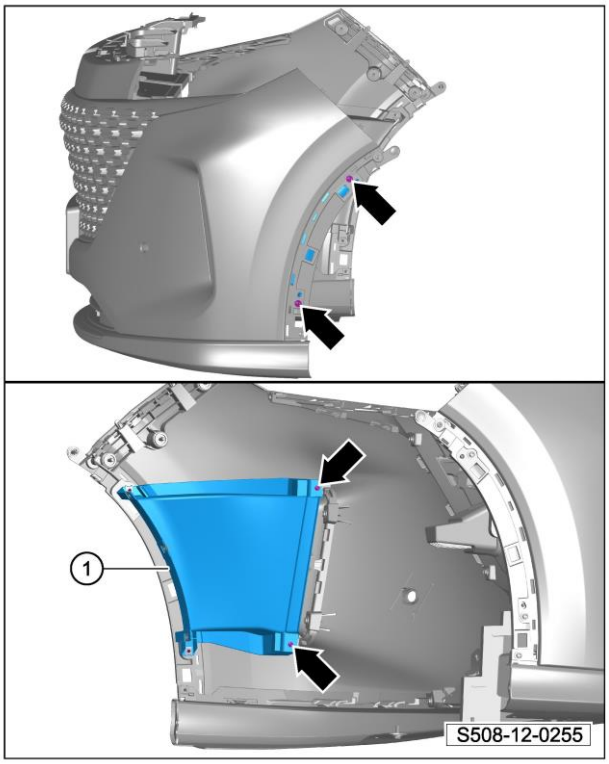
Tip:

The removal and installation procedures are only for the front bumper air duct (left), which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the front bumper air duct

a. Unscrew the fixing screws (see arrow A) and remove the front bumper air duct ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.10 Removal and installation of front bumper deflector

Disassembly procedures

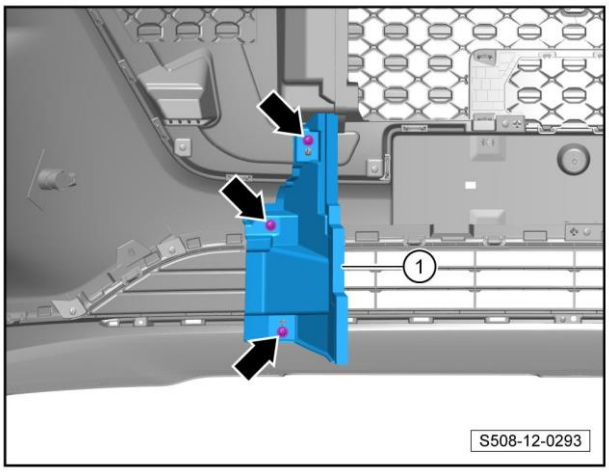
Tip:

The removal and installation procedures are only for the front left bumper deflector, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the front bumper deflector

a. Unscrew the fixing screws (see arrow A) and remove the front bumper deflector ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

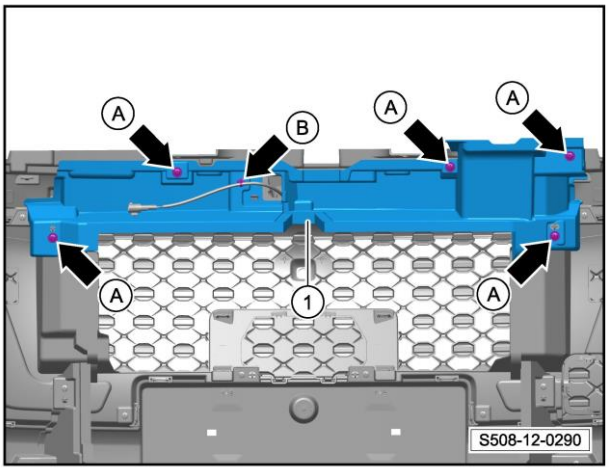
9.4.3.11 Removal and installation of front bumper upper deflector

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

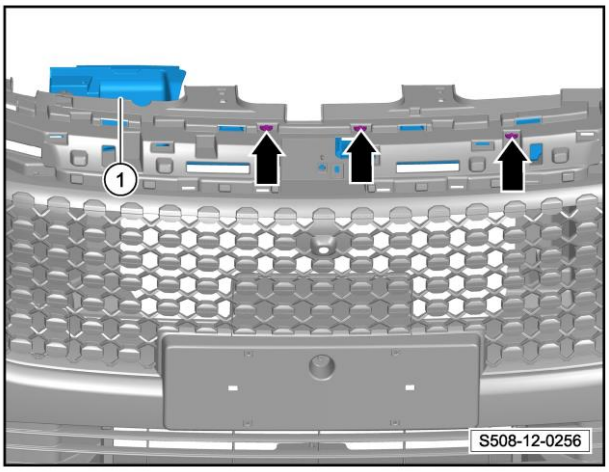
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the front bumper upper deflector

a. Unscrew the fixing screws (see arrow A) on the front bumper deflector ① and disengage the fixing clip (see arrow B) on the logo front assembly harness.



b. Disengage the fixing clips (see the arrow) and remove the front bumper upper deflector ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.12 Removal and installation of front bumper mounting bracket

Disassembly procedures

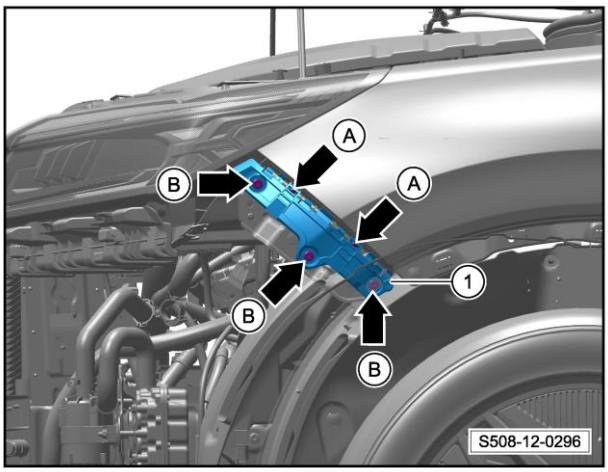
Tip:

The removal and installation procedures are only for the front left bumper mounting bracket, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the front bumper mounting bracket

a. Unscrew the fixing screws (see arrow A) and bolts (see arrow B) and remove the front bumper mounting bracket ①.

- Tightening torque of bolt: 6±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

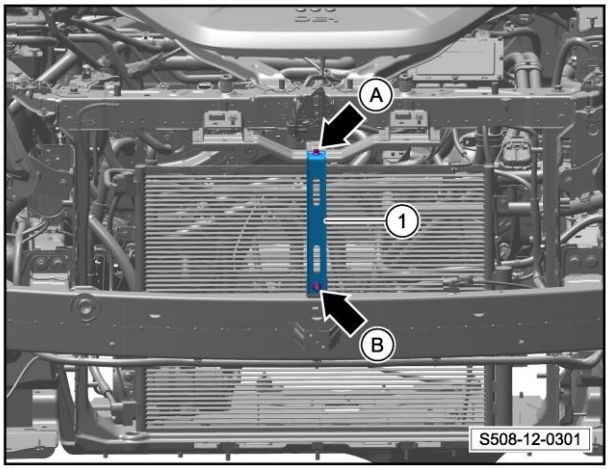
9.4.3.13 Removal and installation of vertical I beam

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories



4 Remove the vertical I beam

a. Unscrew the fixing bolt of I-beam ① (see arrow A).

b. Unscrew the fixing nut (see arrow B) and take out the vertical I-beam ①.

- Tightening torque of bolt (see arrow A): 25±2 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.4.3.14 Removal and installation of frame front crossmember assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove and install the engine compartment trim panel assembly (front). Refer to 9.2.3.3 Removal and installation of engine compartment trim panel assembly (front)

4 Remove and install the engine compartment trim panel assembly (middle). Refer to 9.2.3.4 Removal

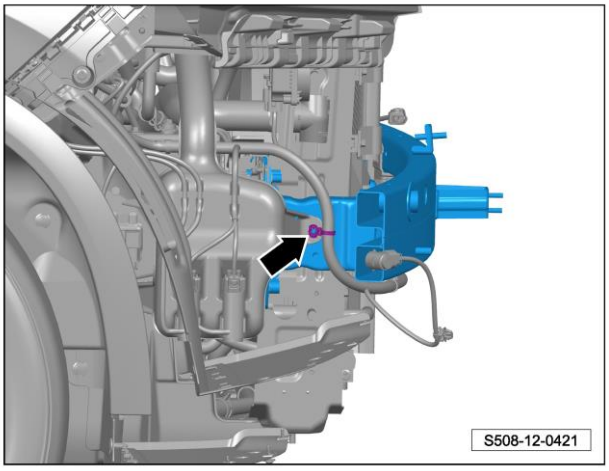
and installation of engine compartment trim panel assembly (middle)

5 Remove and install the front engine compartment trim panel assembly II (left). Refer to 9.2.3.5 Removal and installation of engine compartment trim panel assembly II (left)

6 Remove and install the front engine compartment trim panel assembly II (right). Refer to 9.2.3.6 Removal and installation of engine compartment trim panel assembly II (right)

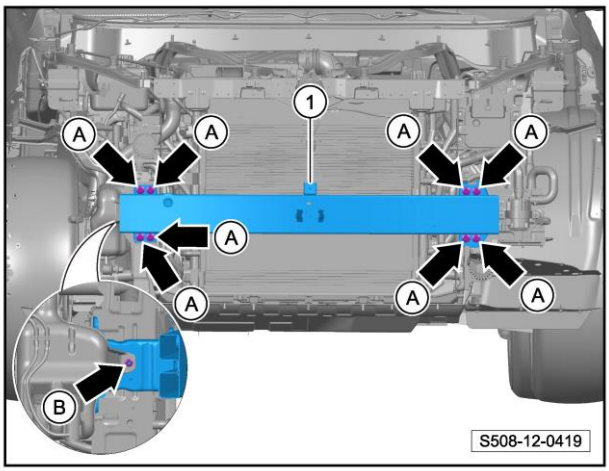
7 Remove the front bumper assembly with accessories. Refer to 9.4.3.1 Removal and installation of front bumper assembly with accessories

8 Remove the vertical I-beam. Refer to 9.4.3.13 Removal and installation of vertical I-beam

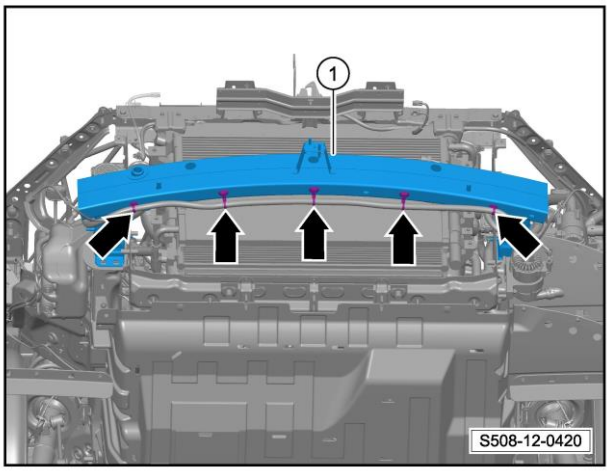


9 Remove the frame front crossmember assembly

a. Disengage the fixing clip (see the arrow) of the engine compartment harness.



b. Unscrew the fixing bolts (see arrow A) and fixing nut (see arrow B) of the front crossmember assembly ① of the frame.



c. Disengage the fixing clips of the engine compartment harness (see the arrow) and remove the front crossmember assembly ① of the frame.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.5 Rear bumper

9.5.1 Specification

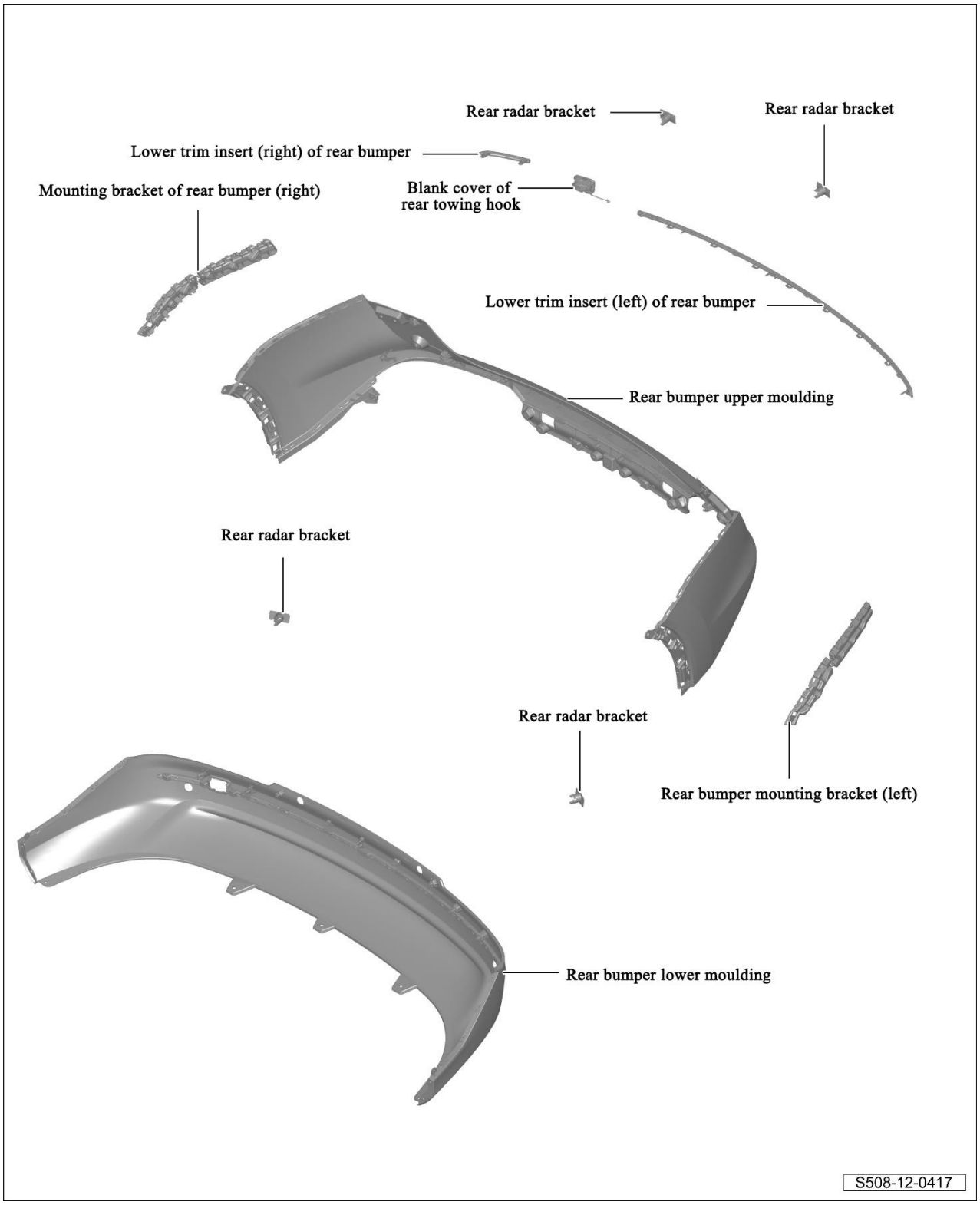
9.5.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Rear bumper harness grounding	Hexagon head bolt c/w plain washer cluster	10±0.5
Connection between rear bumper and frame crossmember	Cross recessed hexagon head and big plain washer assembly bolt M6×18	6±1
Rear bumper mounting bracket	Cross recessed hexagon head flange bolt M6×20	6±1
Frame rear crossmember assembly	Hexagon head flange bolt M8×25	25±2

9.5.2 Exploded view

9.5.2.1 Exploded view

Exploded view



9.5.3 Removal and installation

9.5.3.1 Removal and installation of rear bumper assembly with accessories

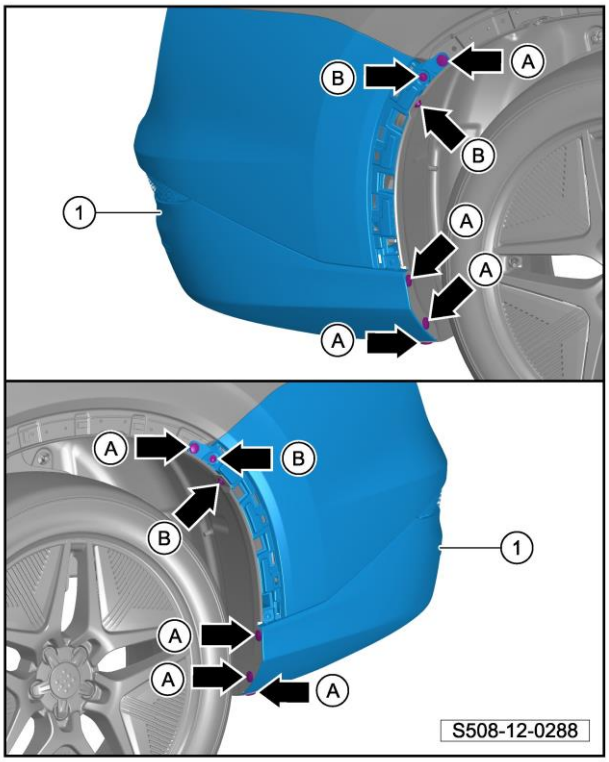
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear left/right wheel arch trim. Refer to 9.15.2.2 Removal and installation of rear wheel arch trim assembly

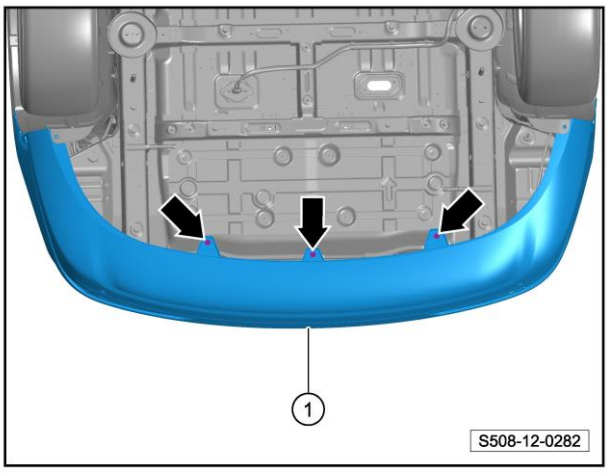
4 Remove the door lift gate checkstrap. Refer to 9.3.3.8 Removal and installation of door lift gate checkstrap



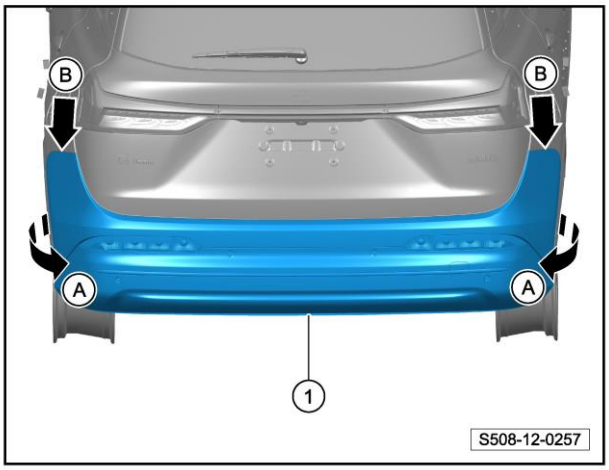
5 Remove the rear bumper assembly with accessories

a. Disengage the left/right fixing clips (see arrow A) of the rear bumper assembly ①.

b. Unscrew the fixing screws (see arrow B) on the left and right sides of the rear bumper assembly ①.



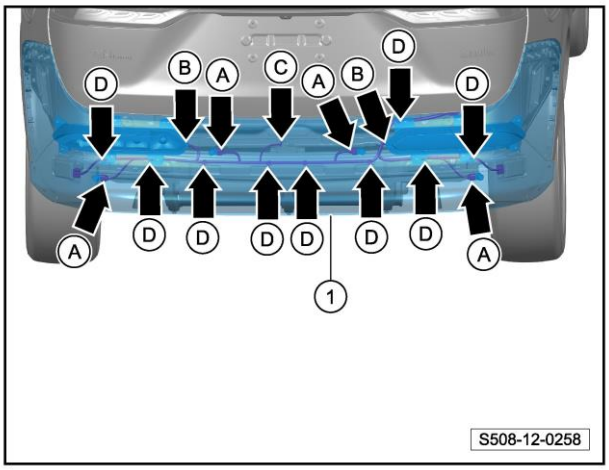
c. Unscrew the fixing bolts (see the arrows) at the bottom of the rear bumper assembly ①.



d. With the assistance of another technician, disengage the rear bumper assembly from the rear bumper mounting bracket in the direction of arrow A, disengage the fixing clips (see arrow B) and move out the rear bumper assembly ①.

Tip:

When disengaging the rear bumper assembly, pay attention to avoiding damage to the harness of the rear bumper assembly.



e. Disconnect the ultrasonic radar connectors (see arrow A), the rear bumper combination light assembly connectors (see arrow B), and the PS antenna assembly connector (see arrow C).

f. Disengage the clips of the rear bumper harness assembly (see arrow D) and remove the rear bumper assembly with accessories ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

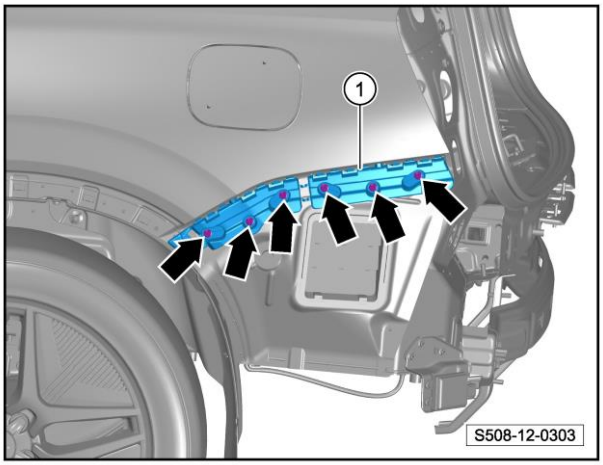
9.5.3.2 Removal and installation of rear bumper mounting bracket

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left bumper mounting bracket, which can be basically referred to for the rear right one.

1 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



2 Remove the rear bumper mounting bracket.

a. Unscrew the fixing screws (see the arrows) of the rear bumper mounting bracket and remove the rear bumper mounting bracket ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.5.3.3 Removal and installation of rear bumper upper moulding

Disassembly procedures

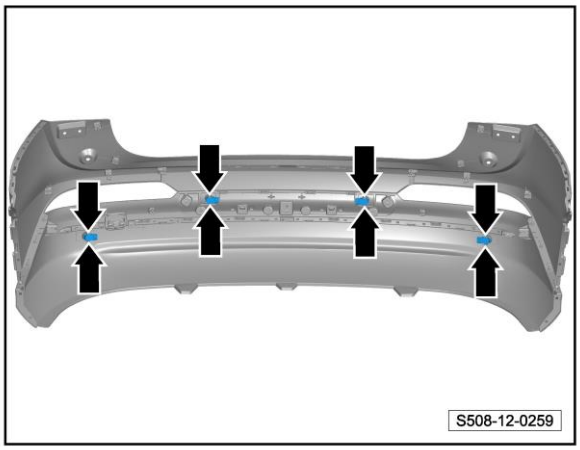
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories

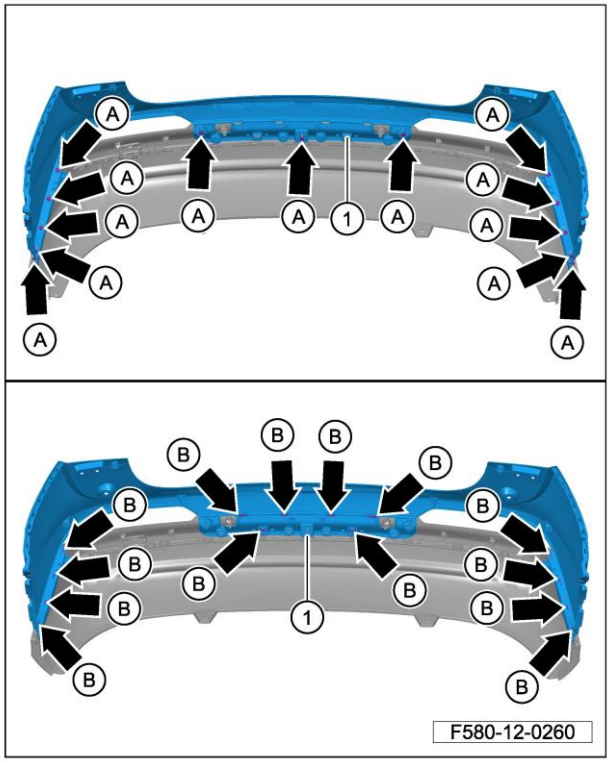
4 Remove the rear bumper rear combination light assembly. Refer to 8.3.5.4 Removal and installation of rear bumper rear combination light assembly

5 Remove PS antenna (rear bumper side). Refer to 8.28.6.5 Removal and installation of PS antenna (rear bumper side)



6 Remove the rear bumper upper moulding

a. Disengage the fixing clip at the arrow position and remove the ultrasonic sensor ① (rear bumper side).



b. Unscrew the fixing screws (see arrow A) of the rear bumper upper moulding ①.

c. Disengage the fixing clips (see arrow B) and remove the rear bumper upper moulding ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.5.3.4 Removal and installation of rear bumper lower moulding

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with

accessories

4 Remove the ultrasonic sensor (rear bumper side). Refer to 8.20.4.2 Removal and installation of ultrasonic sensor (rear bumper side)

5 Remove the rear bumper lower trim inserts. Refer to 9.5.3.5 Removal and installation of rear bumper lower trim inserts

6 Remove the rear bumper lower moulding

a. Remove the rear bumper lower moulding. Refer to 9.5.3.3 Removal and installation of rear bumper upper moulding

Installation procedures

The installation procedure is to be performed basically in the reverse order:

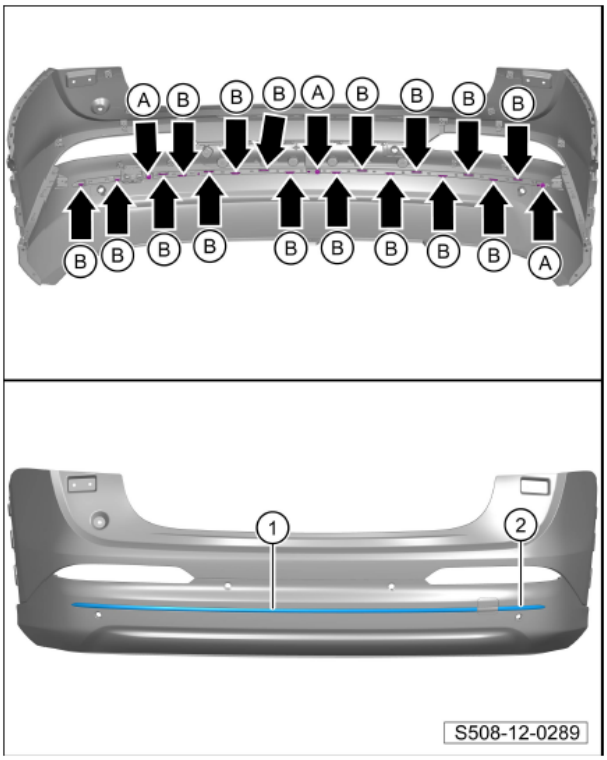
9.5.3.5 Removal and installation of rear bumper lower trim inserts

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



4 Remove the rear bumper lower trim inserts

a. Unscrew the fixing screws (see arrow A) and disengage the fixing clips (see arrow B).

b. Remove the rear bumper lower trim insert (left) ① and the rear bumper lower trim insert (right) ②.

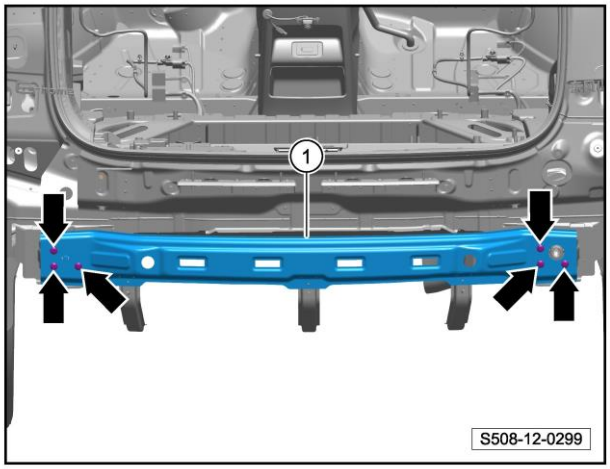
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.5.3.6 Removal and installation of frame rear crossmember assembly

Disassembly procedures

1 Remove the rear bumper assembly with accessories. Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



2 Remove the frame rear crossmember assembly

a. Unscrew the fixing bolts (see the arrow) and remove the rear crossmember assembly ① of the frame.

- Tightening torque of bolt: 25±2 N·m

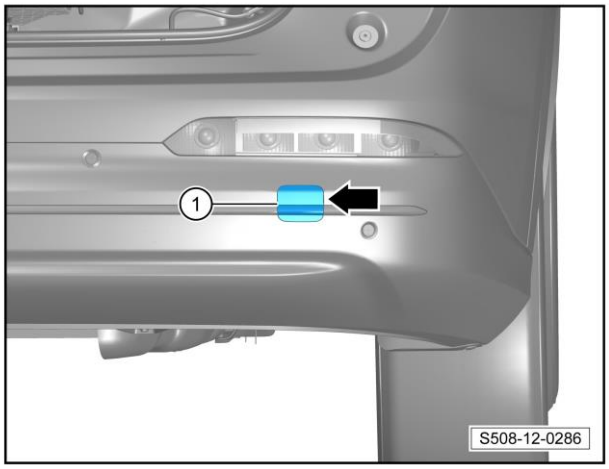
Installation procedures

The installation procedure is to be performed

basically in the reverse order:

9.5.3.7 Removal and installation of rear towing hook blank cover

Disassembly procedures



1 Remove the rear towing hook blank cover

a. Disengage the fixing clip at the arrow position, and remove the rear towing hook blank cover ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6 Front door

9.6.1 Specification

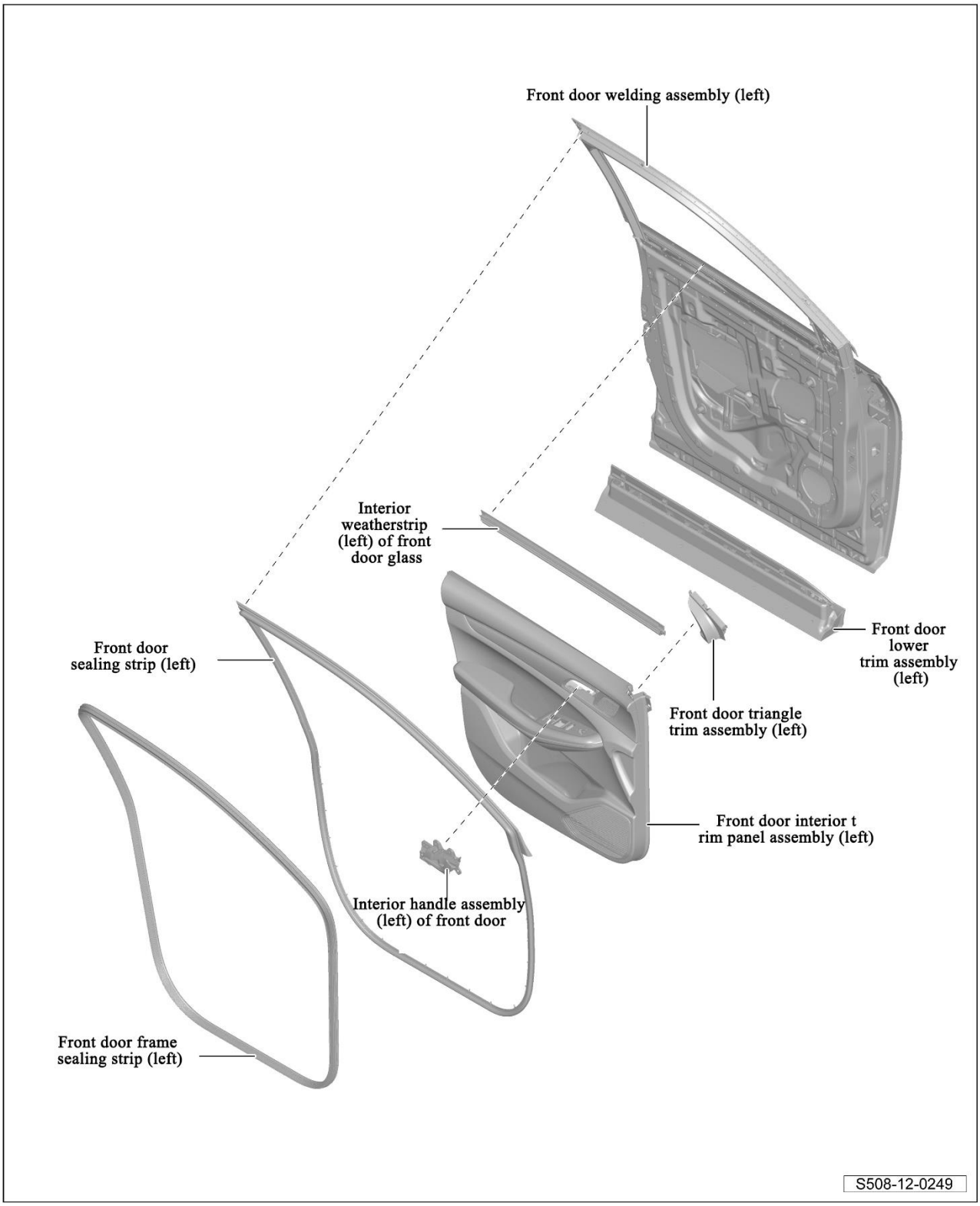
9.6.1.1 Fastener specifications

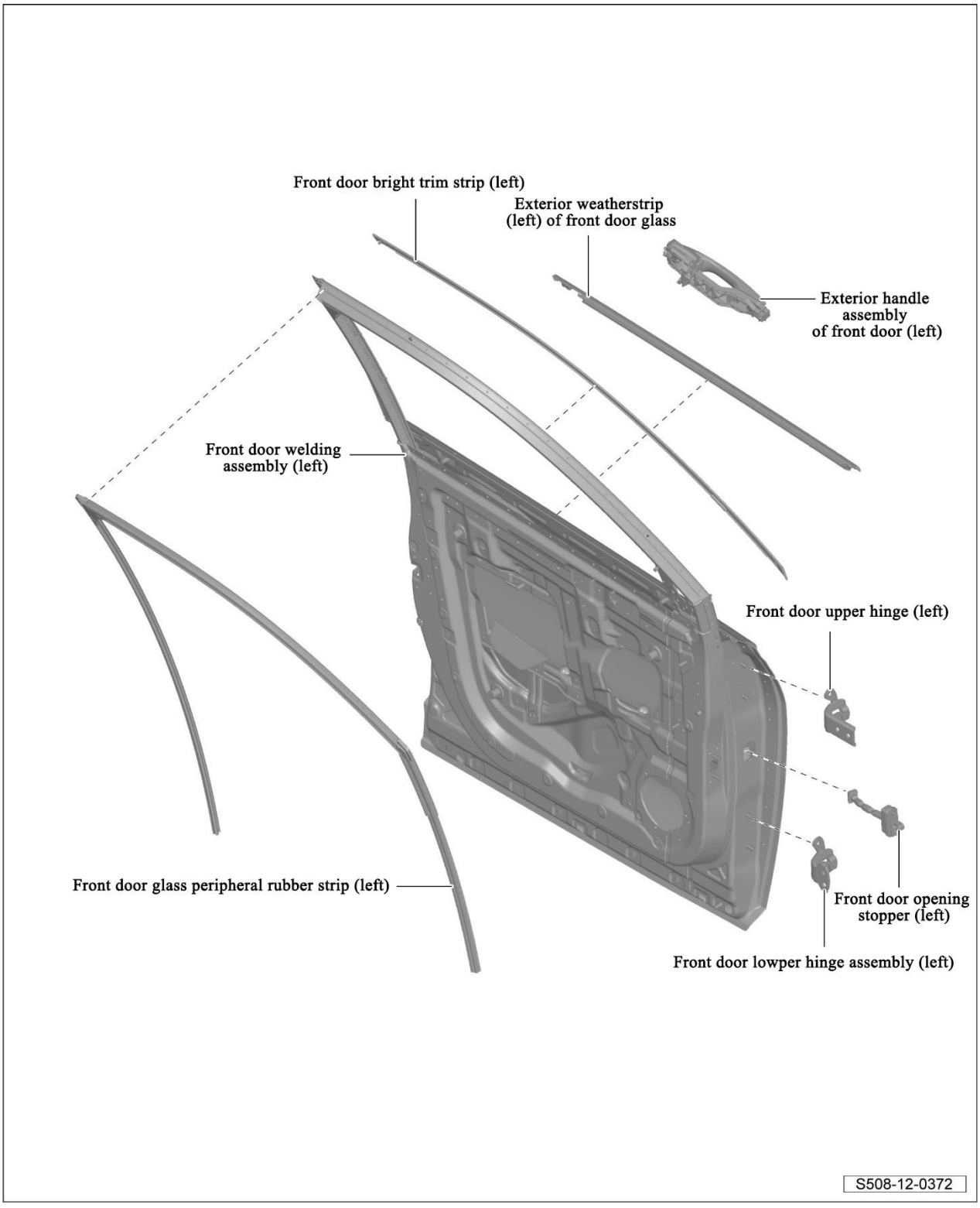
Tightening position	Specification	Tightening torque: N·m
Connection between front door upper hinge and body	Glued hexagon head flange bolt M8×1.25×27	35±3
Connection between front door upper hinge and door	Glued hexagon head flange bolt M8×1.25×27	35±3
Connection of front door checkstrap and body	Hexagon head flange bolt M8 ×25 with guiding spring and plain washers	30±3
Connection between front door opening checkstrap and door	Hexagon nut and conical spring washer cluster M6	10±1
Connection between front door lockpin assembly and body	Glued hexagon lobular socket countersunk head screw M8×20	20±2
Connection between front door lower trim and door	Cross recessed mushroom head tapping screw	2±1
Connection between door interior trim panel and mounting bracket	Cross recessed mushroom head tapping screw	6±1

9.6.2 Exploded view

9.6.2.1 Exploded view

Exploded view of front door




Front door bright trim strip (left)
Exterior weatherstrip (left) of front door glass
Exterior handle assembly of front door (left)
Front door welding assembly (left)
Front door upper hinge (left)
Front door glass peripheral rubber strip (left)
Front door opening stopper (left)
Front door lowper hinge assembly (left)
S508-12-0372

9.6.3 Removal and installation

9.6.3.1 Removal and installation of front door assembly

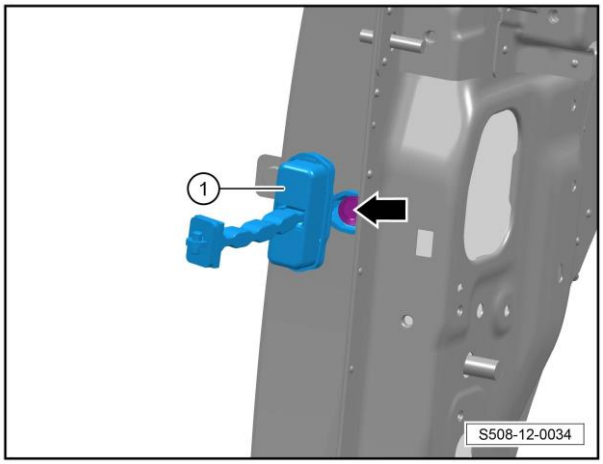
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door assembly, which can be basically referred to for the front right one.

1 Turn off all the electrical appliances and turn off the Start switch.

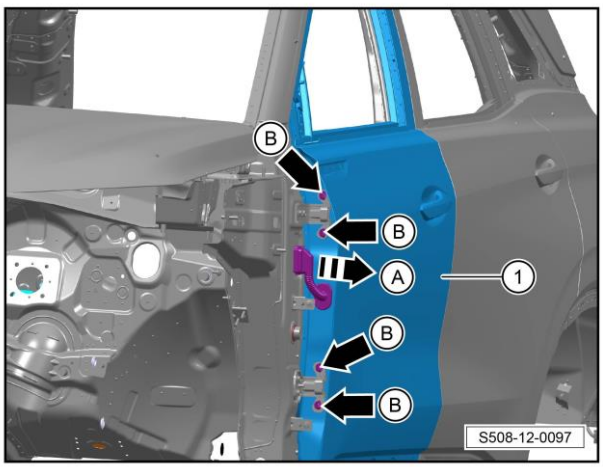
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the front door assembly

a. Unscrew the fixing bolts (see the arrows) of front door opening checkstrap ① (on the body).

- Tightening torque of bolt: 30±3 N·m



b. Disconnect the front door harness connector in the direction of arrow A.

c. Unscrew the fixing bolts (see arrow B) and remove the front door assembly ①.

- Tightening torque of bolt (see arrow B): 35±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.2 Removal and installation of front door upper hinge

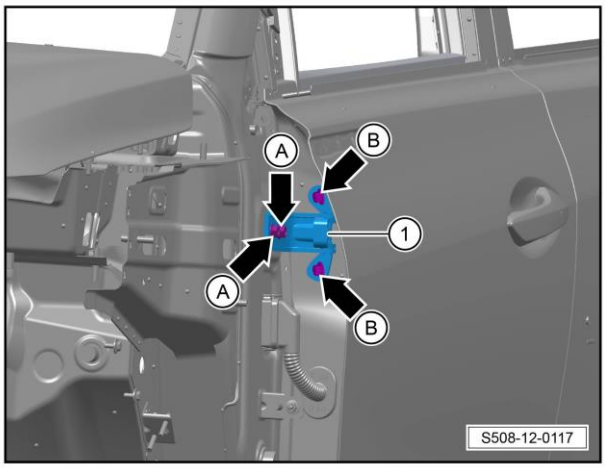
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door upper hinge, which can be basically referred to for the front right one and the front door lower hinge.

For removal of the front door hinge, the removal and installation shall be done with the assistance of another technician.

1 Remove the front left fender component. Refer to 9.2.3.19 Removal and installation of fender component



2 Remove the front door upper hinge

a. Unscrew the fixing bolts (see arrows A and B) and take out the front door upper hinge ①.

- Tightening torque of bolt (see arrow **A**): **35±3 N·m**
- Tightening torque of bolt (see arrow B): 35±3 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

After installation, adjust the front door assembly. Refer to 9.6.3.19 Adjustment of front door assembly

9.6.3.3 Removal and installation of front door opening checkstrap

Disassembly procedures

Tip:

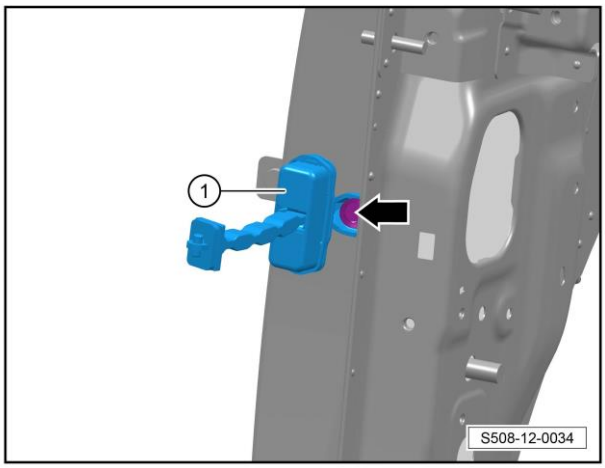
The removal and installation procedures are only for the front left door opening checkstrap, which can be basically referred to for the front right one.

1 Raise the front door glass to the highest position.

2 Remove the front left door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

3 Remove the front door low-pitched loudspeaker. Refer to 8.2.6.3 Removal and installation of front

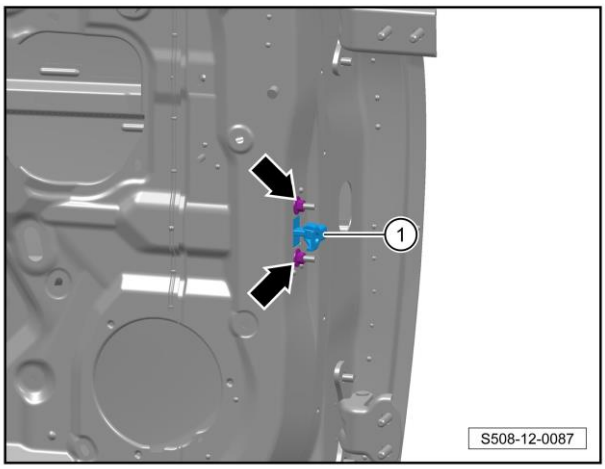
door low-pitched loudspeaker



4 Remove the front door opening checkstrap

a. Unscrew the fixing bolts (see the arrows) of front door opening checkstrap ①.

- Tightening torque of bolt: 30±3 N·m



b. Unscrew the fixing nuts (see the arrow) of front door opening checkstrap and take out the front door opening checkstrap ①.

- Tightening torque of nut: 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.4 Removal and installation of front door lock cylinder assembly

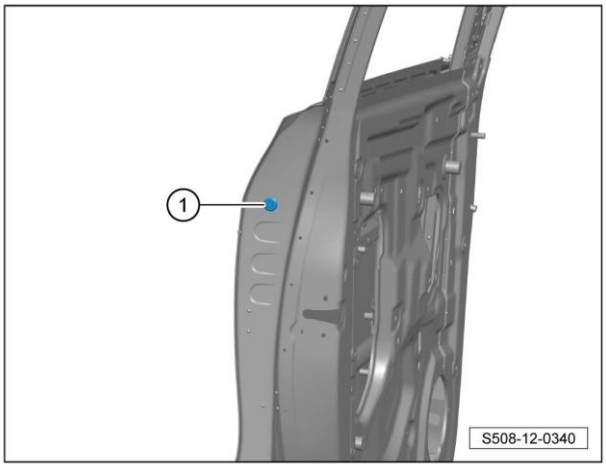
Disassembly procedures

Tip:

Only the driver side door has a lock cylinder.

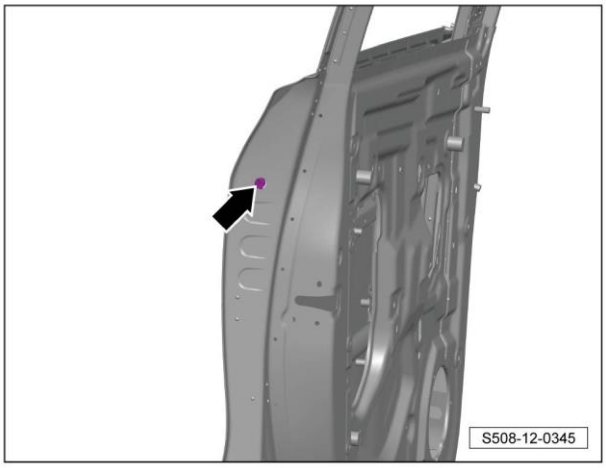
1 Raise the front door glass to the highest position.

2 Remove the front left door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

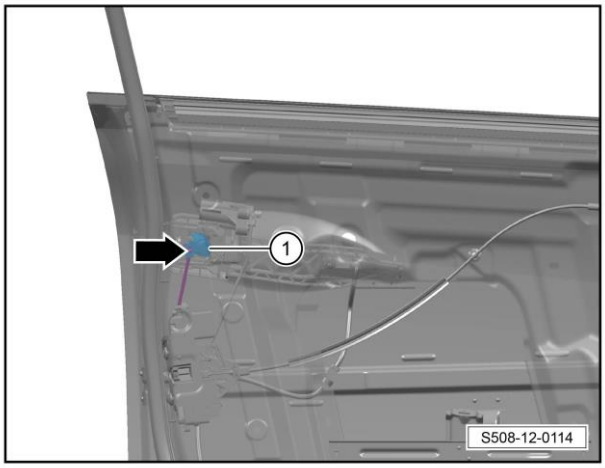


3 Remove the front door lock cylinder assembly

a. Remove the bolt blank cover ① of the front door lock cylinder.



b. Loosen the fixing bolt (see the arrow) of the front door lock cylinder.



c. Open one corner of front door waterproof film.

d. Disconnect the connecting push rod of the front door lock cylinder assembly (see the arrow) from the front left door lock cylinder ① assembly.

e. Pull open the front exterior door handle and remove the front door lock cylinder assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.5 Removal and installation of front left exterior door handle

Disassembly procedures

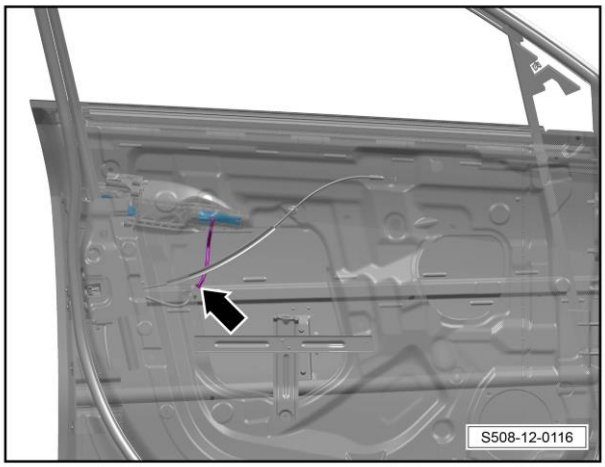
1 Raise the front door glass to the highest position.

2 Turn off all the electrical appliances and turn off the Start switch.

3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the front left door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

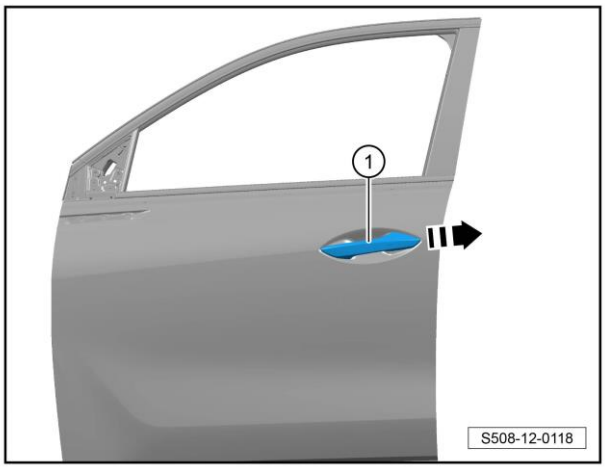
5 Remove the front door lock cylinder assembly. Refer to 9.6.3.4 Removal and installation of front door lock cylinder assembly



6 Remove the front exterior door handle

a. Open one corner of front door waterproof film.

b. Disconnect the connector (see the arrow) of the front left exterior door handle.



c. Pull open the front left exterior door handle and remove the front exterior door handle ① in the direction of arrow at the same time.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, check the functions with the door open.

9.6.3.6 Removal and installation of front exterior door handle bracket

Disassembly procedures

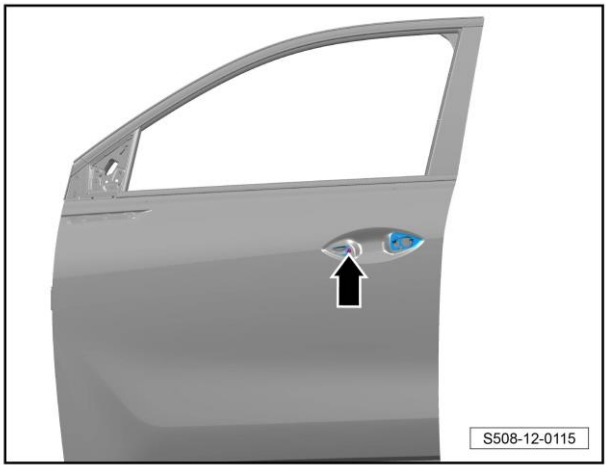
Tip:

The removal and installation procedures are only for the front left door exterior handle bracket, which can be basically referred to for the front right one.

1 Remove the front left door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly

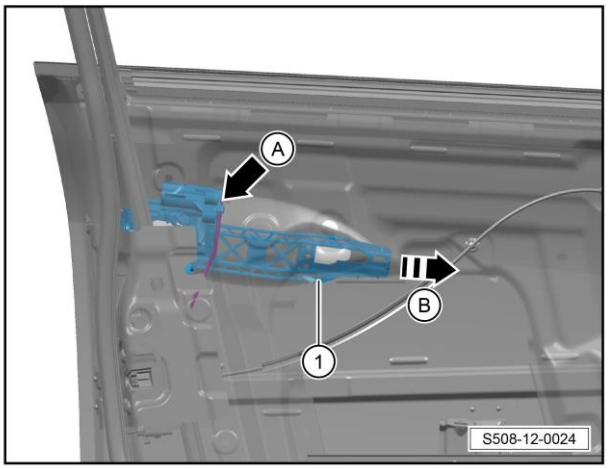
2 Remove the front left door waterproof film. Refer to 9.6.3.18 Removal and installation of front door waterproof film

3 Remove the front left exterior door handle. Refer to 9.6.3.5 Removal and installation of front left exterior door handle



4 Remove the front exterior door handle bracket

a. Unscrew the fixing screws (see the arrows) of the front exterior door handle bracket.



b. Disengage the fixing clip (see arrow A) and disengage the front door exterior handle connecting rod from the front door exterior handle bracket ①.

c. Remove the exterior front door handle bracket ① in direction of arrow B.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

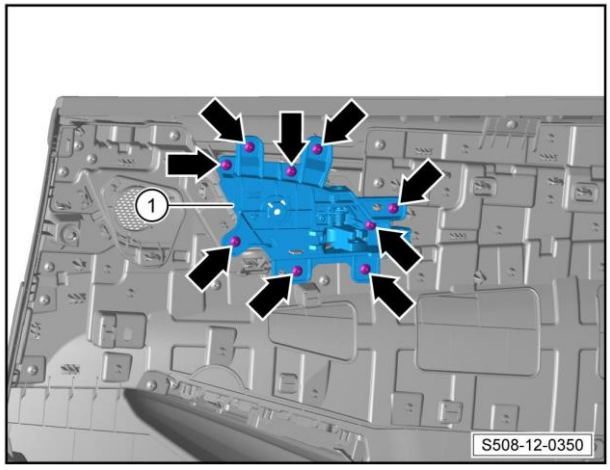
9.6.3.7 Removal and installation of front door interior handle assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door interior handle assembly, which can be basically referred to for the front right one.

1 Remove the front left door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly



2 Remove the front door interior handle assembly

a. Unscrew the fixing screws (see the arrow) and remove the front door interior handle assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.8 Removal and installation of exterior weatherstrip of front door glass

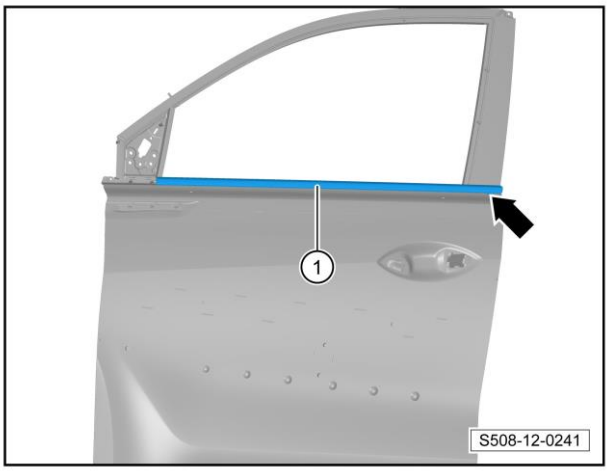
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door glass outer weatherstrip, which can be basically referred to for the front right one.

1 Remove the left exterior rearview mirror. Refer to 8.6.4.1 Removal and installation of exterior rearview mirror assembly

2 Lower the door glass to the lowest position.



3 Remove the exterior weatherstrip of front door glass

a. Disengage the fixing clip (see the arrow) of the exterior weatherstrip of front door glass, and remove the exterior weatherstrip ① of front door glass.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.9 Removal and installation of interior weatherstrip of front door glass

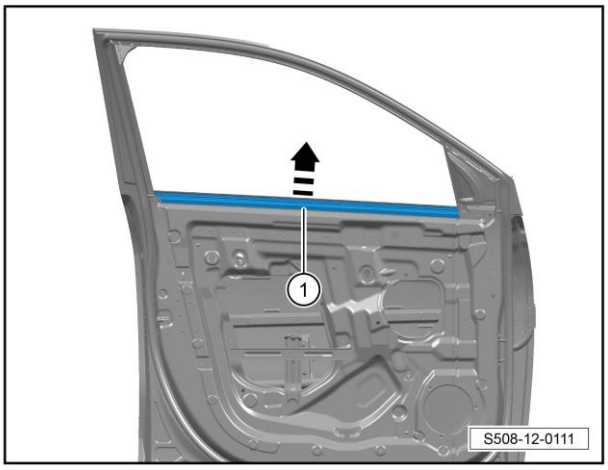
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door window weatherstrip, which can be basically referred to for the front right one.

1 Lower the front door glass to the lowest position.

2 Remove the front left door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly



3 Remove the interior weatherstrip of front door glass

a. Remove the interior weatherstrip of front door glass ① in direction of the arrow.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

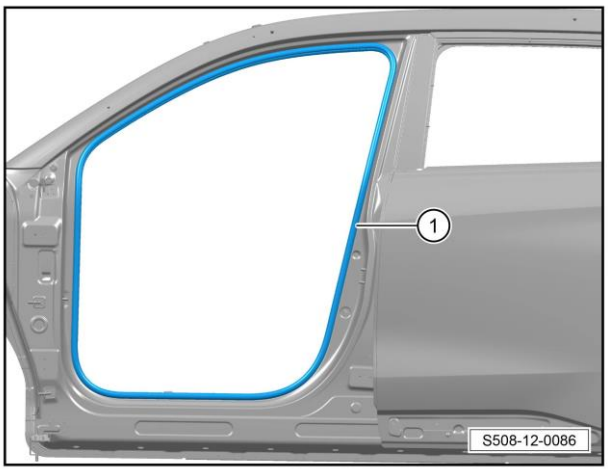
9.6.3.10 Removal and installation of front door frame sealing strip

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door frame sealing strip, which can be basically referred to for the front right one.

1 Remove the front left door sill assembly. Refer to 9.14.2.18 Removal and installation of front door sill assembly



2 Remove the front door frame sealing strip

a. Remove the front door frame sealing strip ① from the protruding edge of the body.

Installation procedures

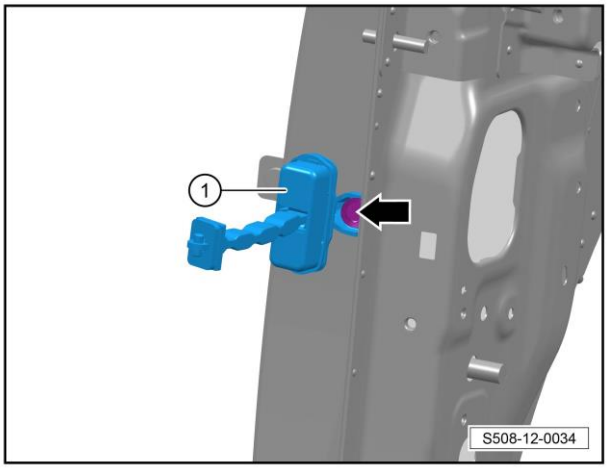
The installation procedure is to be performed basically in the reverse order:

9.6.3.11 Removal and installation of front door sealing strip

Disassembly procedures

Tip:

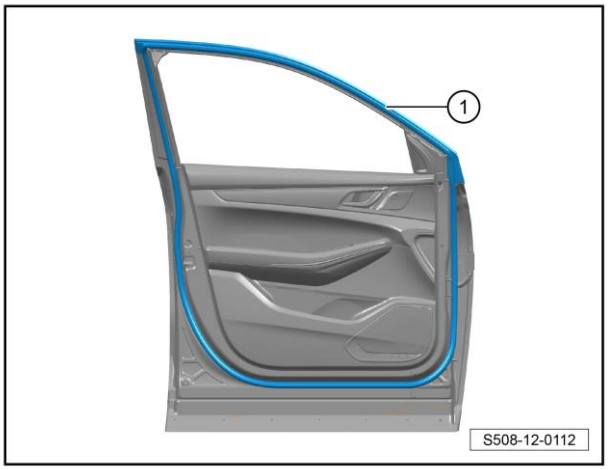
The removal and installation procedures are only for the front left door sealing strip, which can be basically referred to for the front right one.



1 Remove the front door weatherstrip

a. Unscrew the fixing bolt (see the arrow) of the front door checkstrap ① (body side).

- Tightening torque of bolt: 30±3 N·m



b. Disengage the fixing clip of the front door rubber strip and remove the front door sealing strip ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

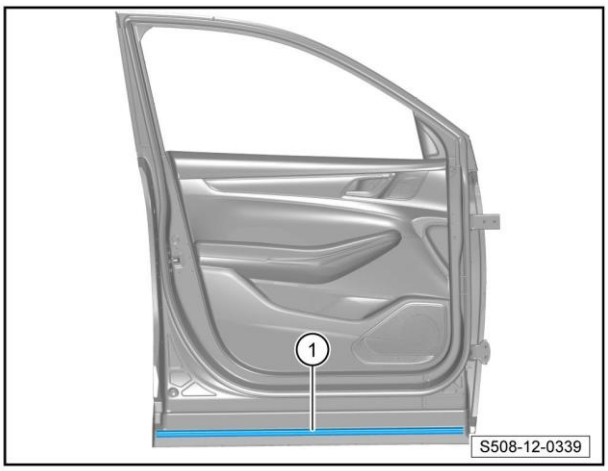
– Check whether the fixing clip is damaged and replace it with a new one if necessary.

9.6.3.12 Removal and installation of front door lower mudguard rubber strip

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door lower mudguard rubber strip, which can be basically referred to for the front right one.



1 Remove the front door lower mudguard rubber strip

a. Open the front door.

b. Use the removal wedge to remove the front door lower mudguard rubber strip ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.13 Removal and installation of front door bright trim strip

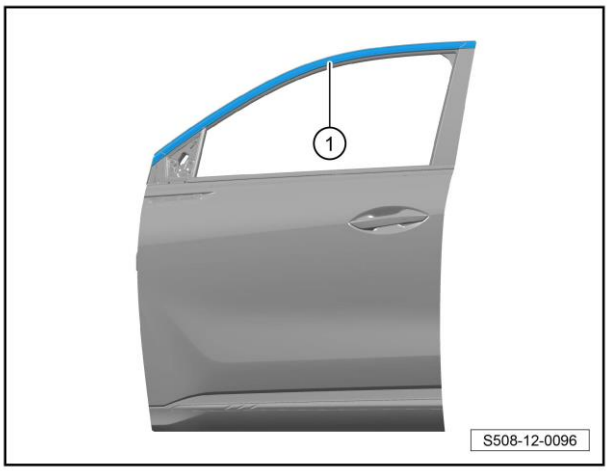
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door bright trim strip, which can be basically referred to for the front right one.

The front door bright trim strip is easily deformed when it is removed, so it is recommended to replace it with new one after removal.

1 Remove the exterior rearview mirror assembly. Refer to 8.6.4.1 Removal and installation of exterior rearview mirror assembly



2 Remove the front door bright trim strip

a. Use the removal wedge to remove the front door bright trim strip ①.

Installation procedures

Perform the installation procedures in the reverse

order of removal procedures and pay attention to the following items:

– Remove the old double-sided adhesive tape from the installation position of the front door bright trim strip on the body.

– Remove the residual old double-sided adhesive tape of the front door bright trim strip.

– Install the new double-sided adhesive tape of the front door bright trim strip.

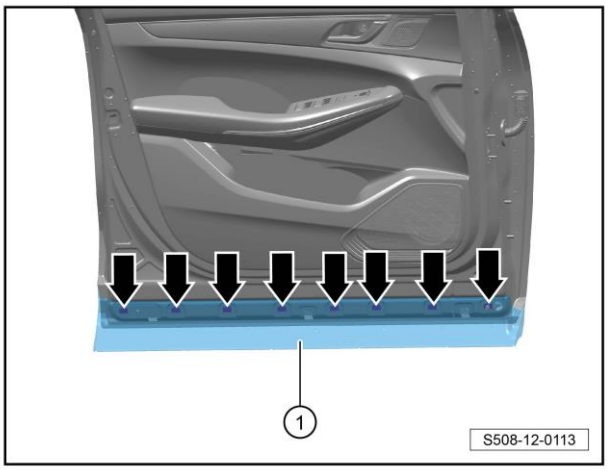
9.6.3.14 Removal and installation of front door lower trim assembly

Disassembly procedures

Tip:

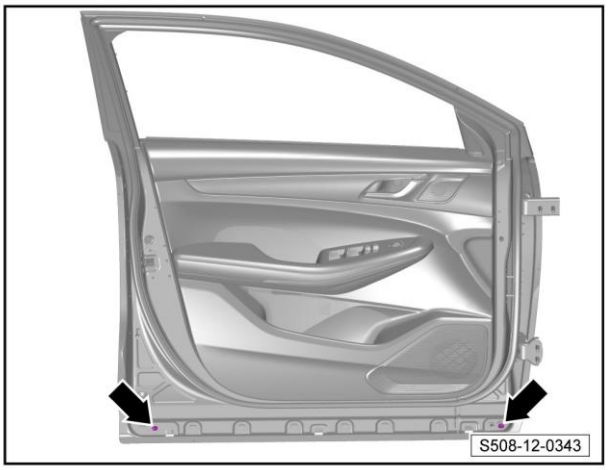
The removal and installation procedures here are only for the lower trim assembly of the front left door, which can be basically referred to for the front right one.

1 Open the front door.



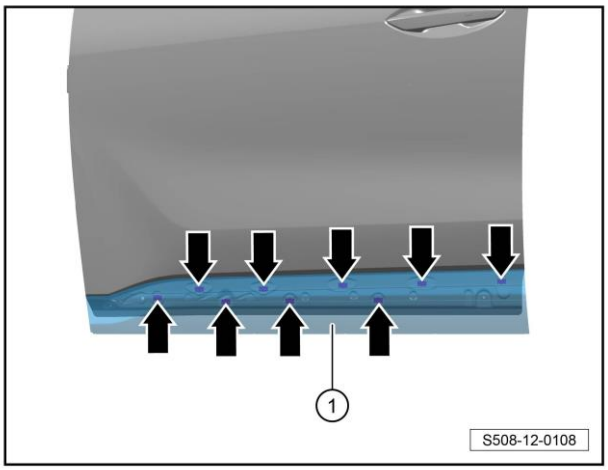
2 Remove the front door lower trim assembly

a. Disengage the inner fixing clip (see the arrow) of the front door lower trim assembly ①.



b. Unscrew the fixing screw (see the arrow) of the front door lower trim assembly.

- Tightening torque of screw: 2±1 N·m



c. Disengage the outer fixing clip (see the arrow) of the front door lower trim assembly and remove the front door lower trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

Check the fixing clip. If it is damaged, replace it with a new one.

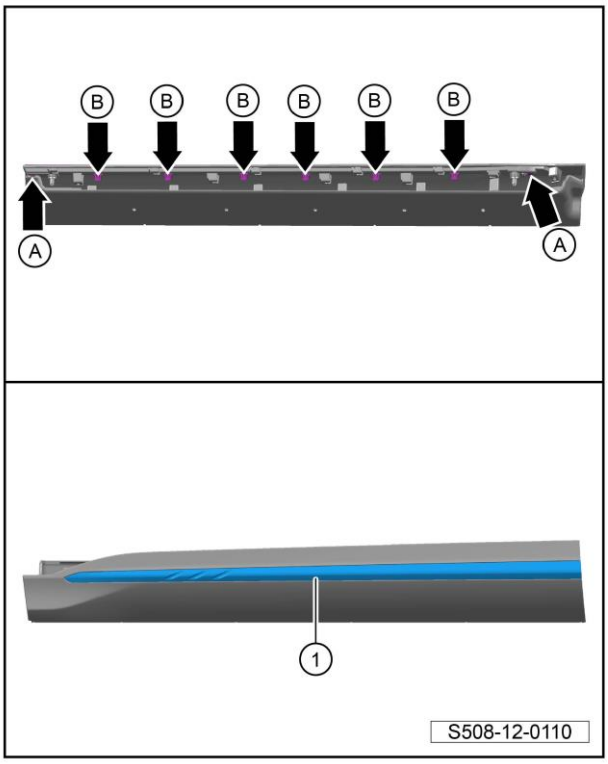
9.6.3.15 Removal and installation of front door lower trim (strip)

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door lower trim strip, which can be basically referred to for the front right one.

1 Remove the front door lower trim assembly. Refer to 9.6.3.14 Removal and installation of front door lower trim assembly



2 Remove the front door lower trim (strip)

a. Unscrew the fixing screws (see arrow A) of front door lower trim (strip).

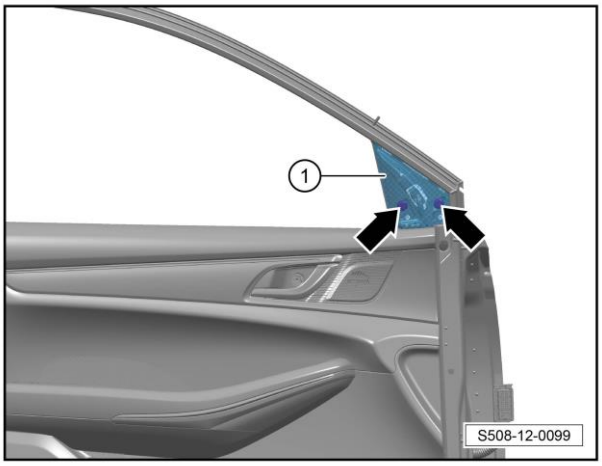
b. Disengage the fixing clips (see arrow B) and remove the front door lower trim strip ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.16 Removal and installation of front door triangular trim assembly

Disassembly procedures



1 Remove the front door triangular trim assembly

a. Disengage the fixing clips (see the arrow) and remove the front door triangle trim assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.17 Removal and installation of front door

interior trim panel assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door interior trim panel assembly, which can be basically referred to for the front right one.

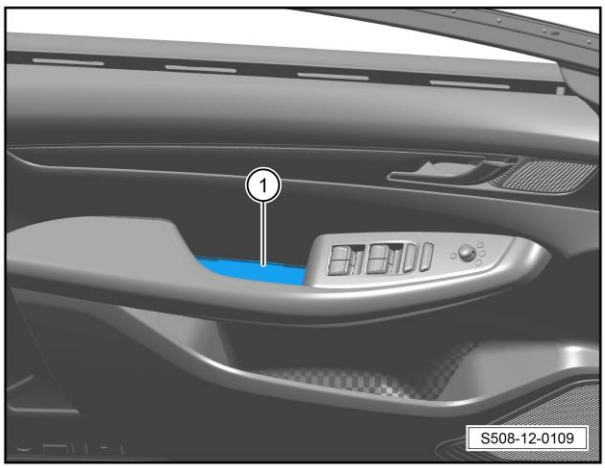
The internal release handle bolt trim cover must be removed with a straight screwdriver or a removal wedge wrapped with soft cloth to avoid damaging the door trim panel assembly.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

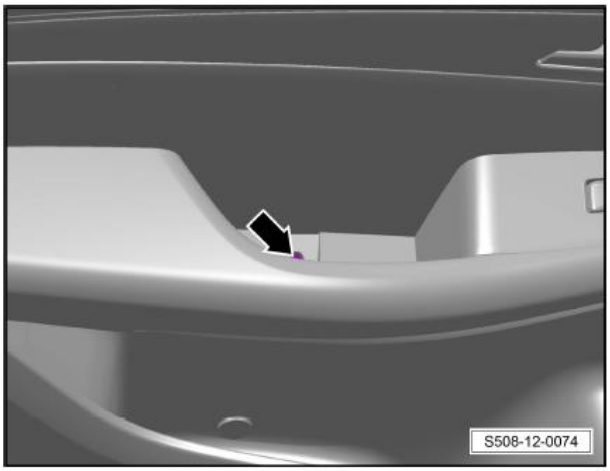
3 Open the front door.

4 Remove the front door triangle trim assembly. Refer to 9.6.3.16 Removal and installation of front door triangle trim assembly



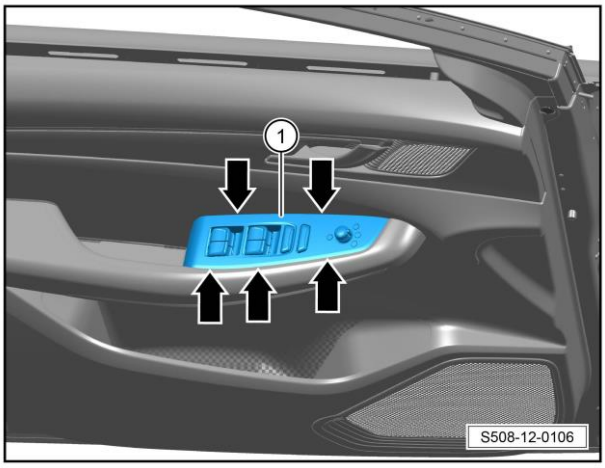
5 Remove the front door interior trim panel assembly

a. Take out the rubber gasket ① of the front door armrest cover plate.

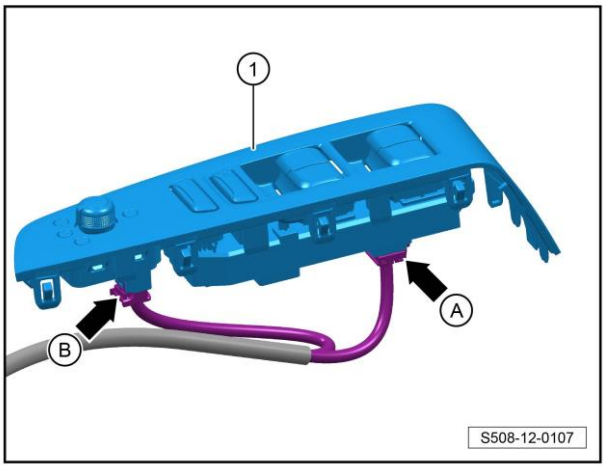


b. Unscrew the fixing screw (see arrow A) of the front door interior trim panel assembly.

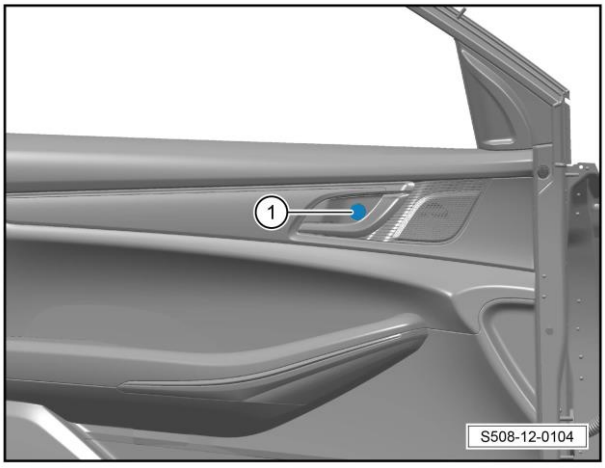
- Tightening torque of screw: **6±1 N·m**



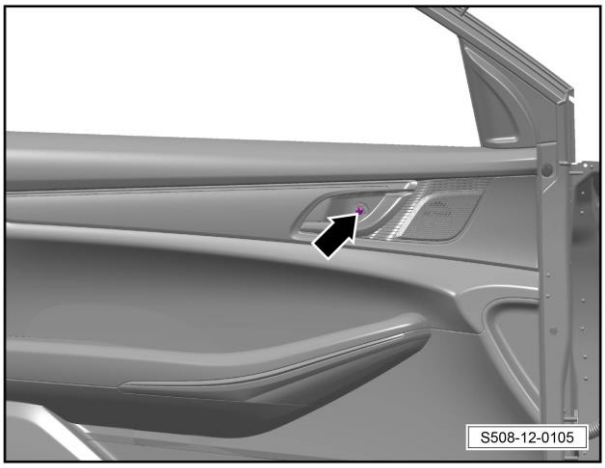
c. Use the removal wedge to remove the front door switch cover plate ① (see the arrow).



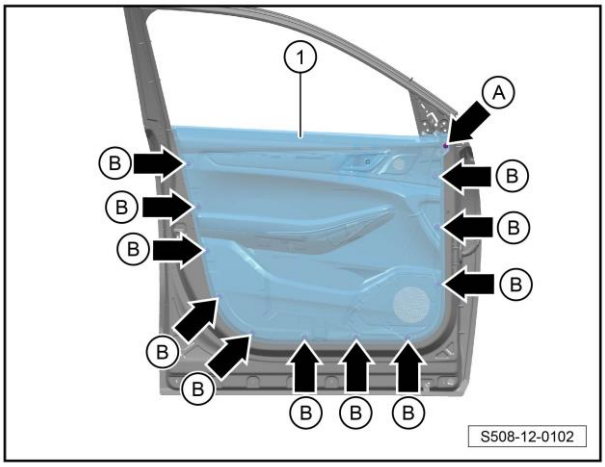
d. Disconnect the connectors (see arrows A and B) and remove the front door switch cover ①.



e. Remove the internal release handle screw trim cover ①.

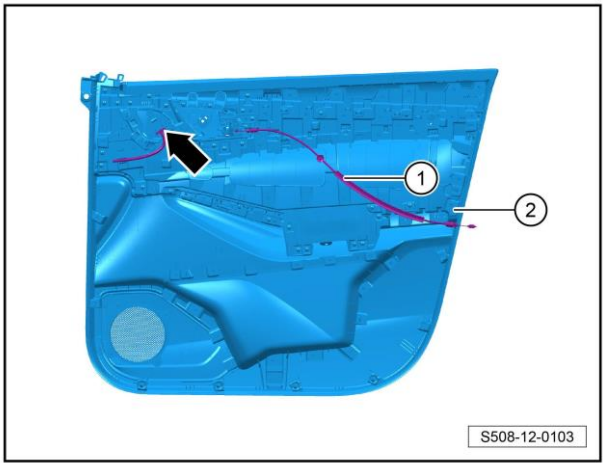


f. Unscrew the fixing screw (see the arrow) of the front door interior trim panel assembly.



g. Disengage the fixing clips (see arrows A and B) of the front door interior trim panel assembly.

h. Remove the front door interior trim panel assembly ①.



i. Disconnect the connector (see the arrow) of the loudspeaker.

j. Disengage the front door internal release cable ① from the front door trim panel and remove the front door inner trim panel assembly ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

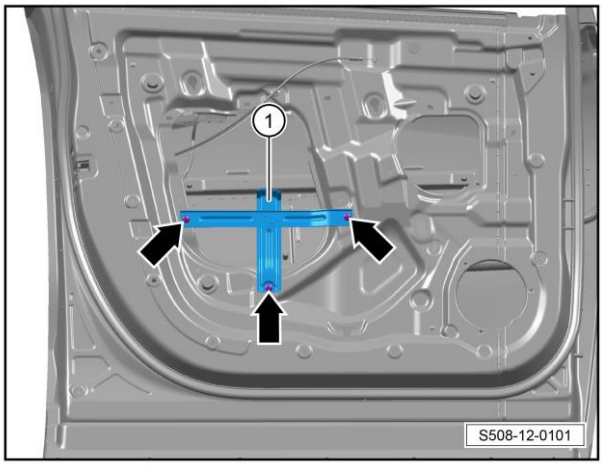
9.6.3.18 Removal and installation of front door waterproof film

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

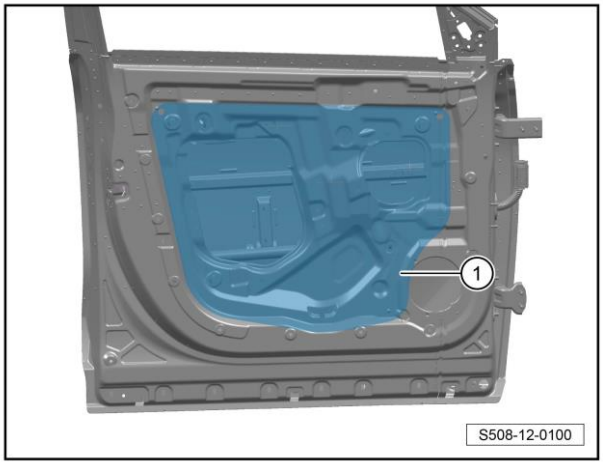
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the front door interior trim panel assembly. Refer to 9.6.3.17 Removal and installation of front door interior trim panel assembly



4 Remove the front door water deflector

a. Unscrew the fixing screws (see the arrow) and remove the front door armrest mounting bracket ①.



b. Tear off the front door waterproof film ①.

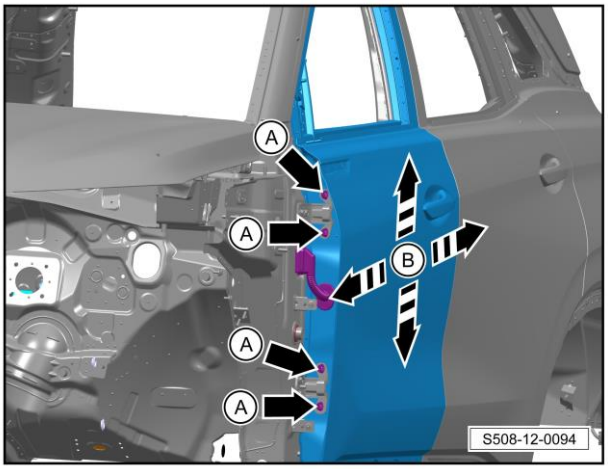
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.6.3.19 Adjustment of front door assembly

Adjustment procedure

1 Remove the fender component. Refer to 9.2.3.19 Removal and installation of fender component.



2 Removal and adjustment of front door assembly

a. Loosen (do not unscrew) the fixing bolts (see arrow A) of the front door hinge.

b. Move the door back and forth, up and down in the direction of arrow B so that when the door is closed, the gap is uniform everywhere, not concave inward or convex outward, and the contour is aligned, which means that the front door has been correctly adjusted.

c. Tighten the hinge bolt (see arrow A).

- Tightening torque of bolt (see arrow **A**): **35±3 N·m**

9.7 Rear door

9.7.1 Specification

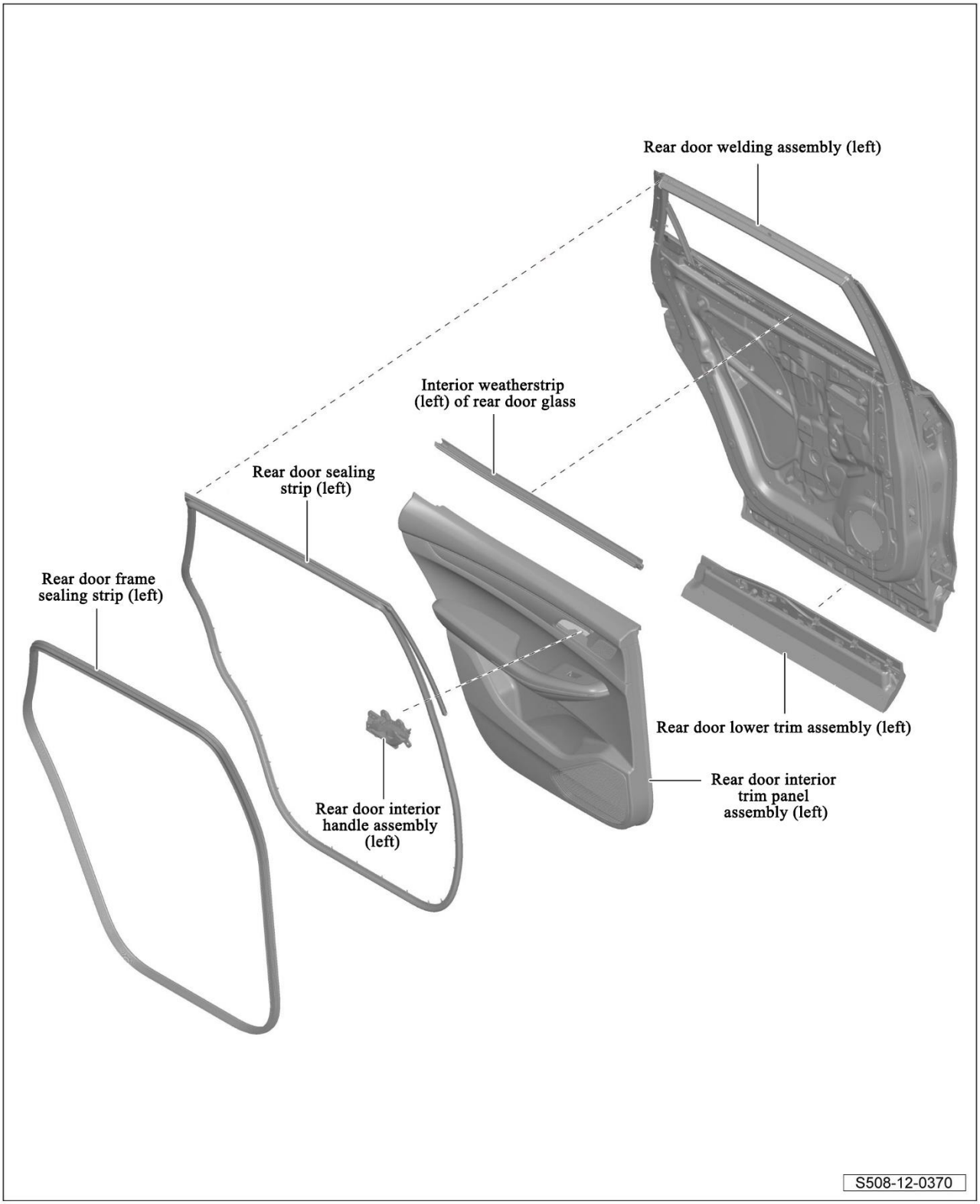
9.7.1.1 Fastener specifications

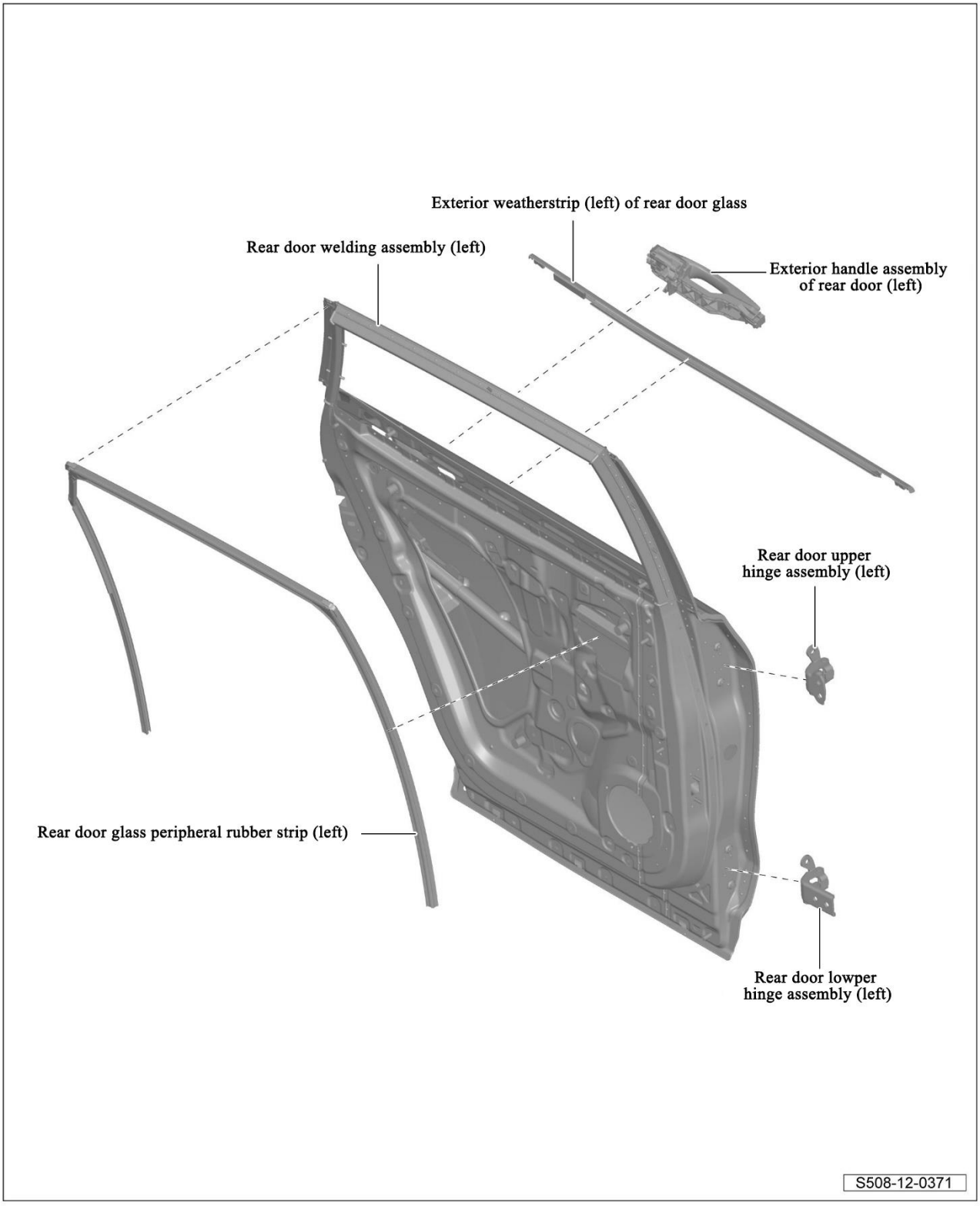
Tightening position	Specification	Tightening torque: N·m
Connection between rear door upper hinge and body	Glued hexagon head flange bolt M8×1.25×27	35±3
Connection between rear door upper hinge and door	Glued hexagon head flange bolt M8×1.25×27	35±3
Connection between rear door opening checkstrap and body	Hexagon head flange bolt M8 ×25 with guiding spring and plain washers	30±3
Connection between rear door opening checkstrap and door	Hexagon nut and conical spring washer cluster M6	10±1
Connection between rear door lockpin assembly and body	Glued hexagon lobular socket countersunk head screw M8×20	20±2
Connection between rear door lower trim and door	Cross recessed mushroom head tapping screw	2±1
Connection between door interior trim panel and mounting bracket	Cross recessed mushroom head tapping screw	6±1

9.7.2 Exploded view

9.7.2.1 Exploded view

Exploded view of rear door assembly




Exterior weatherstrip (left) of rear door glass
Rear door welding assembly (left)
Exterior handle assembly of rear door (left)
Rear door upper hinge assembly (left)
Rear door glass peripheral rubber strip (left)
Rear door lowper hinge assembly (left)
S508-12-0371

9.7.3 Removal and installation

9.7.3.1 Removal and installation of rear door assembly

Disassembly procedures

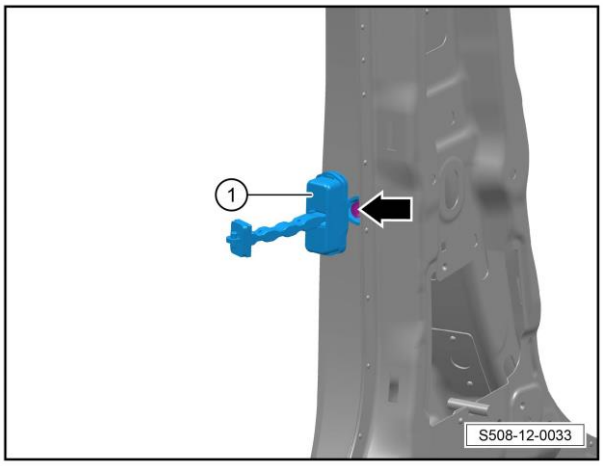
Tip:

The removal and installation procedures are only for the rear left door assembly, which can be basically referred to for the rear right one.

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

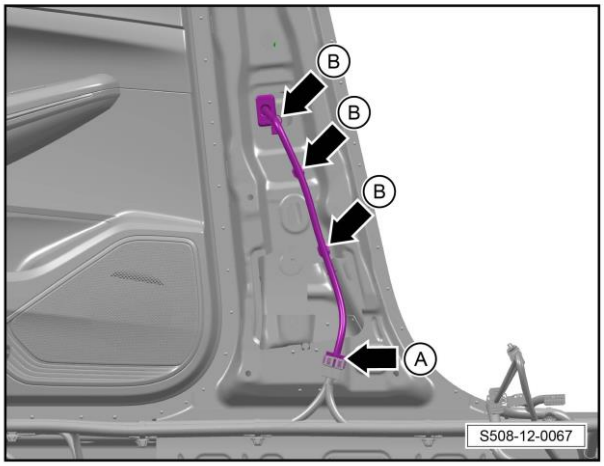
3 Remove the B-pillar lower interior trim panel assembly. Refer to 9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly



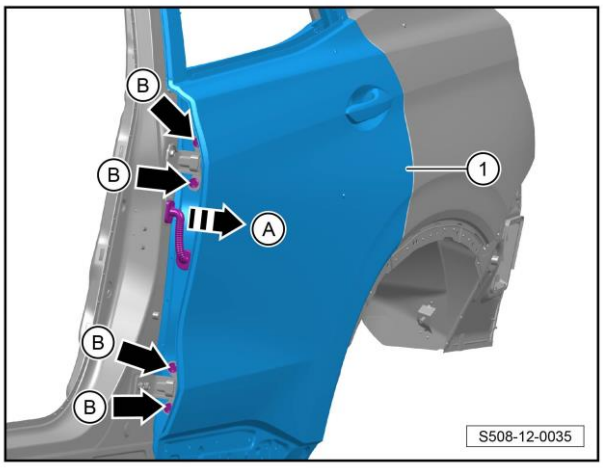
4 Remove the rear door assembly

a. Unscrew the fixing bolts (see the arrows) of rear door opening checkstrap ① (on the body).

- Tightening torque of bolt: 30±3 N·m



b. Disconnect the rear door harness connector (see arrow A) and disengage its fixing clips (see arrow B).



c. Disengage the harness protective jacket in the direction of arrow A.

d. Unscrew fixing bolts (see arrow B) of the front door, and remove the rear door assembly ①.

- Tightening torque of bolt (see arrow B): 35±3 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

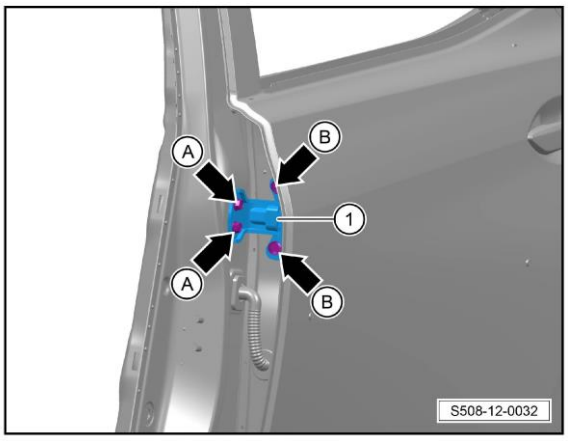
9.7.3.2 Removal and installation of rear door hinge

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door upper hinge, which can be basically referred to for the rear right one.

1 Open the front door.



2 Remove the rear door hinge

a. Unscrew the rear door hinge fixing bolt (on the body) (see arrow A).

b. Unscrew the fixing bolts of the rear door hinge (on the door) (see arrow B), and remove the rear door upper hinge ①.

- Tightening torque of bolt (see arrow **A**): **35±3 N·m**
- Tightening torque of bolt (see arrow B): 35±3 N·m

Notes

The hinge can be removed and installed only with the door supported by another technician.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

After installation, adjust the rear door assembly.

Refer to 9.7.3.17 Adjustment of rear door assembly

9.7.3.3 Removal and installation of rear door opening checkstrap

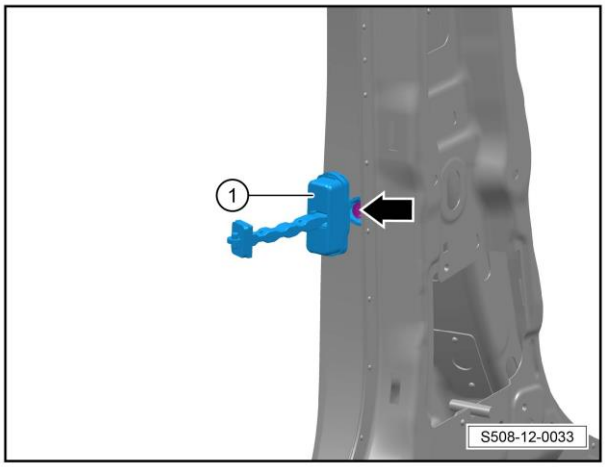
Disassembly procedures

Tip:

The removal and installation procedures are only for the rear door opening checkstrap, which can be basically referred to for the rear right one.

1 Raise the rear door glass to the highest position.

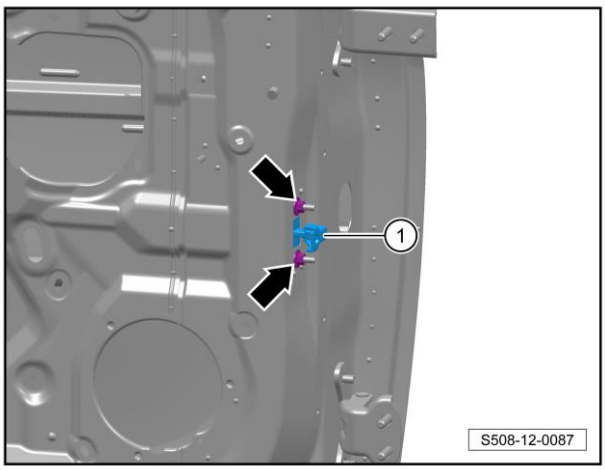
2 Remove the rear left door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly



3 Remove the rear door opening checkstrap

a. Unscrew the fixing bolts (see the arrows) of rear door opening checkstrap ① (on the body).

- Tightening torque of bolt: 30±3 N·m



b. Unscrew the fixing nuts (see the arrow) and remove the rear door opening checkstrap.

- Tightening torque of nut: 10±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

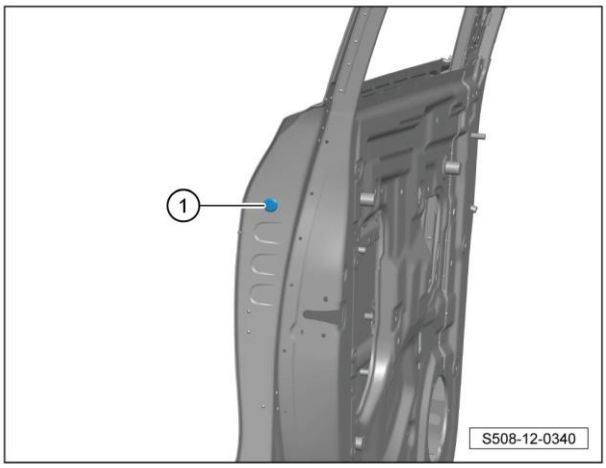
9.7.3.4 Removal and installation of rear

exterior door handle

Disassembly procedures

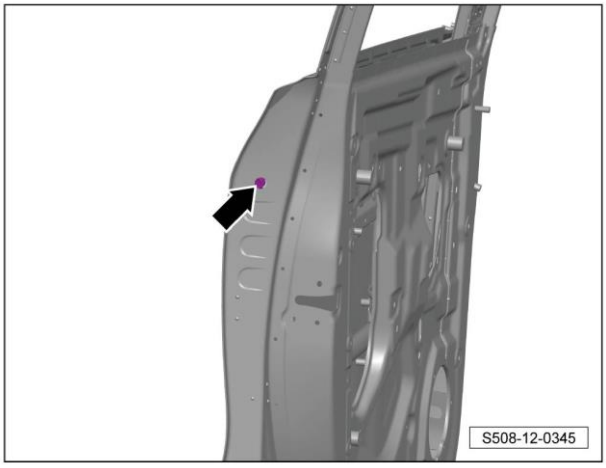
Tip:

The removal and installation procedures are only for the rear left door exterior handle, which can be basically referred to for the rear right one.

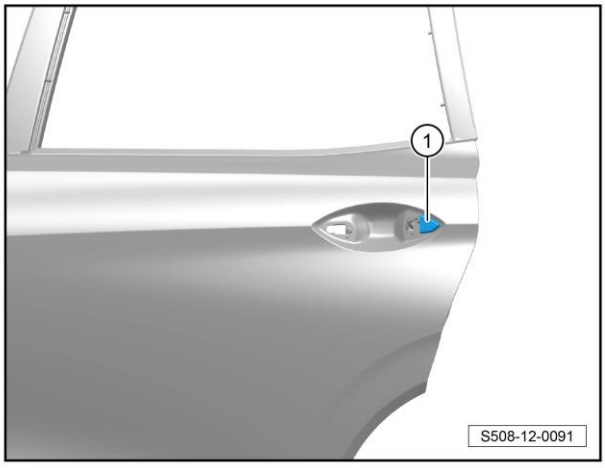


1 Remove the rear exterior door handle

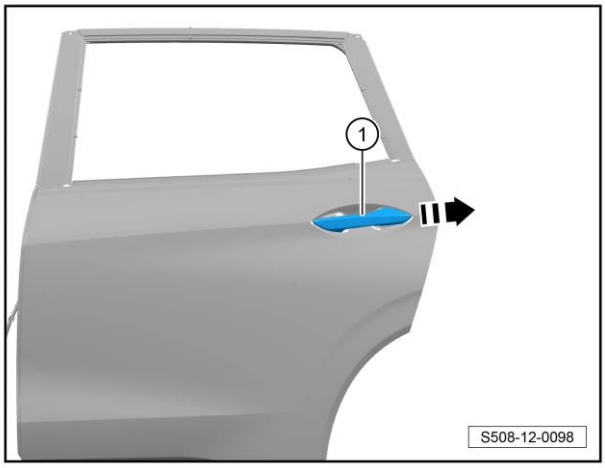
a. Remove the bolt blank cover ① of the rear exterior door handle trim cover.



b. Loosen the fixing bolts (see the arrow) of the trim cover of the rear door exterior handle.



c. Pull open the rear exterior door handle and remove the rear exterior door handle trim cover ①.



d. Pull open the rear exterior door handle and remove the rear exterior door handle ① in the direction of arrow.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- After installation, check the functions with the door open.

9.7.3.5 Removal and installation of rear door exterior handle bracket

Disassembly procedures

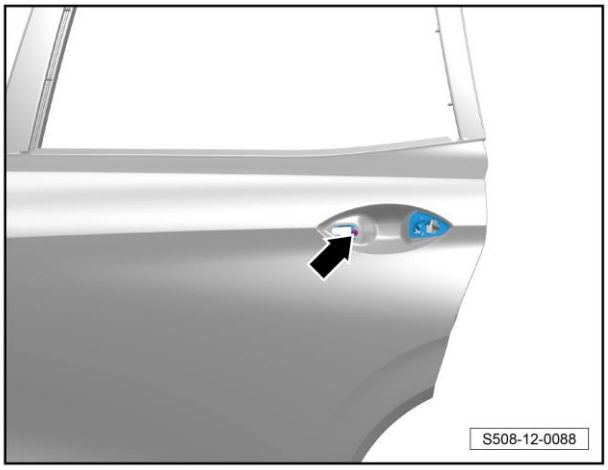
Tip:

The removal and installation procedures are only for the front left door exterior handle bracket, which can be basically referred to for the rear right one.

1 Raise the rear door glass to the highest position.

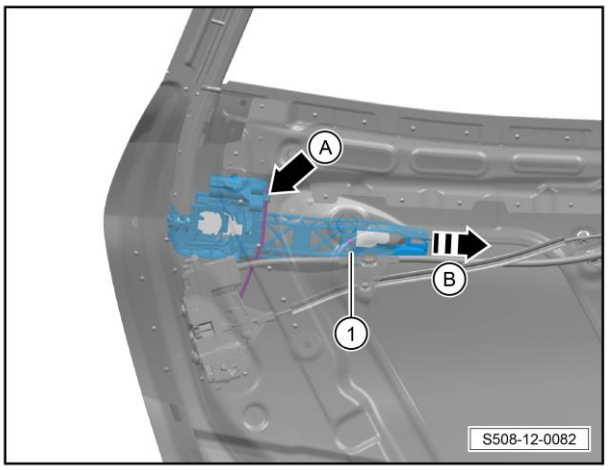
2 Remove the rear left door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly

3 Remove the rear left exterior door handle. Refer to 9.7.3.4 Removal and installation of rear exterior door handle



4 Remove the rear exterior door handle bracket

a. Unscrew the fixing screw (see the arrow) of the rear door exterior handle bracket.



b. Open one corner of rear door waterproof film.

c. Disengage the connecting push rod of the rear exterior door handle bracket from the rear exterior door handle bracket (see arrow A).

d. Remove the exterior rear door handle bracket ① in direction of arrow B.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

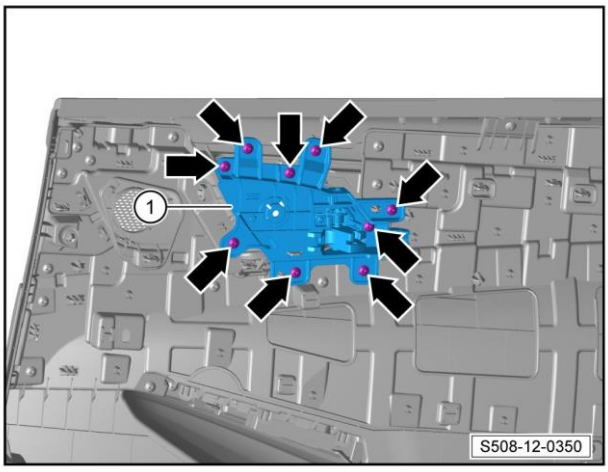
9.7.3.6 Removal and installation of rear door interior handle assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door interior handle assembly, which can be basically referred to for the rear right one.

1 Remove the rear left door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly



2 Remove the rear door interior handle assembly

a. Unscrew the fixing screws (see the arrow) and remove the rear door interior handle assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

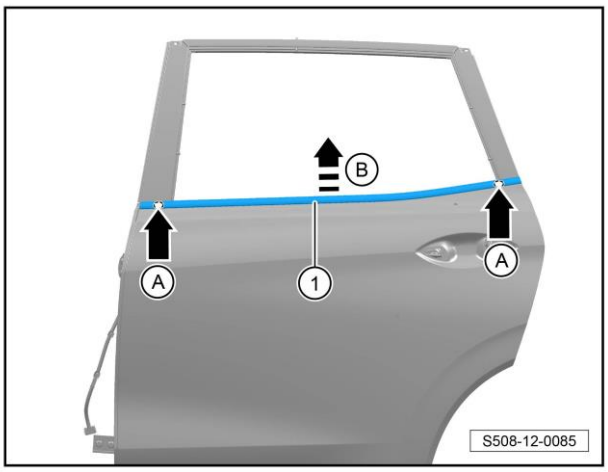
9.7.3.7 Removal and installation of exterior weatherstrip of rear door glass

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left glass outer weatherstrip, which can be basically referred to for the rear right one.

1 Lower the rear door glass to the lowest position.



2 Remove the exterior weatherstrip of rear door glass

a. Disengage the fixing clips (see arrow A) of the exterior weatherstrip of the rear door glass.

b. Remove the exterior weatherstrip of the rear door glass ① in the direction of arrow B.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.7.3.8 Removal and installation of interior weatherstrip of rear door glass

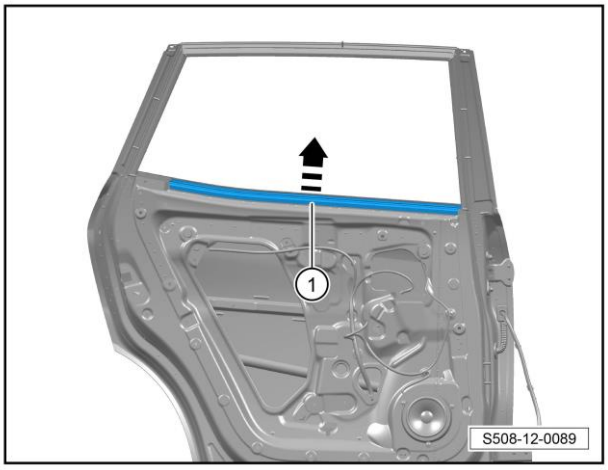
Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door glass inner weatherstrip, which can be basically referred to for the rear right one.

1 Lower the rear door glass to the lowest position.

2 Remove the rear left door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly



3 Remove the interior weatherstrip of rear door glass

a. Remove the interior weatherstrip of rear door glass ① in direction of the arrow.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

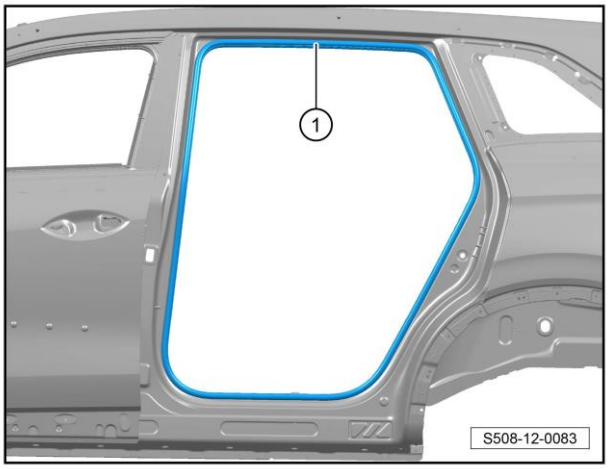
9.7.3.9 Removal and installation of rear door frame sealing strip

Disassembly procedures

Tip:

The removal and installation procedures are only for the sealing strip of the rear left door frame, which can be basically referred to for the rear right one.

1 Remove the rear door sill trim panel assembly. Refer to 9.14.2.19 Removal and installation of rear door sill assembly



2 Remove the rear door frame sealing strip

a. Remove the rear door frame sealing strip ① from the body flange.

Installation procedures

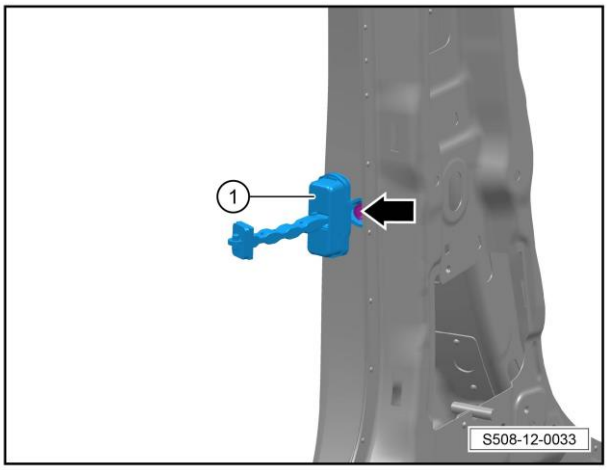
The installation procedure is to be performed basically in the reverse order:

9.7.3.10 Removal and installation of rear door sealing strip

Disassembly procedures

Tip:

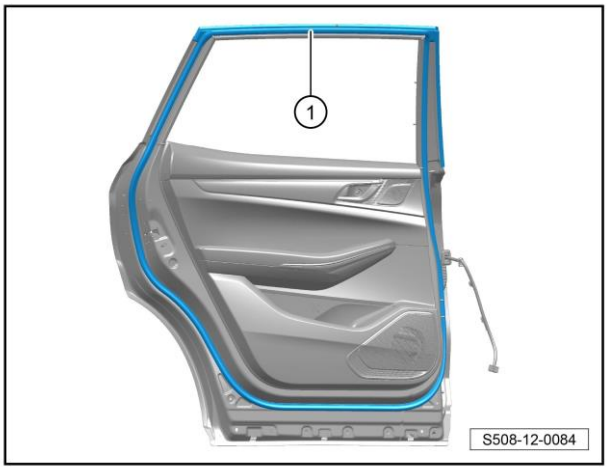
The removal and installation procedures are only for the sealing strip of the rear left door, which can be basically referred to for the rear right one.



1 Remove the rear door sealing strip

a. Unscrew the fixing bolts (see the arrows) of rear door opening checkstrap ① (body side).

- Tightening torque of bolt: 30±3 N·m



b. Disengage the fixing clips of the rear door sealing strip and remove the rear door sealing strip ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

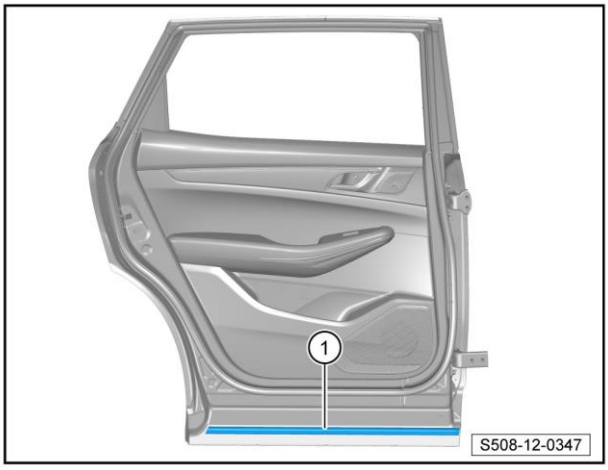
– Check whether the fixing clip is damaged and replace it with a new one if necessary.

9.7.3.11 Removal and installation of rear door lower mudguard rubber strip

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door lower mudguard rubber strip, which can be basically referred to for the rear right one.



1 Remove the rear door lower mudguard rubber strip

a. Open the front door.

b. Use the removal wedge to remove the rear door lower mudguard rubber strip ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

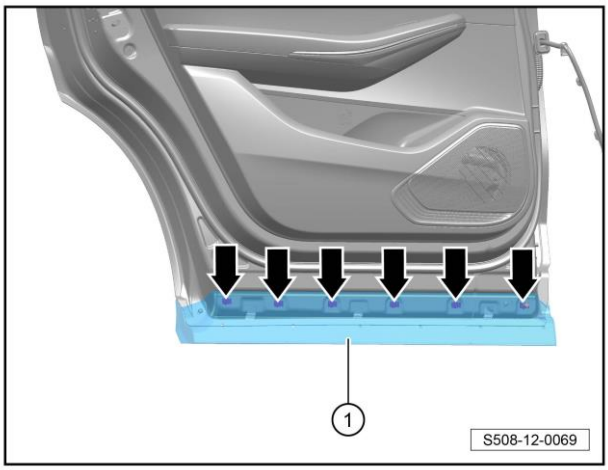
9.7.3.12 Removal and installation of rear door lower trim assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door lower trim assembly, which can be basically referred to for the rear right one.

1 Open the rear door.

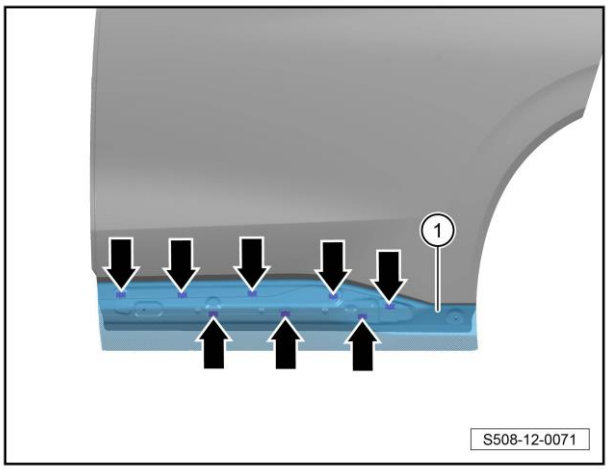


2 Remove the rear door lower trim assembly

a. Disengage the fixing clips (see the arrow) of the rear door lower trim assembly ①.

b. Unscrew the fixing screw (see the arrow) of the rear door lower trim assembly.

- Tightening torque of screw: 2±1 N·m



c. Disengage the fixing clips (see the arrow) and remove the rear door lower trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

Check the fixing clip. If it is damaged, replace it with a new one.

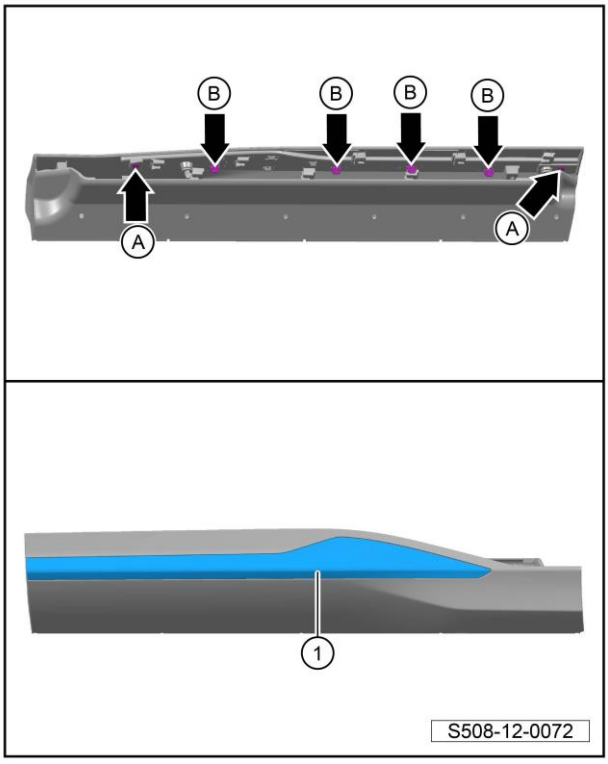
9.7.3.13 Removal and installation of rear door lower trim (strip)

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door lower trim strip, which can be basically referred to for the rear right one.

1 Remove the rear door lower trim assembly. Refer to 9.7.3.12 Removal and installation of rear door lower trim assembly



2 Remove the rear door lower trim (strip)

a. Unscrew the fixing screws (see arrow A) of rear door lower trim (strip).

b. Disengage the fixing clips (see arrow B) and remove the rear door lower trim strip ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

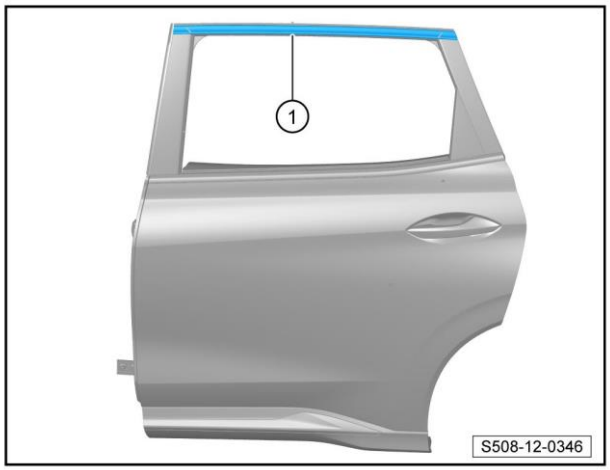
9.7.3.14 Removal and installation of rear door bright trim strip

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door bright trim strip, which can be basically referred to for the rear right one.

The rear door bright trim strip is easily deformed when it is removed, so it is recommended to replace it with new one after removal.



1 Remove the rear door bright trim strip

a. Use the removal wedge to remove the rear door bright trim strip ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Remove the old double-sided adhesive tape from the installation position of the rear door bright trim strip assembly on the body.

– Remove the residual old double-sided adhesive tape of the rear door bright trim strip.

– Install the new double-sided adhesive tape of the rear door bright trim strip.

9.7.3.15 Removal and installation of rear door interior trim panel assembly

Disassembly procedures

Tip:

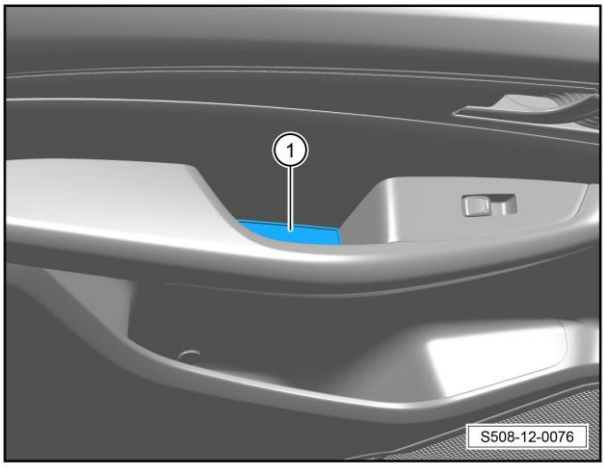
The removal and installation procedures are only for the rear left door interior trim panel assembly, which can be basically referred to for the rear right one.

The internal release handle bolt trim cover must be removed with a straight screwdriver or a removal wedge wrapped with soft cloth to avoid damaging the door trim panel assembly.

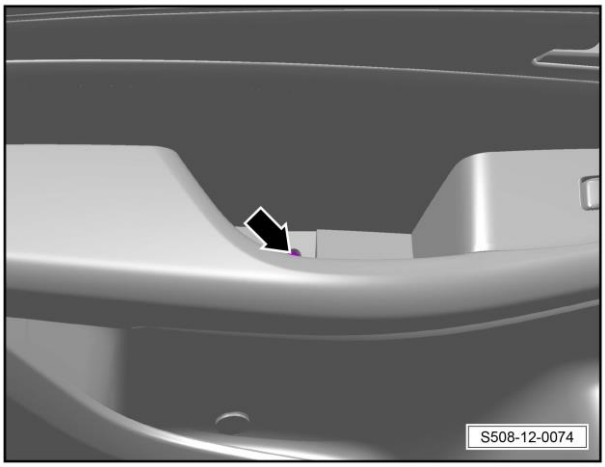
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Open the rear door.

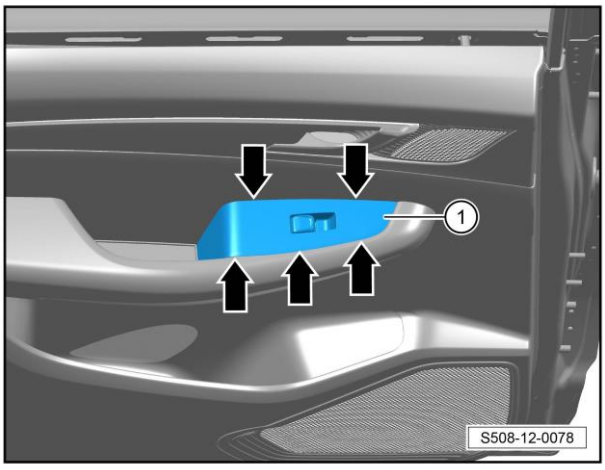


a. Remove the rubber gasket ① of the rear door armrest cover plate.

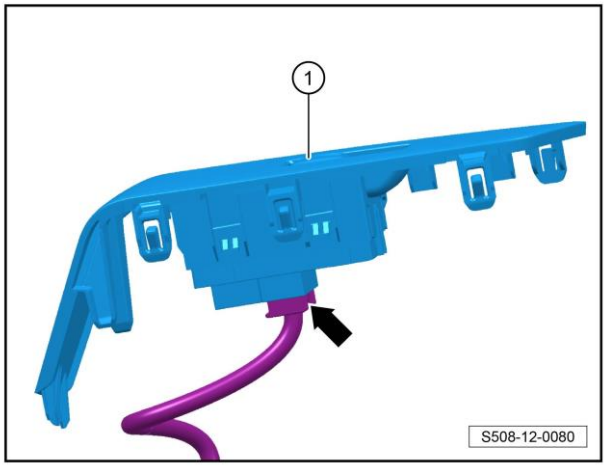


b. Unscrew the fixing screw (see the arrow) of the rear door interior trim panel assembly.

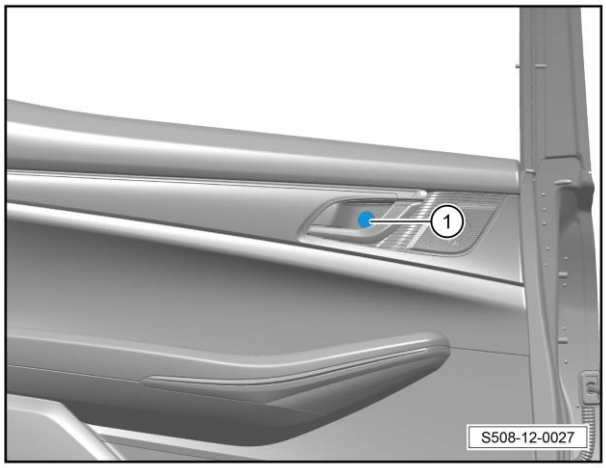
- Tightening torque of screw: **6±1 N·m**



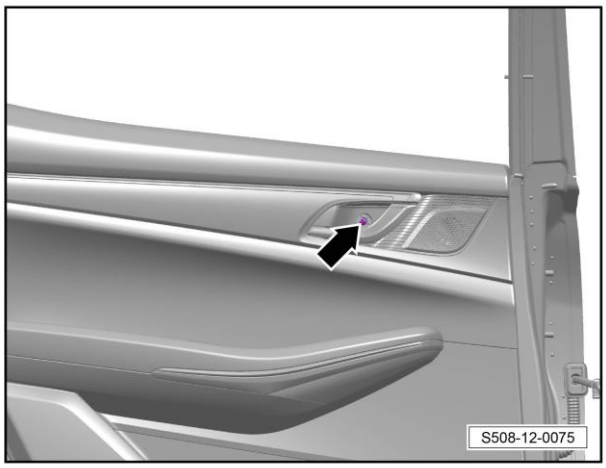
c. Use the removal wedge to remove the rear door switch cover plate ① (see the arrow).



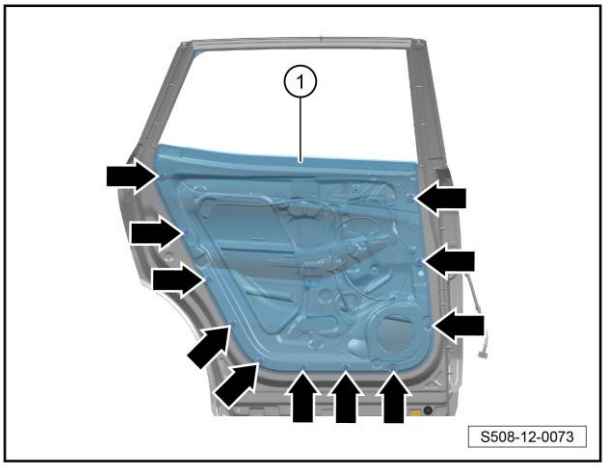
d. Disconnect the connector (see the arrow) and take out the rear door switch cover ①.



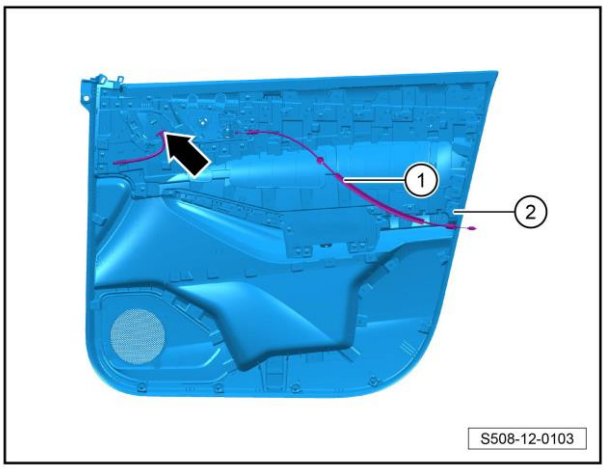
e. Remove the internal release handle screw trim cover ①.



f. Unscrew the fixing screw (see the arrow) of the rear door interior trim panel assembly.



g. Disengage the fixing clips (see the arrows) of the rear door interior trim panel assembly ①.



h. Disconnect the connector (see the arrow) of rear door interior trim panel.

i. Disengage the rear door interior handle cable ① from the rear door trim panel assembly ② and remove the rear door interior trim panel assembly ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

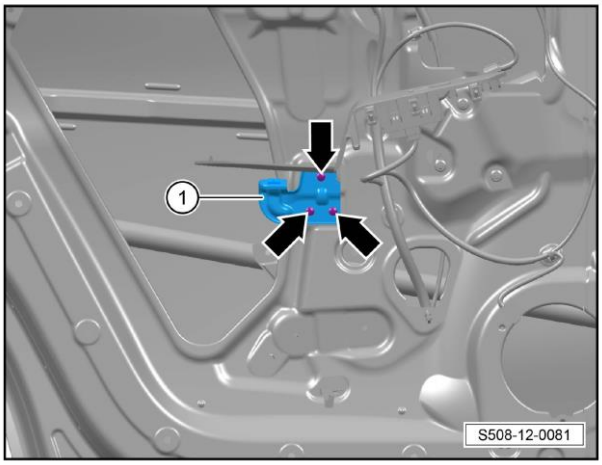
9.7.3.16 Removal and installation of rear door waterproof film

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

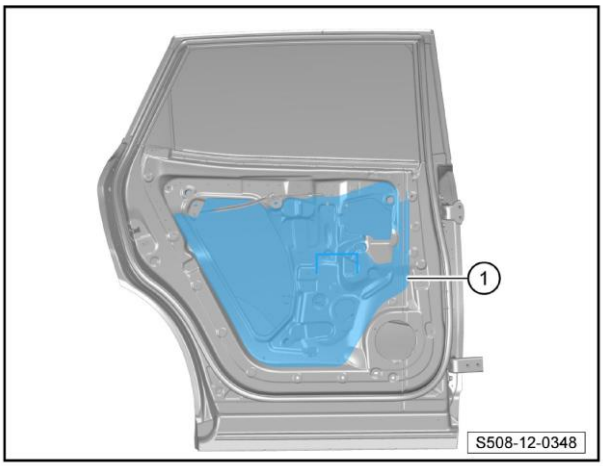
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the rear door interior trim panel assembly. Refer to 9.7.3.15 Removal and installation of rear door interior trim panel assembly



4 Remove the rear door waterproof membrane

a. Unscrew the fixing screws (see the arrows) and remove the rear door armrest mounting bracket ①.



b. Tear off the rear door waterproof film ①.

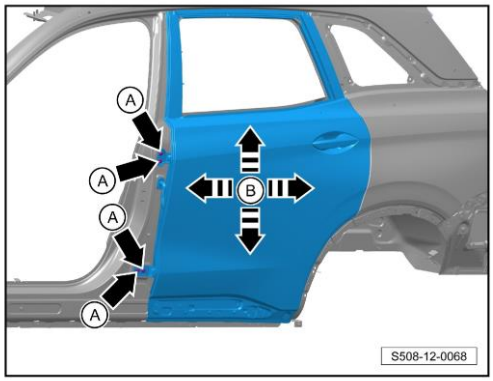
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.7.3.17 Adjustment of rear door assembly

Adjustment procedure

1 Open the front door.



2 Adjustment of rear door assembly

a. Loosen (do not unscrew) the fixing bolts (see arrow A) of the rear door hinge.

b. Move the door back and forth, up and down in the direction of arrow B so that when the door is closed, the gap is uniform everywhere, not concave inward or convex outward, and the contour is aligned, which means that the front door has been correctly adjusted.

c. Tighten the hinge bolt (see arrow A).

- Tightening torque of bolt (see arrow **A**): **35±3 N·m**

9.8 Instrument panel

9.8.1 Specification

9.8.1.1 Fastener specifications

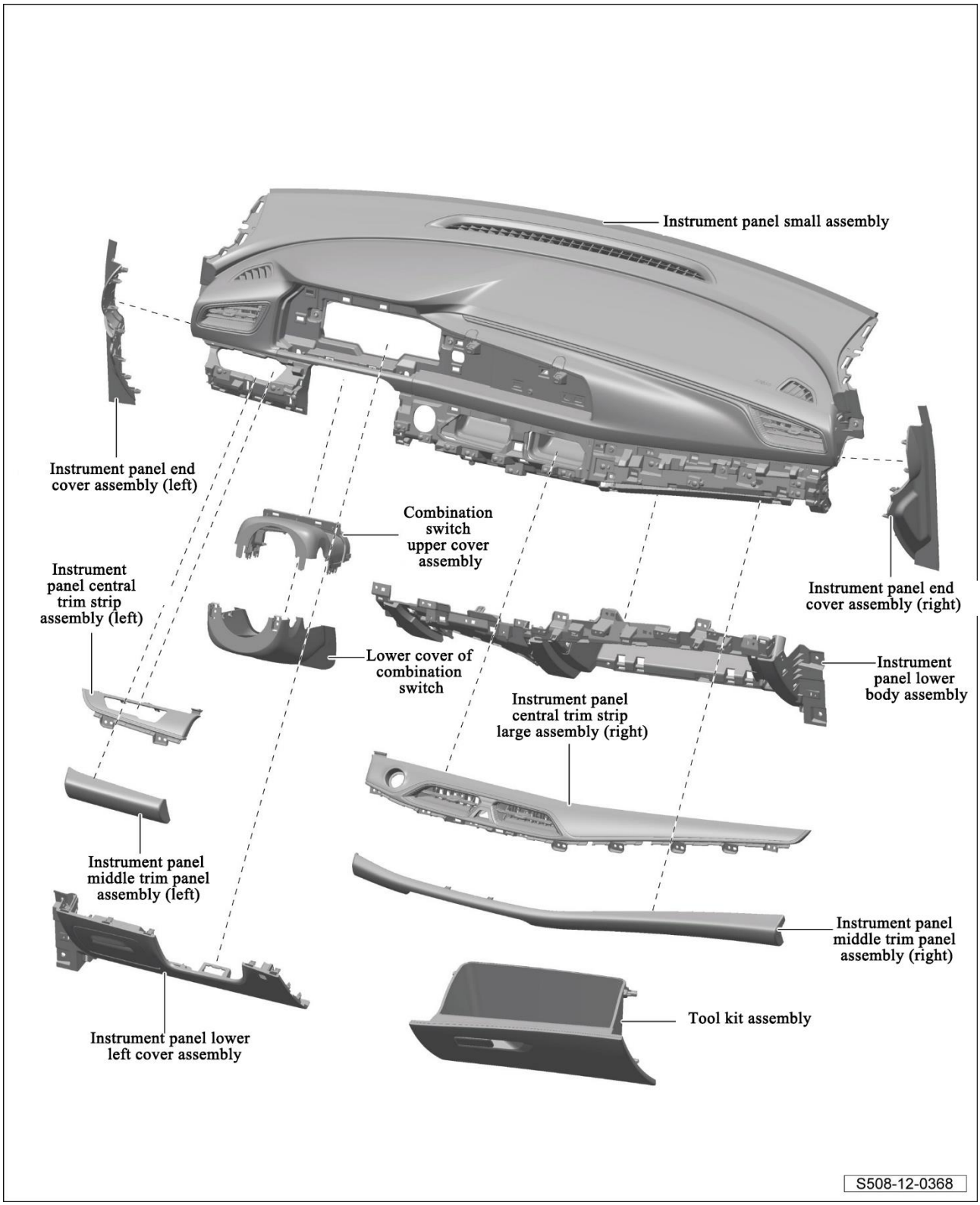
Tightening position	Specification	Tightening torque: N·m
Installation of the instrument panel moulding and steering support member assembly	Hexagon flange nut M6	6±1
Installation of the instrument panel moulding and steering support member assembly	Cross recessed hexagon head flange bolt	6±1
Installation of the instrument panel lower moulding and steering support member assembly	Cross recessed mushroom head tapping screw	3±1
Installation of the instrument panel lower moulding and steering support member assembly	Cross recessed hexagon head flange bolt	6±1
Installation of the instrument panel lower moulding and steering support member assembly	Cross recessed hexagon head flange bolt	6±1
Installation of the instrument panel lower moulding and steering support member assembly	Cross recessed hexagon head flange bolt	6±1
Installation of the instrument cluster mask and steering support member assembly	Cross recessed mushroom head tapping screw	3±1
Installation of instrument panel central trim strip and instrument panel moulding	Cross recessed mushroom head tapping screw	3±1
Installation of toolbox guard and instrument panel moulding	Cross recessed mushroom head tapping screw	3±1
Installation of toolbox guard and instrument panel moulding	Cross recessed hexagon head flange bolt	6±1
Installation of left lower guard and steering support member assembly	Cross recessed mushroom head tapping screw	3±1
Installation of left lower guard and steering support member assembly	Cross recessed hexagon head flange bolt	6±1
Installation of left lower guard and steering support member assembly	Cross recessed hexagon head flange bolt	6±1
Connection between steering support member and body (left/right)	Hexagon head bolt c/w spring washer and big washer cluster M8×25	25±2
Connection between steering support member and body	Cross recessed hexagon head flange bolt	25±2
Cab harness fuse box and fuse box mounting bracket	Cross recessed hexagon head flange bolt M6×16	10±1
Cab harness assembly and front wall side inner panel (right)	Cross recessed hexagon head flange bolt	10±1

HVAC assembly and steering support member assembly	Cross recessed hexagon head flange bolt	8±1

9.8.2 Exploded view

9.8.2.1 Exploded view

Exploded view of instrument panel



9.8.3 Removal and installation

9.8.3.1 Removal and installation of instrument panel subassembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

4 Remove the left/right instrument panel end cover assembly. Refer to 9.8.3.5 Removal and installation of instrument panel end cover assembly

5 Remove the instrument panel left lower cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel left lower cover assembly

6 Remove the instrument panel lower body assembly. Refer to 9.8.3.2 Removal and installation of instrument panel lower body assembly

7 Remove the instrument cluster assembly. Refer to 8.8.6.1 Removal and installation of instrument cluster assembly

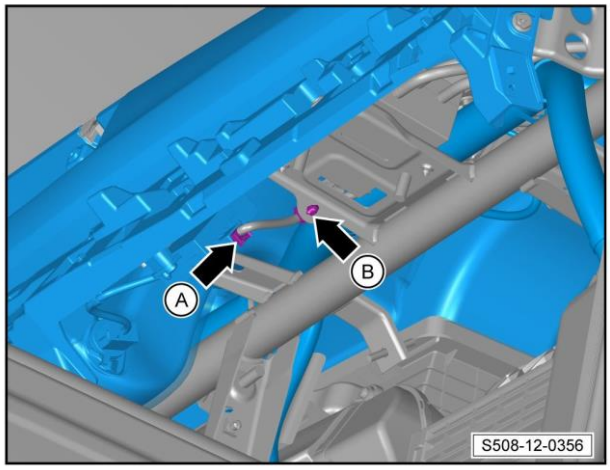
8 Remove the steering wheel assembly. Refer to 3.13.8.6 Removal and installation of steering wheel assembly

9 Remove the combination switch upper cover assembly. Refer to 9.8.3.7 Removal and installation of combination switch upper cover assembly

10 Remove the combination switch lower cover. Refer to 9.8.3.8 Removal and installation of combination switch lower cover

11 Remove the combination switch assembly. Refer to 8.3.5.17 Removal and installation of combination switch assembly

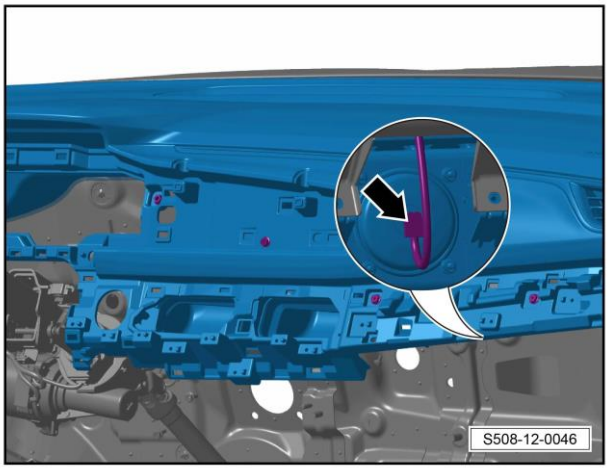
12 Remove the left/right A-pillar interior trim panel assembly. Refer to 9.14.2.8 Removal and installation of A-pillar interior trim panel assembly



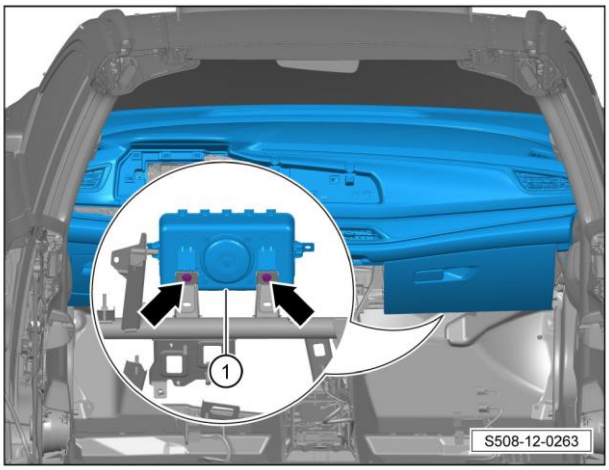
13 Remove the instrument panel subassembly

a. Disconnect the connector (see arrow A) of the anion generator.

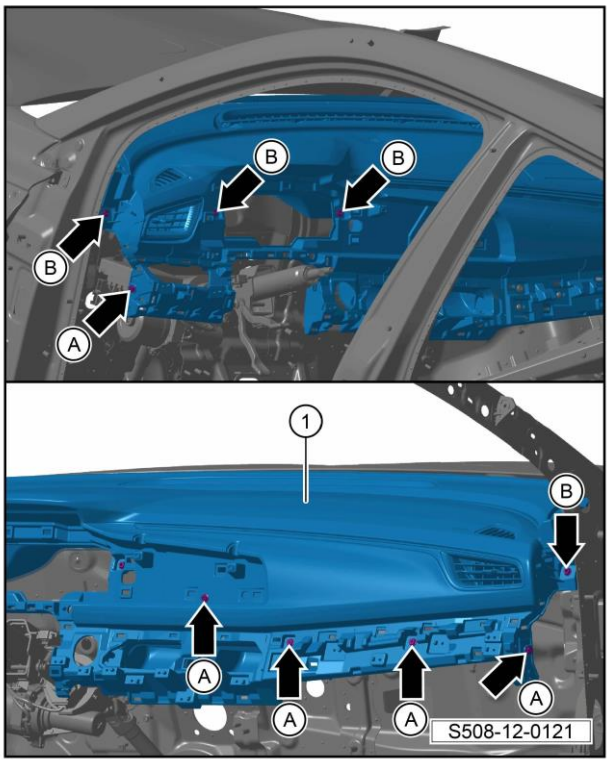
b. Disengage the fixing clip of the negative ion generator harness (see arrow B).



c. Disconnect the connector (see the arrow) of front passenger airbag module.



d. Unscrew the fixing bolts (see the arrows) of the front passenger airbag module ①.



e. Unscrew the fixing bolt (see arrow A) and nut (see arrow B) of instrument panel subassembly.

f. Remove the instrument panel subassembly ①.

- Tightening torque of bolt (see arrow A): 6±1 N·m
- Tightening torque of nut (see arrow B): 6±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.2 Removal and installation of instrument panel lower moulding assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

4 Remove the instrument panel middle trim panel assembly (right). Refer to 9.8.3.14 Removal and installation of instrument panel middle trim panel assembly (right)

5 Remove the instrument panel central trim strip large assembly. Refer to 9.8.3.12 Removal and installation of instrument panel central trim strip large assembly (right)

6 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly

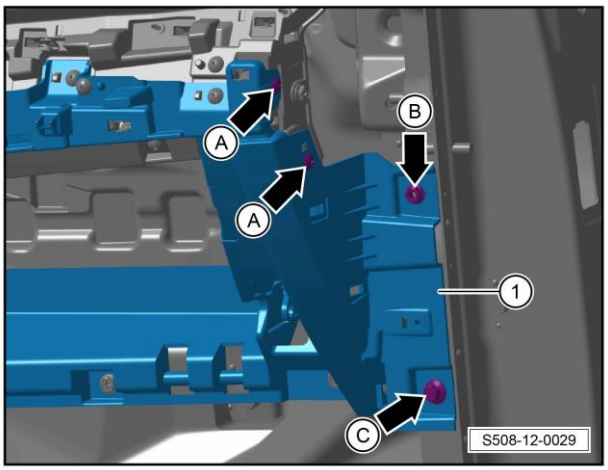
7 Remove the toolbox guard board assembly. Refer to 9.8.3.4 Removal and installation of toolbox guard

board

8 Remove the instrument panel left lower cover assembly. Refer to 9.8.3.6 Removal and installation of instrument panel left lower cover assembly

9 Remove the instrument panel end cover assembly. Refer to 9.8.3.5 Removal and installation of instrument panel end cover assembly

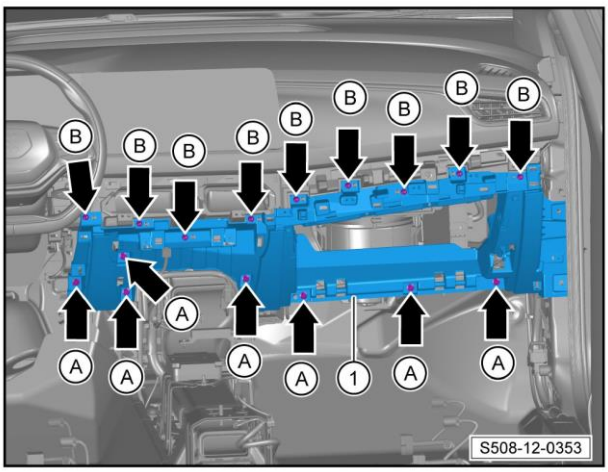
10 Remove the right A-pillar lower interior trim panel assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly



11 Remove the instrument panel lower moulding assembly

a. Unscrew the fixing screws (see arrow A), nuts (see arrow B) and bolts (see arrow C) of the instrument panel lower moulding assembly ①.

- Tightening torque of nut (see arrow B): 6±1 N·m
- Tightening torque of bolt (see arrow C): 6±1 N·m



b. Unscrew the fixing screws (see arrow A) and bolts (see arrow B) and remove instrument panel lower moulding assembly ①.

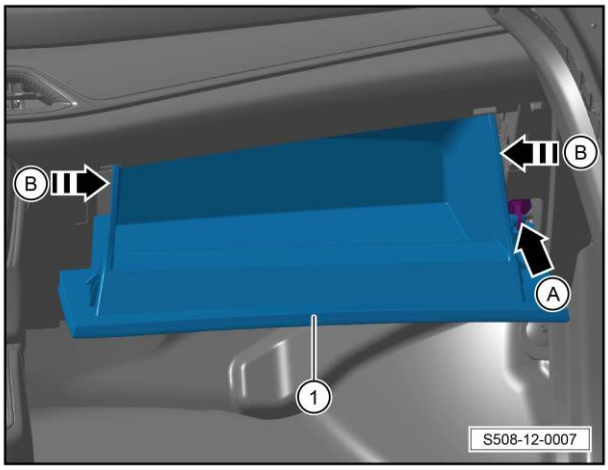
- Tightening torque of bolt (see arrow A): 6±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.3 Removal and installation of toolbox assembly

Disassembly procedures



1 Remove the toolbox assembly

a. Open the toolbox assembly ①.

b. Disengage the damper from the toolbox assembly ① (see arrow A).

c. Remove the toolbox assembly ① while pressing both sides of the toolbox assembly in the direction of arrow B.

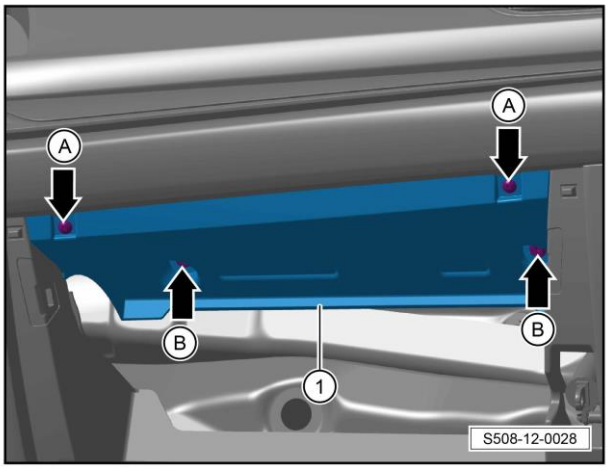
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.4 Removal and installation of toolbox guard

Disassembly procedures

1 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly



2 Remove the toolbox guard

a. Unscrew the fixing screws (see arrow A) and bolts (see arrow B) and remove the toolbox guard ①.

- Tightening torque of screw (see arrow A): 3±1 N·m
- Tightening torque of bolt (see arrow B): 6±1Nm

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.5 Removal and installation of instrument panel end cover assembly

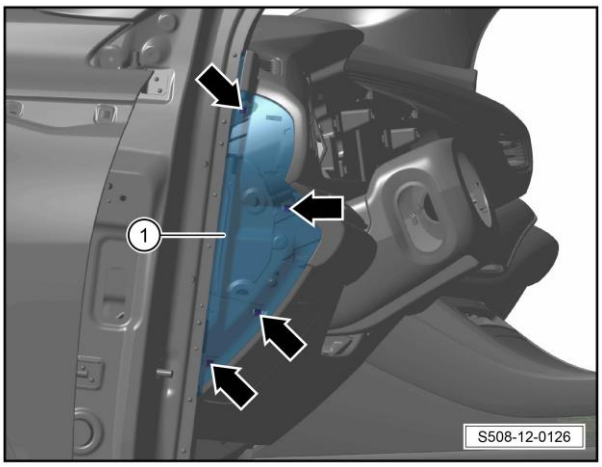
Disassembly procedures

Tip:

The removal and installation procedures are only for the left instrument panel end cover assembly, which

can be basically referred to for the right one.

1 Open the front door.



3 Remove the instrument panel end cover assembly

a. Disengage one corner of the sealing strip of the front door frame.

b. Disengage the fixing clips (see the arrows) and remove the instrument panel end cover assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.6 Removal and installation of instrument panel left lower cover plate assembly

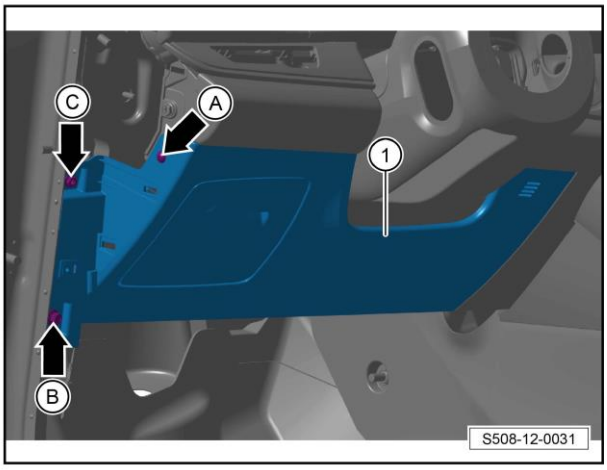
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel end cover assembly. Refer to 9.8.3.5 Removal and installation of instrument panel end cover assembly

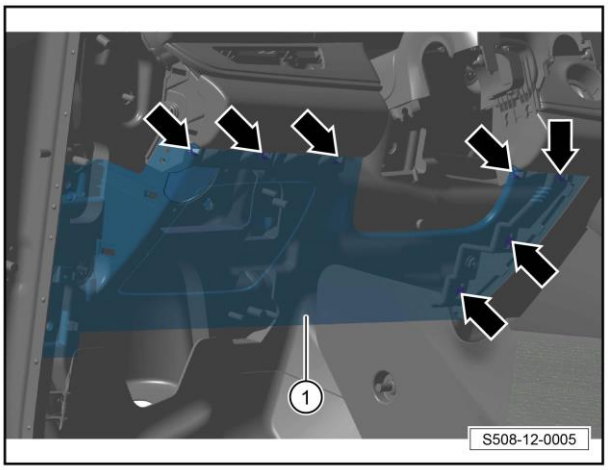
4 Remove the A-pillar lower interior trim panel assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly



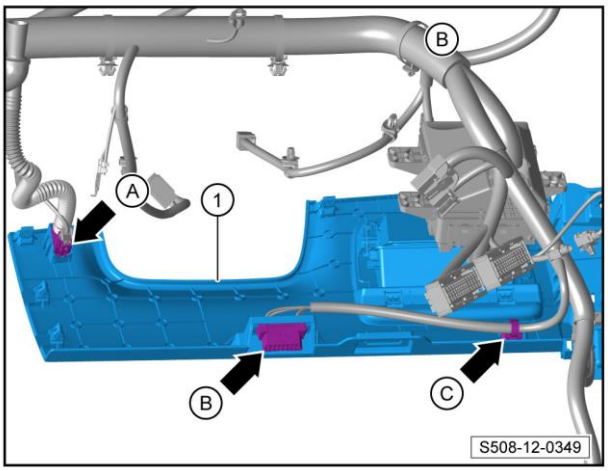
5 Remove the instrument panel lower left end cover assembly

a. Unscrew the fixing screws (see arrow A), bolts (see arrow B) and nuts (see arrow C) of the left lower cover plate assembly ① of the instrument panel.

- Tightening torque of screw (see arrow A): 3±1 N·m
- Tightening torque of bolt (see arrow B): 6±1Nm
- Tightening torque of nut (see arrow C): 6±1 N·m



b. Disengage the fixing clips (see the arrows) and remove the instrument panel left lower cover assembly ①.



c. Disengage the room temperature sensor from the instrument panel left lower cover assembly at the position of arrow A.

d. Disconnect the OBD diagnostic interface (see arrow B).

e. Disengage the harness fixing clips (see arrow C) and remove the instrument panel left lower cover assembly ①

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.7 Removal and installation of combination switch upper cover assembly

Disassembly procedures

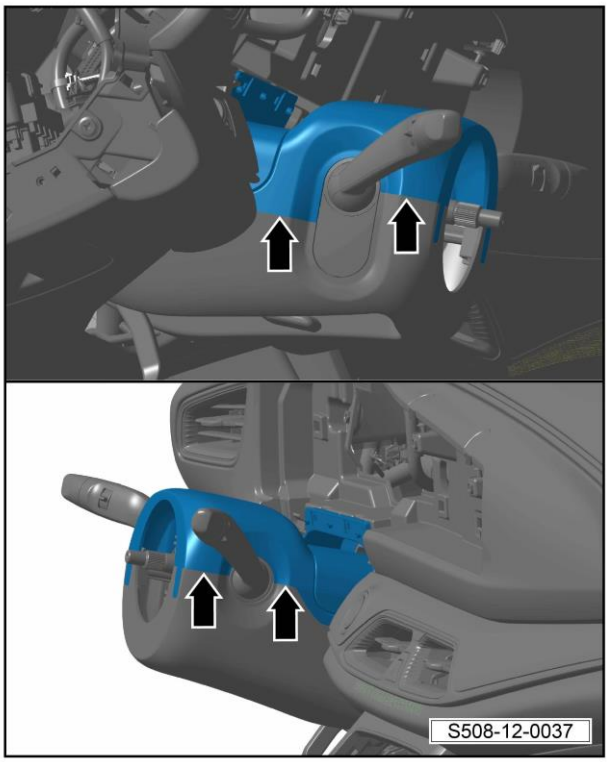
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the driver seat airbag module. Refer to 7.1.7.2 Removal and installation of driver seat airbag module

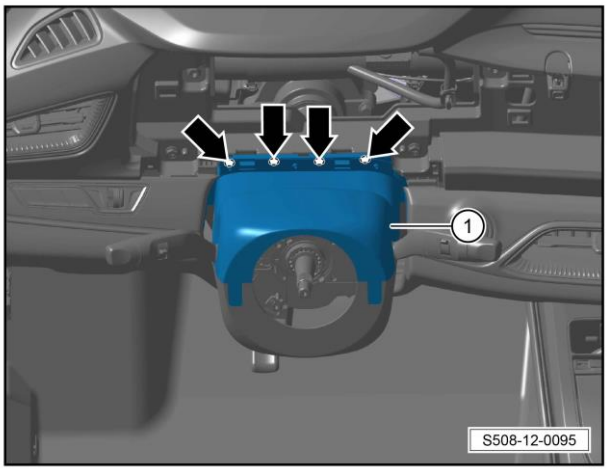
4 Remove the steering wheel assembly. Refer to 3.13.8.6 Removal and installation of steering wheel assembly

5 Remove the instrument panel central trim strip (middle). Refer to 9.8.3.11 Removal and installation of instrument panel central trim strip (middle)



6 Remove the upper cover assembly of combination switch

a. Disengage the combination switch upper cover assembly from the combination switch lower cover (see the arrow).



b. Disengage the fixing clips (see the arrow), and remove the combination switch upper cover assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.8 Removal and installation of combination switch lower cover

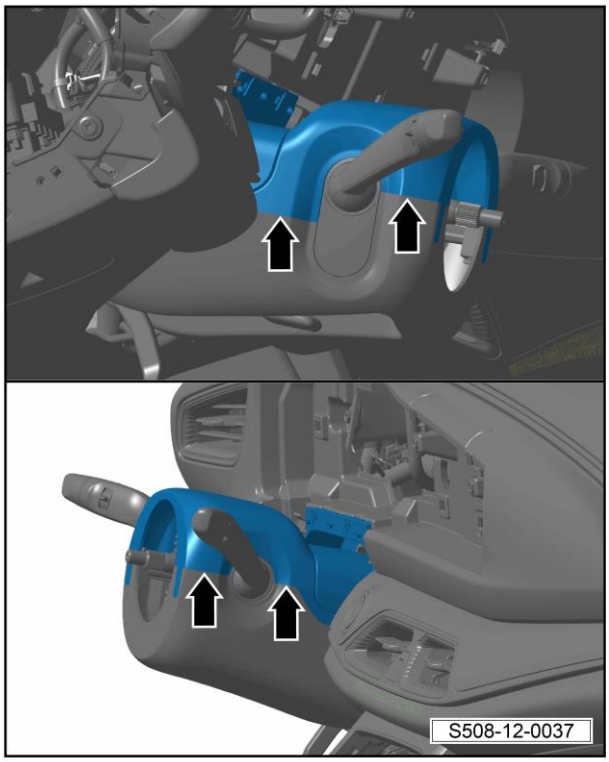
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

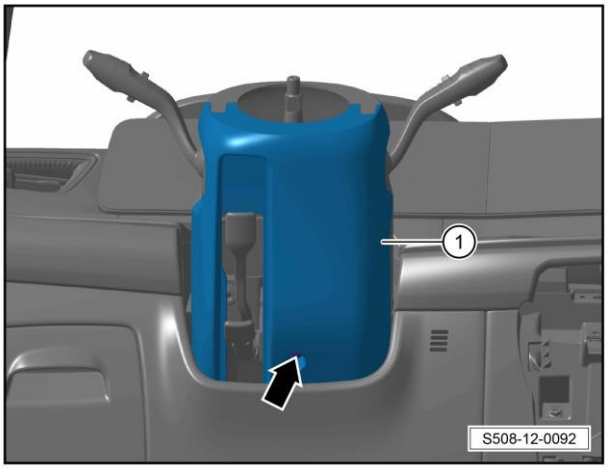
3 Remove the driver seat airbag module. Refer to 7.1.7.2 Removal and installation of driver seat airbag module

4 Remove the steering wheel assembly. Refer to 3.13.8.6 Removal and installation of steering wheel assembly



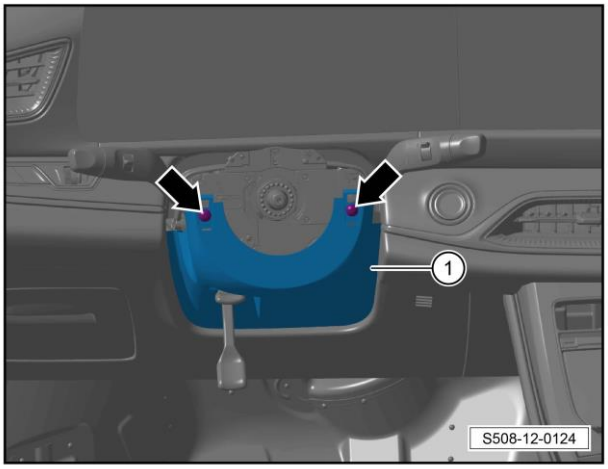
5 Remove the combination switch lower cover

a. Disengage the combination switch upper cover assembly from the combination switch lower cover (see the arrow).



b. Unscrew the fixing screw (see the arrow) at the lower end of combination switch lower cover ①.

- Tightening torque of screw: 3±1 N·m



c. Unscrew the fixing bolts (see the arrow), and remove the combination switch lower cover ①.

- Tightening torque of screw: 3±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

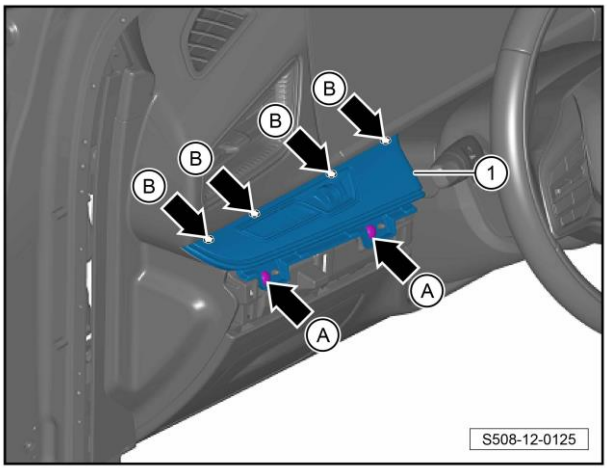
9.8.3.9 Removal and installation of instrument panel central trim strip assembly (left)

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the instrument panel central trim panel assembly (left). Refer to 9.8.3.10 Removal and installation of instrument panel central trim panel assembly (left)

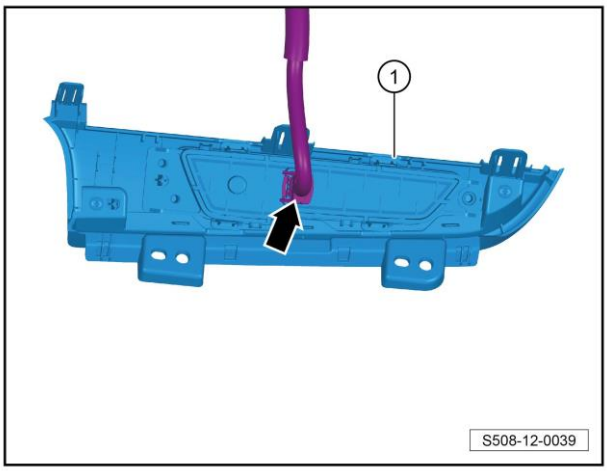


4 Remove the instrument panel central trim strip assembly (left)

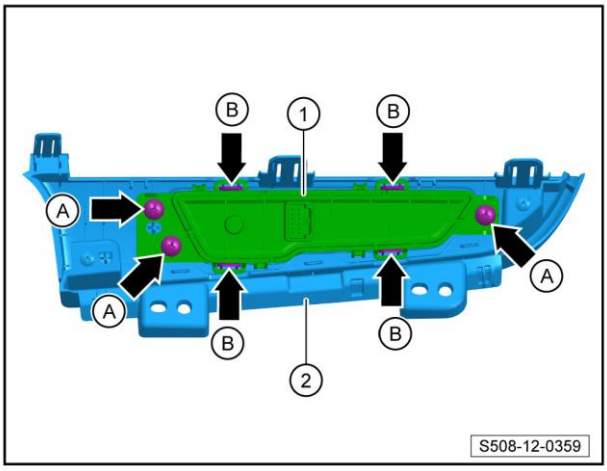
a. Unscrew the fixing screws (see arrow A) of the instrument panel central trim strip assembly (left).

b. Disengage the fixing clips (see arrow B) and remove the instrument panel central trim strip assembly (left) ①.

- Tightening torque of screw (see arrow A): 3±1 N·m



c. Disconnect the connector (see the arrow) and remove the instrument panel central trim strip assembly (left) with accessories ①.



d. Unscrew the fixing screws (see arrow A) of small switch assembly ①.

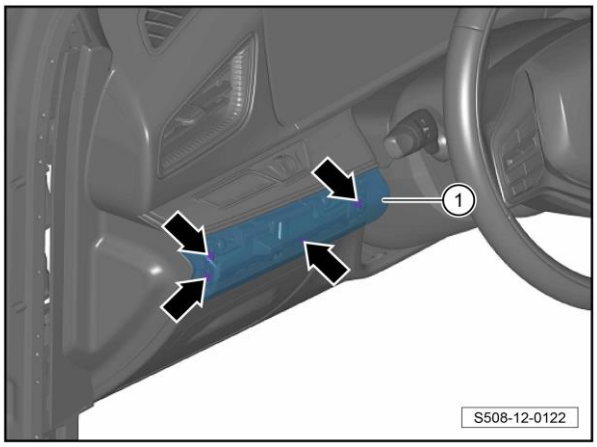
e. Disengage the fixing clips (see arrow B), detach the small switch set ①, and remove the instrument panel central trim strip assembly (left) ②.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.10 Removal and installation of instrument panel middle trim panel assembly (left)

Disassembly procedures



1 Remove the instrument panel middle trim panel assembly (left)

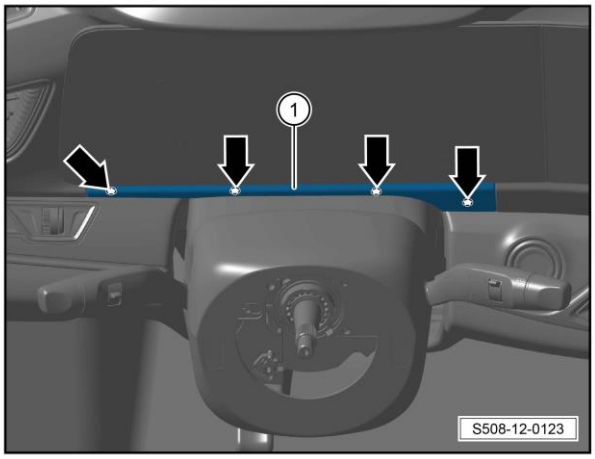
a. Disengage the fixing clips (see the arrow) and remove the instrument panel middle trim panel assembly (left) ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.11 Removal and installation of instrument panel central trim strip (middle)

Disassembly procedures



1 Remove the instrument panel central trim strip (middle)

a. Adjust the steering wheel to the lowest position.

b. Disengage the fixing clips (see the arrows) and remove the instrument panel central trim strip (middle) ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.12 Removal and installation of instrument panel central trim strip large assembly (right)

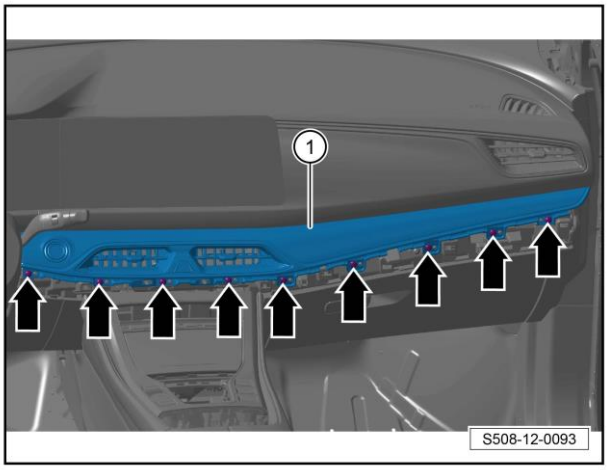
Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

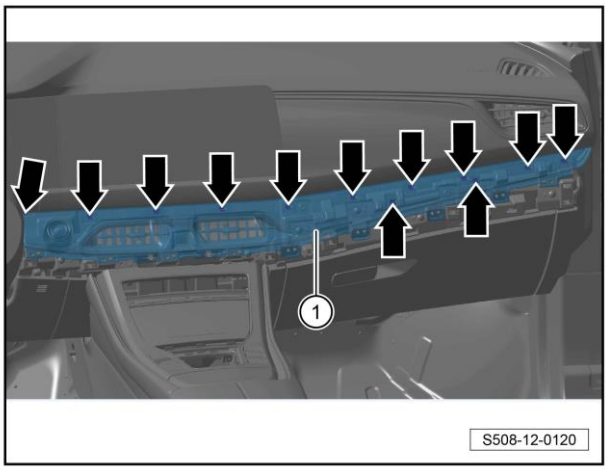
3 Remove the instrument panel middle trim panel

assembly (right). Refer to 9.8.3.14 Removal and installation of instrument panel middle trim panel assembly (right)

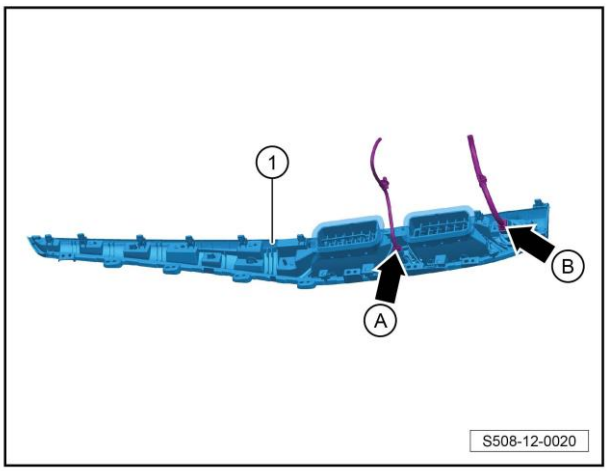


4 Remove the instrument panel central trim strip large assembly (right)

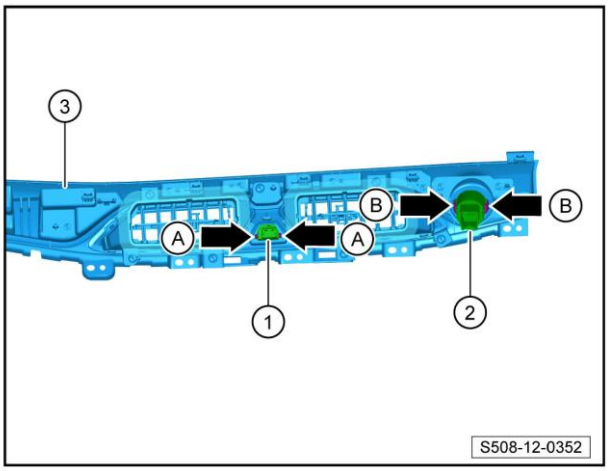
a. Unscrew the fixing screws (see the arrow) of the instrument panel central trim strip large assembly (right) ①.



b. Disengage the fixing clips (see the arrow) and remove the instrument panel central trim strip large assembly (right) ①.



c. Disconnect the connectors (see arrows A and B), and take out the instrument panel central trim strip large assembly (right) ①.



d. Disengage the fixing clips (see arrow A), and remove the hazard warning switch ①.

e. Disengage the fixing clips (see arrow B), remove the ENGINE START/STOP button ② and detach the instrument panel central trim strip large assembly (right) ③.

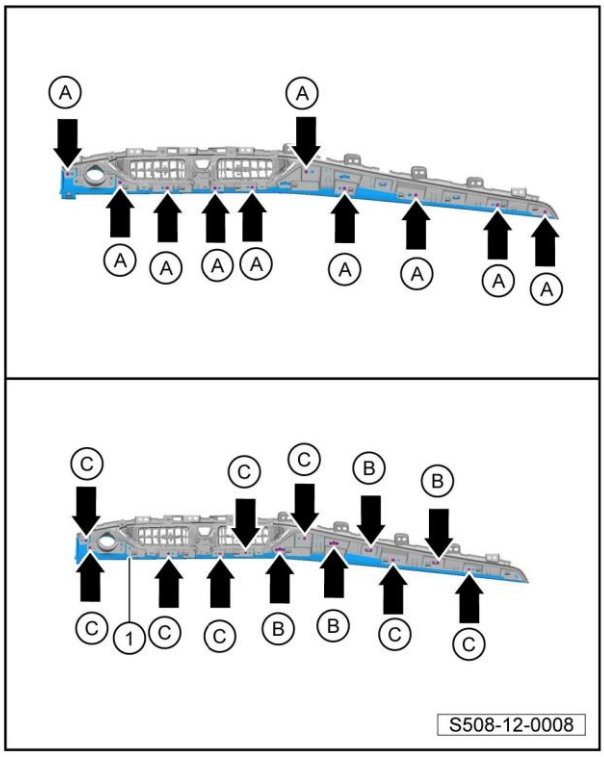
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.13 Removal and installation of instrument panel central trim strip assembly (right)

Disassembly procedures

1 Remove the instrument panel central trim strip assembly (right). Refer to 9.8.3.12 Removal and installation of instrument panel central trim strip assembly (right)



2 Remove the instrument panel central trim strip assembly (right)

a. Unscrew the fixing screws (see arrow A) of the instrument panel central trim strip assembly (right).

b. Disengage the fixing clips (see arrows B and C) and remove the instrument panel central trim strip assembly ① (right).

Installation procedures

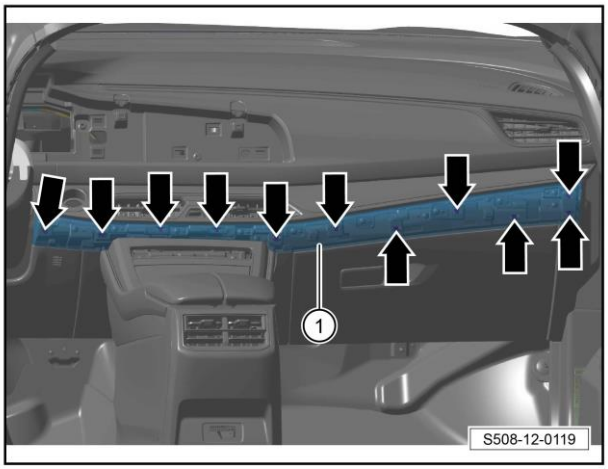
Perform the installation procedures in the reverse

order of removal procedures and pay attention to the following items:

– Check whether the clip is damaged and replace it if necessary.

9.8.3.14 Removal and installation of instrument panel middle trim panel assembly (right)

Disassembly procedures



1 Remove the instrument panel middle trim panel assembly (right)

a. Disengage the fixing clips (see the arrow) and remove the instrument panel middle trim panel assembly (right) ①.

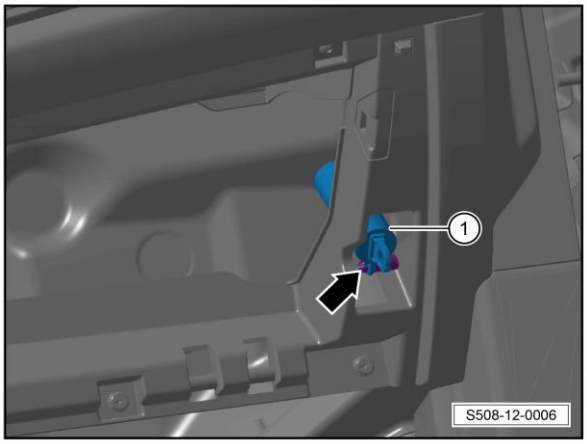
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.15 Removal and installation of toolbox damper

Disassembly procedures

1 Remove the toolbox assembly. Refer to 9.8.3.3 Removal and installation of toolbox assembly



3 Remove the toolbox damper

a. Disengage the toolbox damper from the instrument panel lower moulding (see the arrow), and take out the toolbox damper ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.8.3.16 Removal and installation of steering support structure assembly

Disassembly procedures

1 Remove the instrument panel subassembly. Refer to 9.8.3.1 Removal and installation of instrument panel subassembly

2 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component

3 Remove the front wiper motor and bracket assembly. Refer to 8.7.6.7 Removal and installation of front wiper motor and bracket assembly

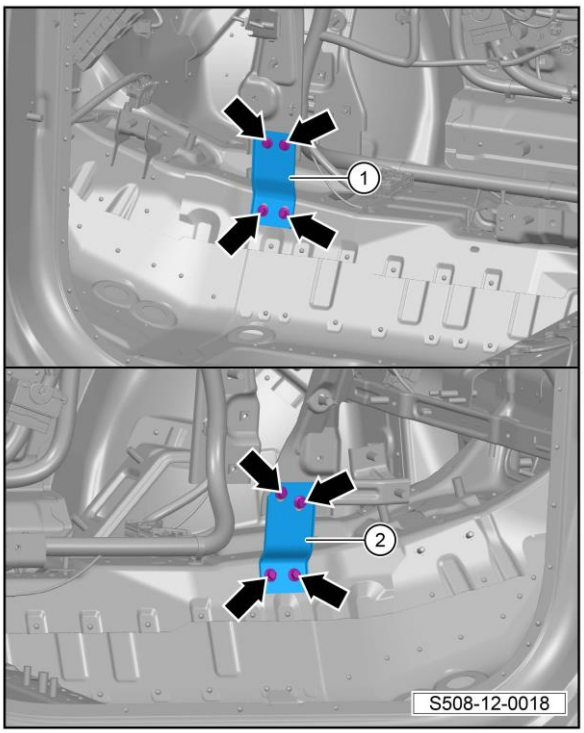
4 Remove the airbag ECU. Refer to 7.1.7.1 Removal and installation of airbag ECU

5 Remove the body control module. Refer to 8.28.6.1 Removal and installation of body controller

6 Remove the PM2.5 sensor body assembly. Refer to 6.6.4.8 Removal and installation of PM2.5 sensor body assembly

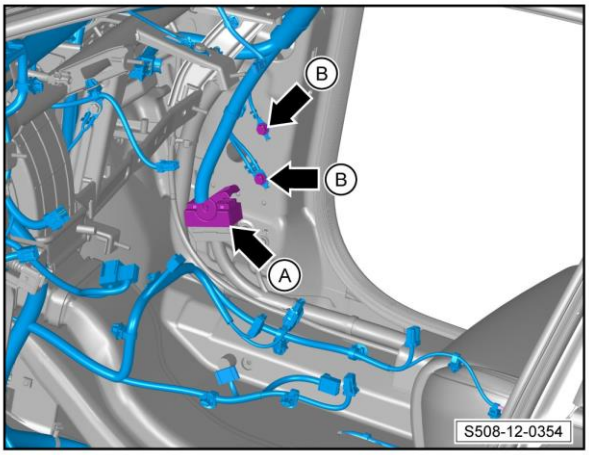
7 Remove the two-in-one antenna. Refer to 8.17.6.2 Removal and installation of the two-in-one antenna assembly

8 Remove the steering column assembly. Refer to 3.13.8.5 Removal and installation of steering column assembly



9 Remove the steering support structure assembly

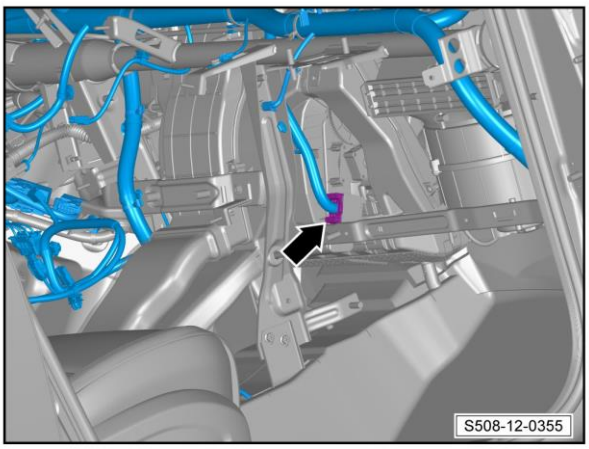
a. Unscrew the fixing bolts (see the arrows), and remove the pipe beam lower connecting brackets left ① and right ②.



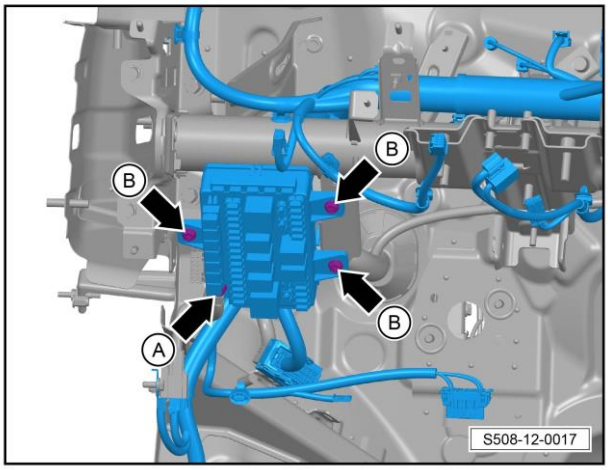
b. Disconnect the connector of the right side of cab harness with chassis harness (see arrow A).

c. Unscrew the grounding bolt of cab harness (see arrow B).

- Tightening torque of bolt (see arrow B): 10±1 N·m

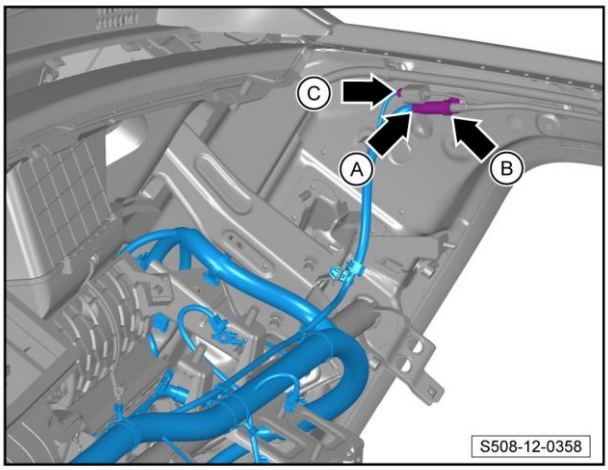


d. Disconnect the connector of the right side of cab harness with A/C harness (see the arrow).

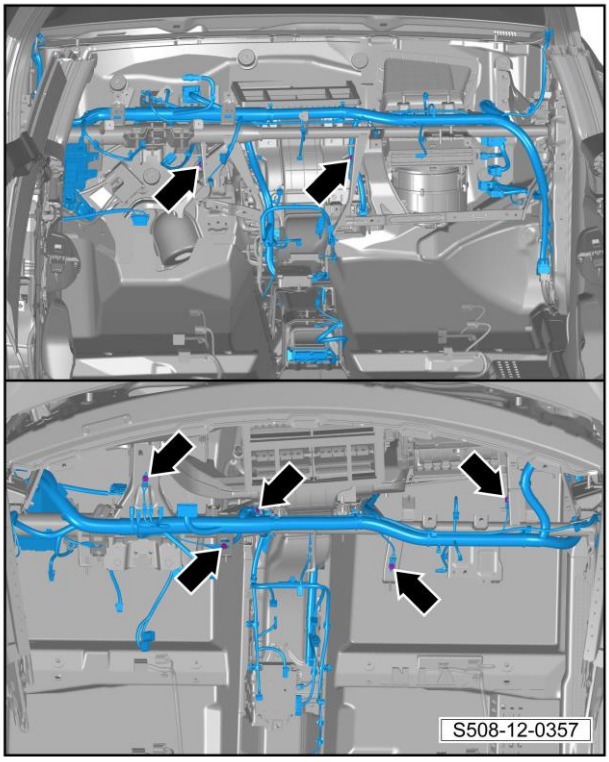


e. Unscrew the fixing nut (see arrow A) and bolts (see arrow B) of the cab electrical box.

- Tightening torque of nut (see arrow A): 10±1N·m
- Tightening torque of bolt (see arrow B): 10±1 N·m

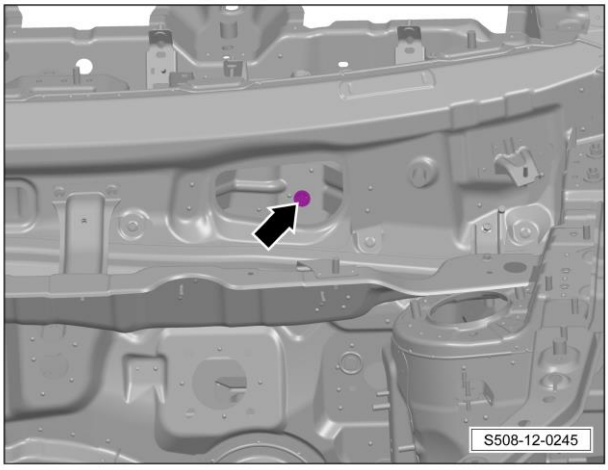


f. Disconnect the connectors of feeder I and feeder II (see arrows A and C) and disengage the fixing clips (see arrow B).



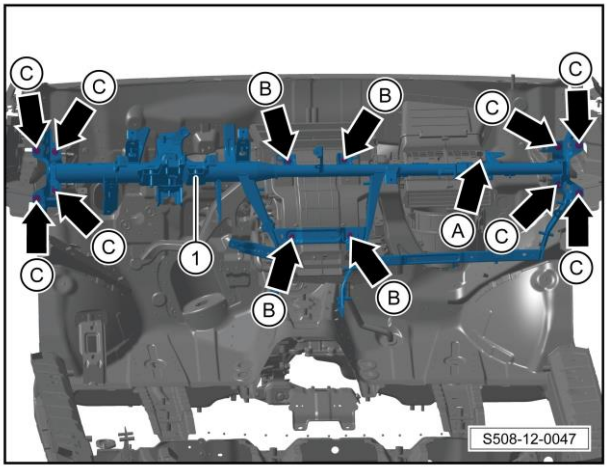
g. Unscrew the ground bolt of cab harness (see the arrow) and disengage the fixing clip of cab harness to move the harness aside.

- Tightening torque of bolt: 10±1 N·m



h. Unscrew the fixing bolt at the front end of the steering support structure (see the arrow).

- Tightening torque of bolt: 25±2 N·m



i. Unscrew the fixing bolts (see arrows A and B) from the steering support structure assembly to HVAC.

j. Unscrew the fixing bolts (see arrow C) and remove the steering support member ①.

- Tightening torque of bolt (see arrow A): 8±1 N·m
- Tightening torque of bolt (see arrow B): 8±1 N·m
- Tightening torque of bolt (see arrow **C**): **25±2 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.9 Control box

9.9.1 Specification

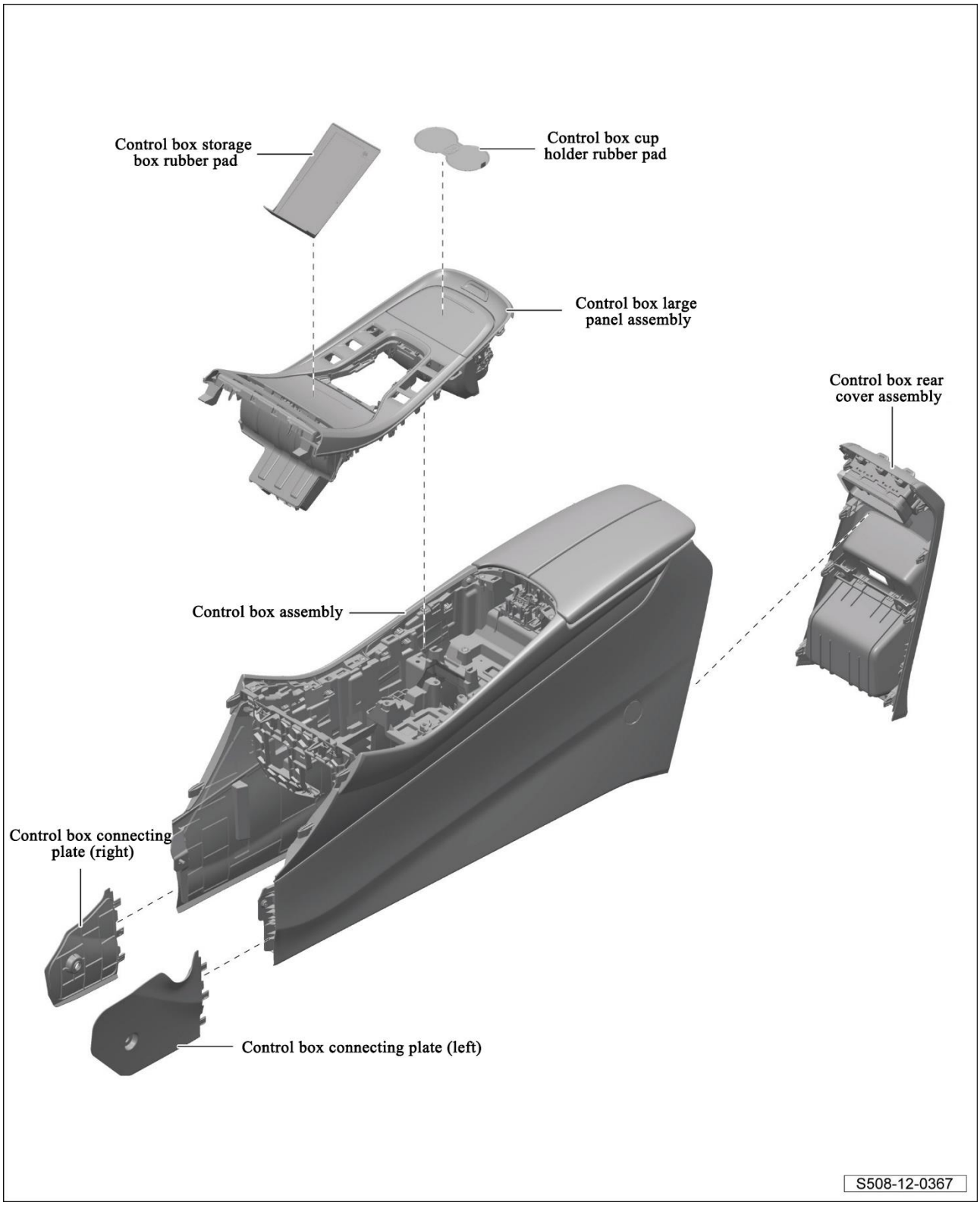
9.9.1.1 Fastener specifications

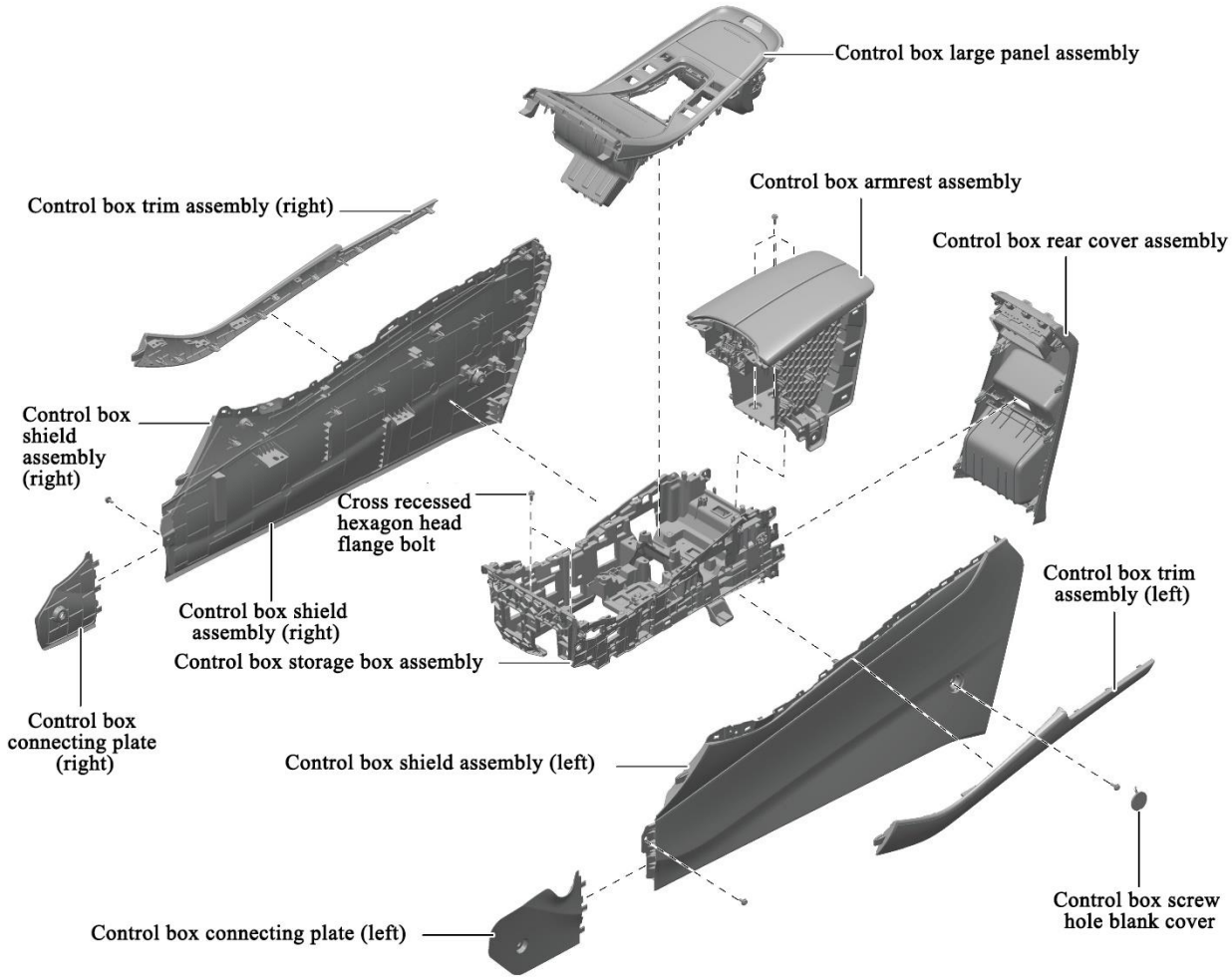
Tightening position	Specification	Tightening torque: N·m
Installation of control box storage box, connecting plate and armrest storage box mounting bracket	Cross recessed hexagon head flange bolt	6±1
Installation of control box frame and gearshift mounting bracket	Cross recessed hexagon head flange bolt	6±1
Installation of control box connecting plate and tubular beam	Cross recessed hexagon head flange bolt	6±1
Gearshift mounting bracket and gearshift mechanism mounting bracket	Cross recessed hexagon head flange bolt	6±1

9.9.2 Exploded view

9.9.2.1 Exploded view

Exploded view of control box




Control box large panel assembly
Control box armrest assembly
Control box rear cover assembly
Control box trim assembly (right)
Control box shield assembly (right)
Cross recessed hexagon head flange bolt
Control box shield assembly (right)
Control box storage box assembly
Control box connecting plate (right)
Control box trim assembly (left)
Control box shield assembly (left)
Control box screw hole blank cover
Control box connecting plate (left)

S508-12-0369

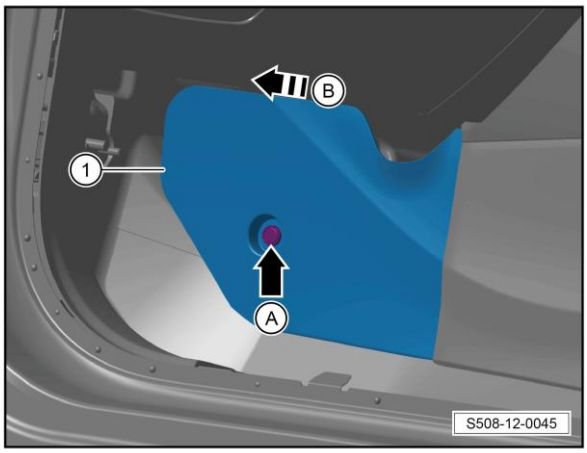
9.9.3 Removal and installation

9.9.3.1 Removal and installation of control box connecting plate

Disassembly procedures

Tip:

The removal and installation procedures are only for the left control box connecting plate, which can be basically referred to for the right one.



1 Remove the control box connecting plate

a. Disengage the fixing clip of the control box connecting plate (see arrow A).

b. Remove the control box connecting plate ① in the direction of arrow B.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.9.3.2 Removal and installation of control box assembly

Disassembly procedures

1 Remove the control box rear cover assembly. Refer to 9.9.3.4 Removal and installation of control box rear cover assembly

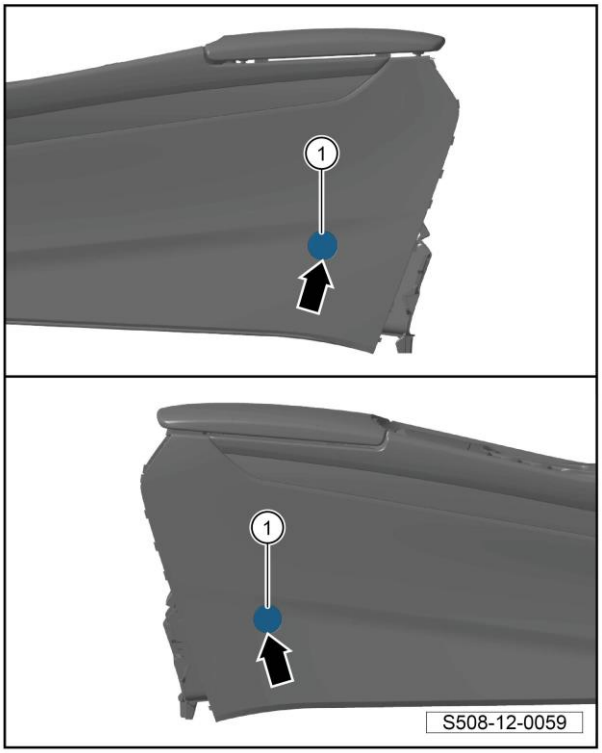
2 Remove the rear air-to-face pipeline assembly 2. Refer to 6.5.4.15 Removal and installation of rear air-to-face pipeline assembly 2

3 Remove the gearshift control mechanism assembly. Refer to 4.3.5.1 Removal and installation of gearshift control mechanism assembly

4 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly

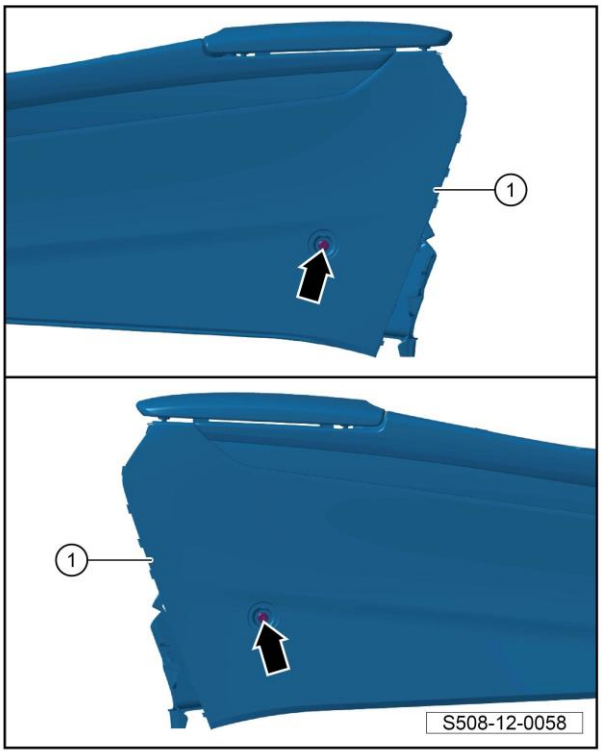
5 Remove the IMMO antenna. Refer to 8.28.6.3 Removal and installation of IMMO antenna

6 Remove the control box connecting plate. Refer to 9.9.3.1 Removal and installation of control box connecting plate



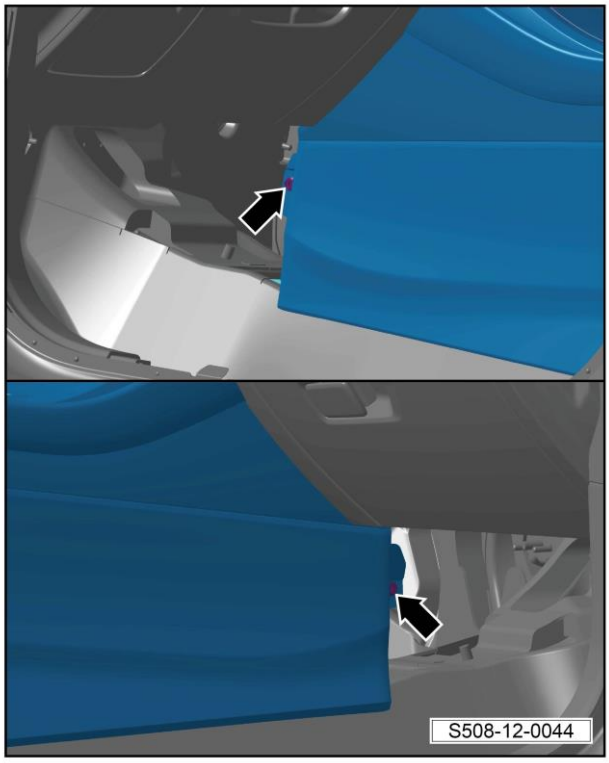
7 Remove the control box assembly

a. Remove the screw hole blank cover ① of the control box (see the arrow).



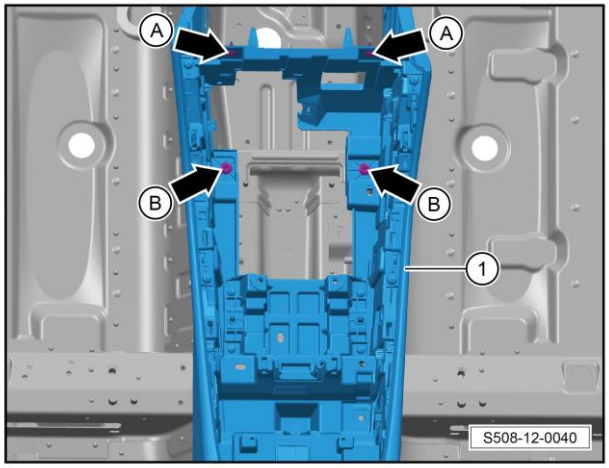
b. Unscrew the fixing bolts (see the arrows) of control box assembly ①.

- Tightening torque of bolt: 6±1 N·m



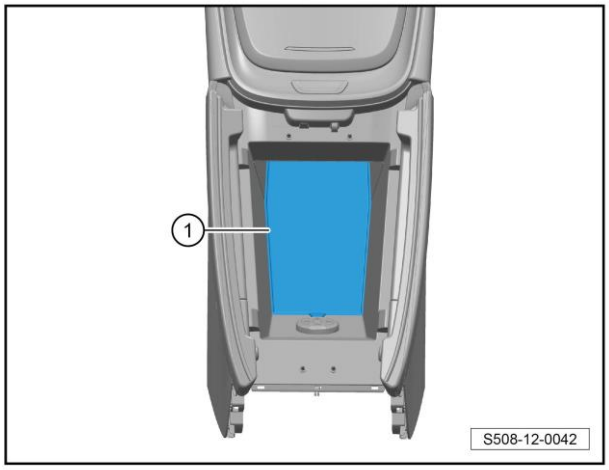
c. Unscrew the fixing bolts (see the arrows) on both sides of the control box assembly.

- Tightening torque of bolt: 6±1 N·m

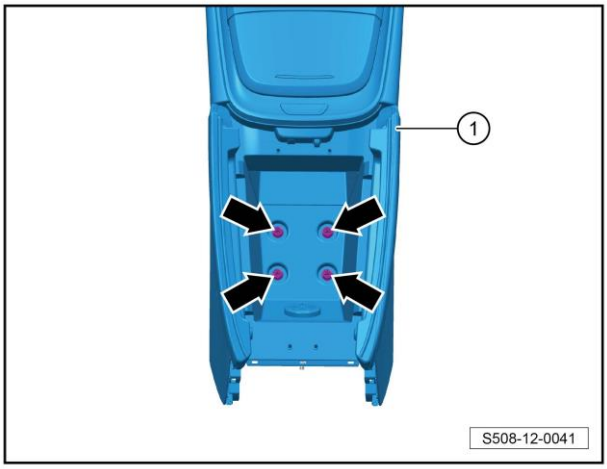


d. Unscrew the upper fixing screws (see arrow A) and bolts (see arrow B) of the control box assembly ①.

- Tightening torque of bolt (see arrow B): 6±1Nm

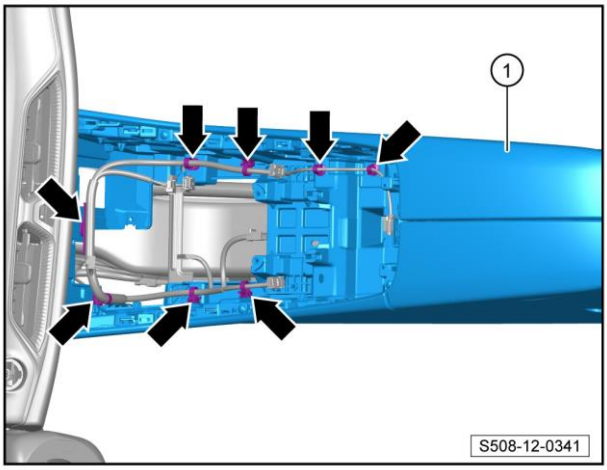


e. Open the armrest of the control box and take out the rubber pad ① of the storage box of the control box.



f. Unscrew the fixing bolts (see the arrows) of control box assembly ①.

- Tightening torque of bolt: 6±1 N·m



g. Disengage the harness clips (see the arrow) and remove the control box assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

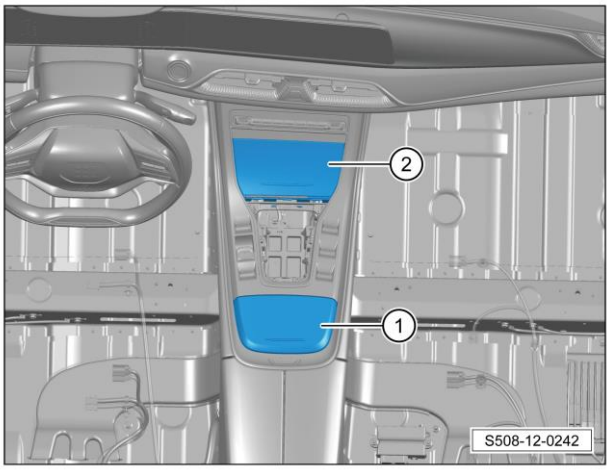
9.9.3.3 Removal and installation of control box large panel assembly

Disassembly procedures

1 Turn off all the electrical appliances and turn off the Start switch.

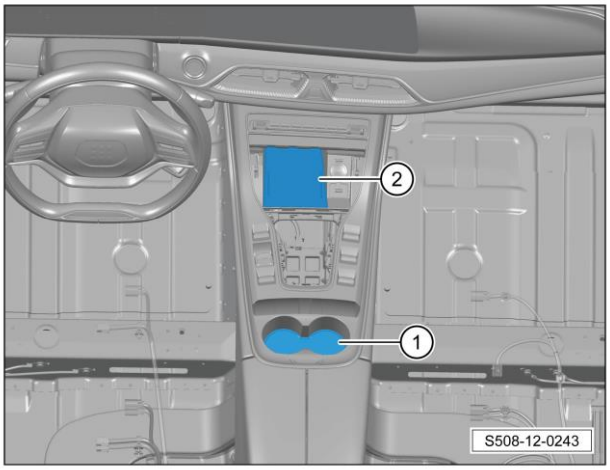
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

3 Remove the gearshift control mechanism assembly. Refer to 4.3.5.1 Removal and installation of gearshift control mechanism assembly

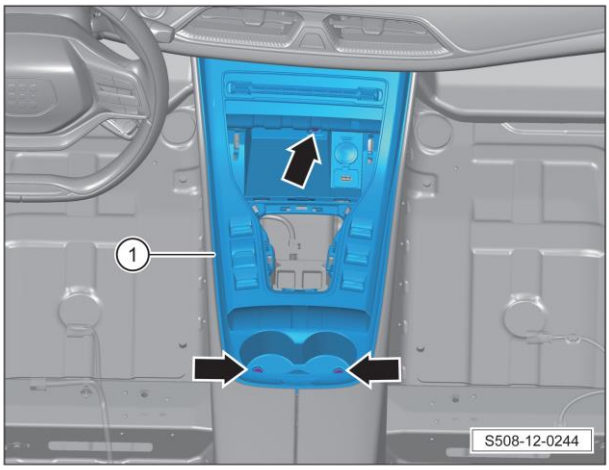


4 Remove the control box large panel assembly

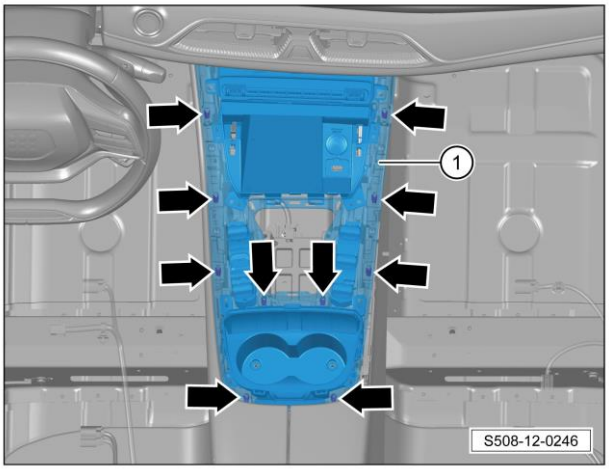
a. Open the control box cup holder ① and the control box storage box cover ②.



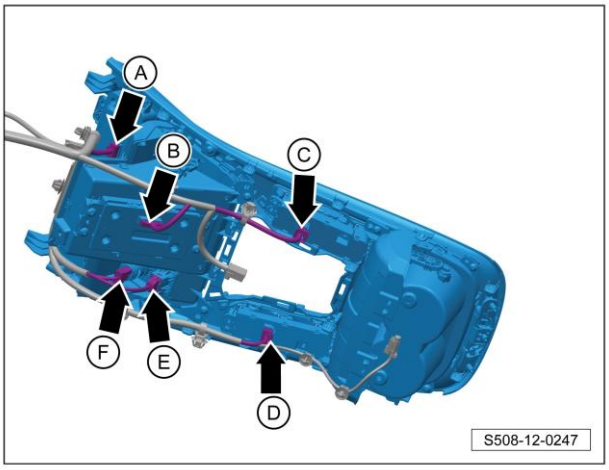
b. Take out the rubber pad ① of the control box cup holder and ② of the control box storage box.



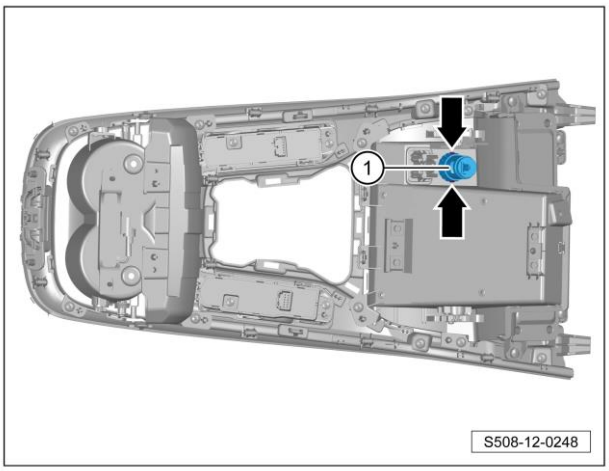
c. Unscrew the fixing screws (see the arrows) of the control box large panel assembly ①.



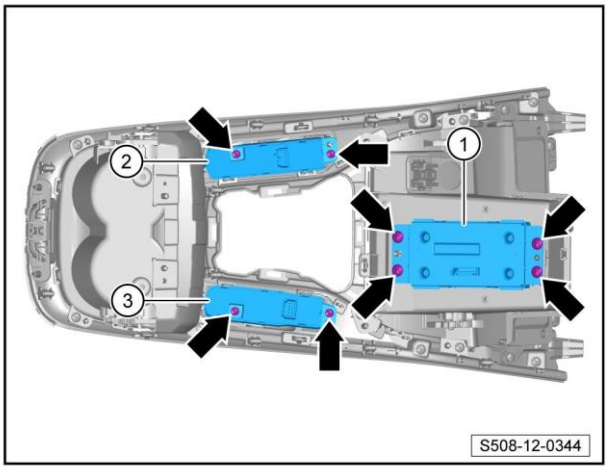
d. Disengage the fixing clips (see the arrow) and remove the control box large panel assembly ①.



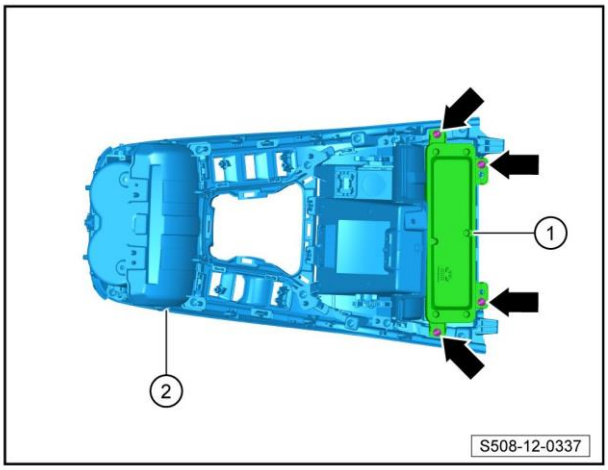
e. Disconnect the connectors (see arrows A, B, C, D, E and F) and take out the control box large panel assembly.



f. Disengage the fixing clips (see the arrows) and remove the on-board power supply ①.



g. Unscrew the fixing screws (see the arrow) and remove the mobile phone wireless charging module ① of the gearshift panel, and the right switch component ② and the left switch component ③ of the gearshift panel.



h. Unscrew the fixing screws (see the arrow), remove the A/C control panel assembly ① and detach the control box large panel assembly ②.

Installation procedures

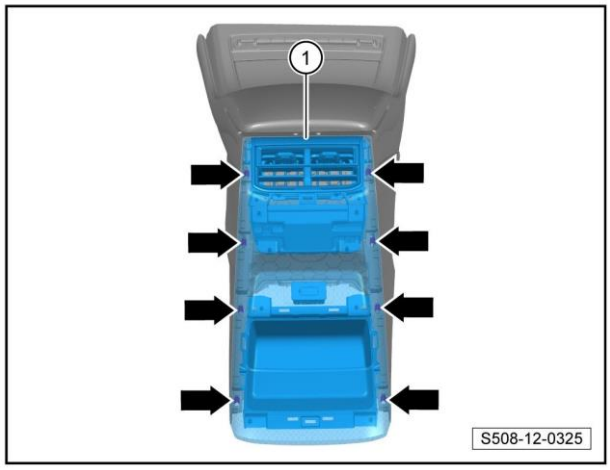
The installation procedure is to be performed basically in the reverse order:

9.9.3.4 Removal and installation of control box rear cover assembly

Disassembly procedures

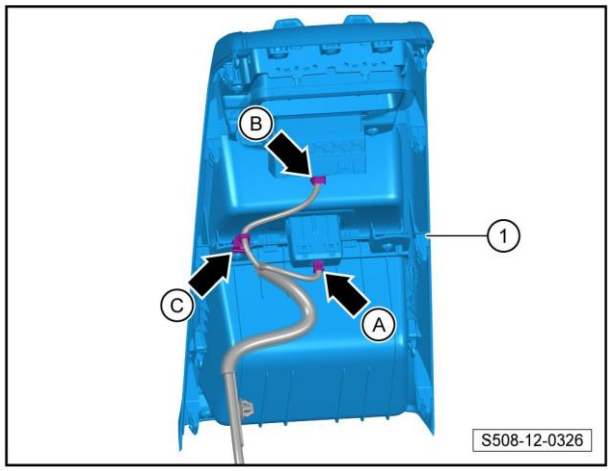
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



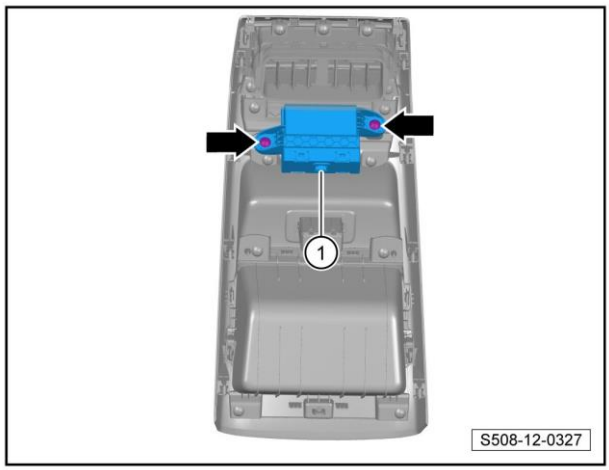
3 Remove the control box rear cover assembly

a. Disengage the fixing clips (see the arrow) and remove the control box rear cover assembly with accessories ①.

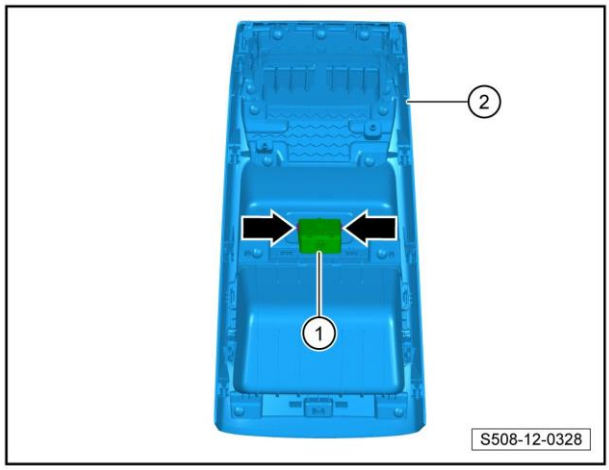


b. Disconnect the cab harness connectors (see arrows A and B).

c. Disengage the fixing clips of the cab harness (see arrow C) and remove the control box rear cover assembly with accessories ①.



d. Unscrew the fixing screws (see the arrow) and remove the Bluetooth controller ①.



e. Disengage the fixing clips (see the arrow), remove the USB charging port ① and take out the control box rear cover assembly ②.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

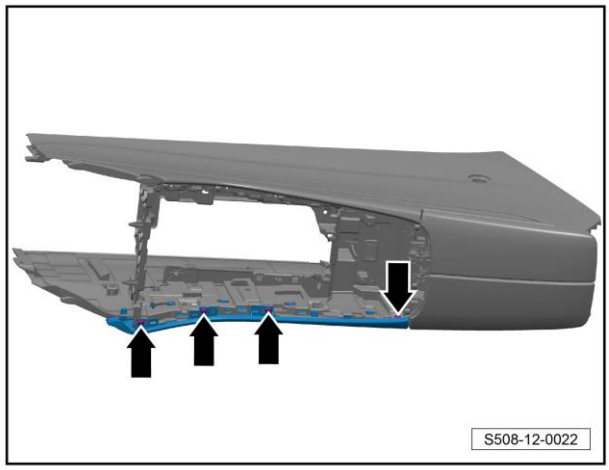
9.9.3.5 Removal and installation of control box trim assembly

Disassembly procedures

Tip:

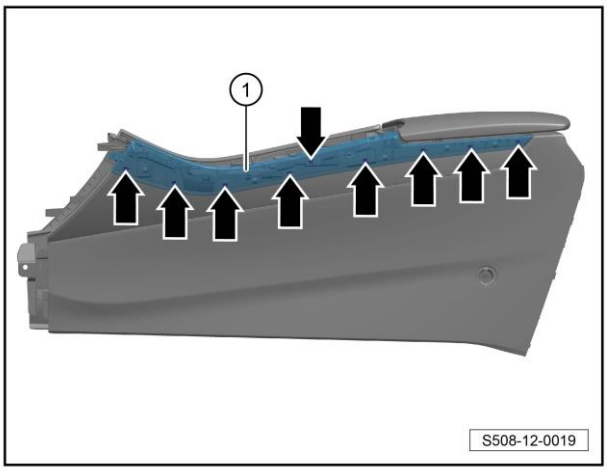
The removal and installation procedures are only for the left control box trim assembly, which can be basically referred to for the rear right one.

1 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly



2 Remove the control box trim assembly

a. Unscrew the fixing screws (see the arrows) of the control box trim assembly.



b. Disengage the fixing clips (see the arrow) and remove the control box trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.9.3.6 Removal and installation of control box guard assembly

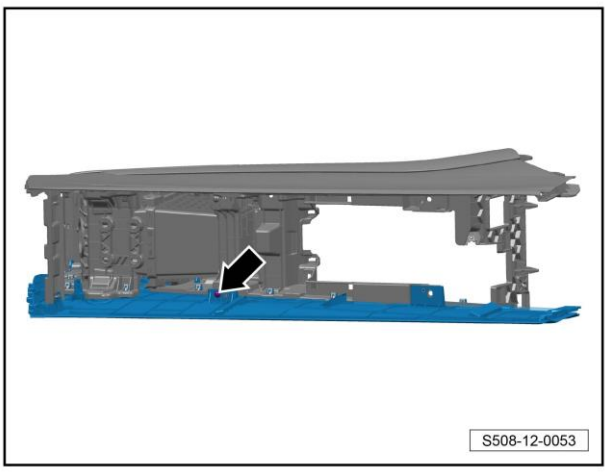
Disassembly procedures

Tip:

The removal and installation procedures are only for the left control box guard board assembly, which can be basically referred to for the right one.

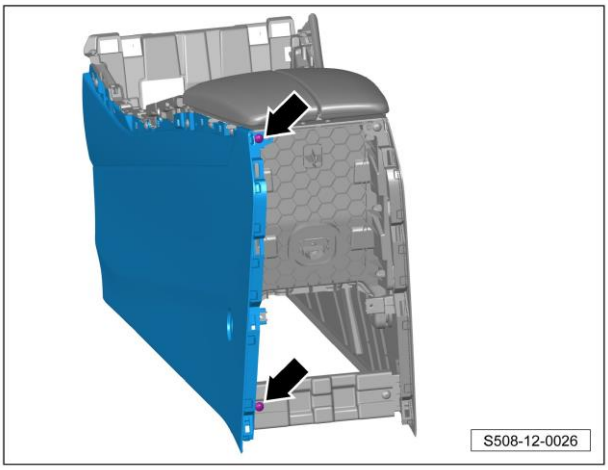
1 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

2 Remove the control box trim assembly. Refer to 9.9.3.5 Removal and installation of control box trim assembly

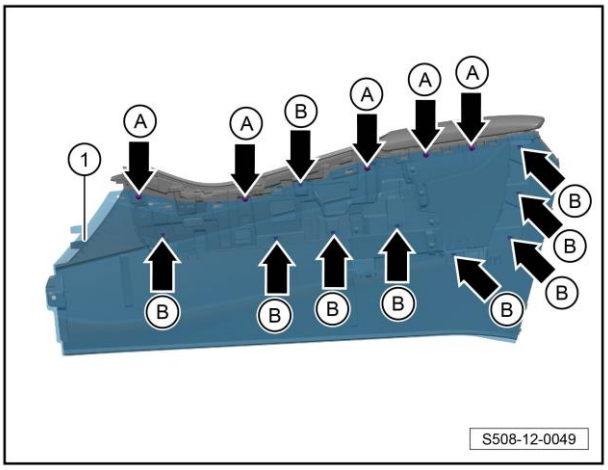


3 Remove the control box guard assembly

a. Unscrew the bottom fixing screws (see the arrows) of the control box guard assembly.



b. Unscrew the rear fixing screws (see the arrows) of the control box guard assembly.



c. Unscrew the fixing screws (see arrow A) of the control box guard board assembly.

d. Disengage the fixing clips (see arrow B) and remove the control box guard board assembly ①

Installation procedures

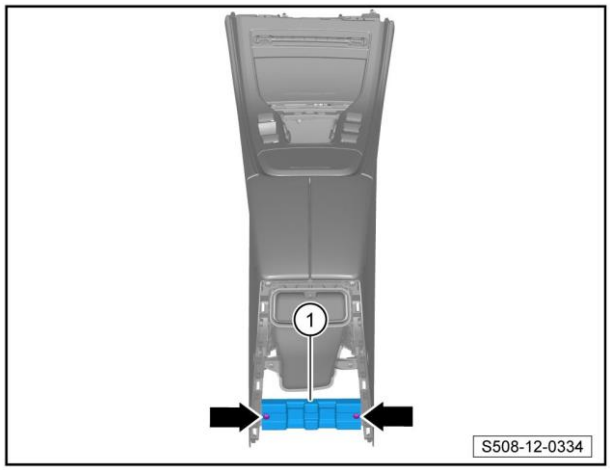
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.9.3.7 Removal and installation of control box rear mounting bracket

Disassembly procedures

1 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly



2 Remove the control box rear mounting bracket

a. Unscrew the fixing screws (see the arrow) and remove the control box rear mounting bracket ①.

Installation procedures

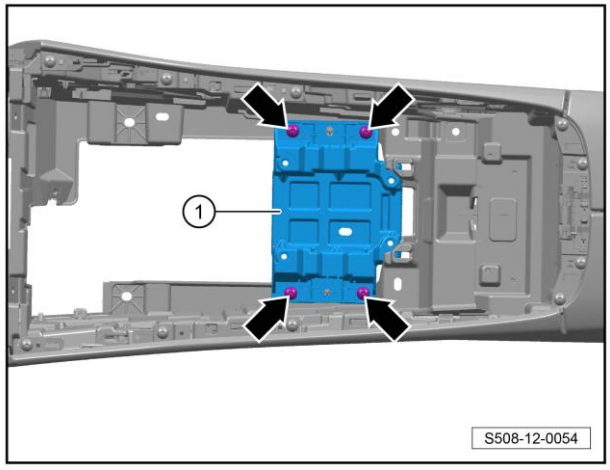
The installation procedure is to be performed basically in the reverse order:

9.9.3.8 Removal and installation of electronic gearshift mounting bracket

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly

2 Remove the gearshift control mechanism assembly. Refer to 4.3.5.1 Removal and installation of gearshift control mechanism assembly



3 Remove the electronic gearshift mounting bracket

a. Unscrew the fixing screws (see the arrows) of the electronic gearshift mounting bracket and remove the electronic gearshift mounting bracket ①

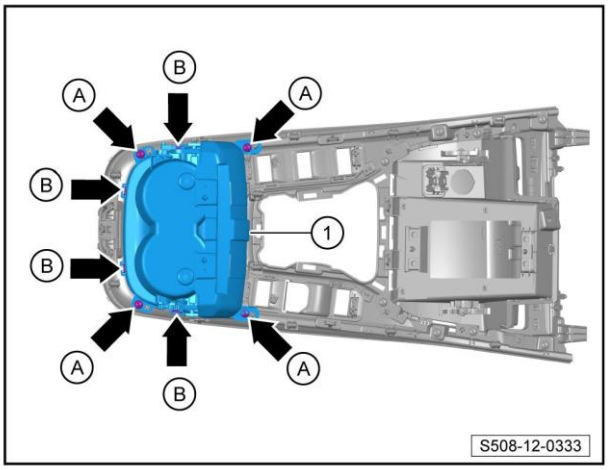
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.9.3.9 Removal and installation of control box cup holder assembly

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



2 Remove the control box cup holder assembly

a. Unscrew the fixing screw (see the arrow) of the control box cup holder assembly and remove the control box cup holder assembly ①.

Installation procedures

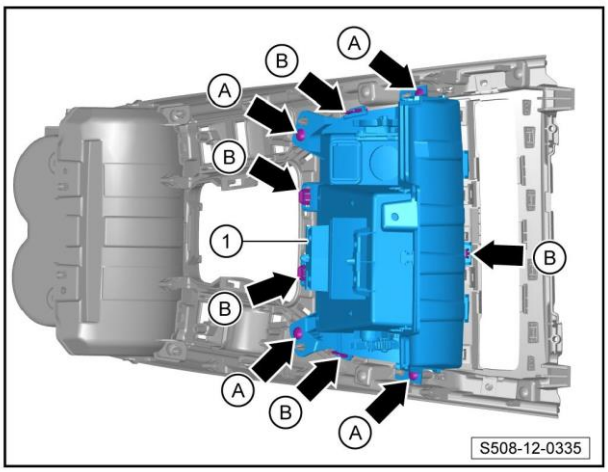
The installation procedure is to be performed basically in the reverse order:

9.9.3.10 Removal and installation of control box front storage box assembly

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly

2 Remove the mobile phone wireless charging module. Refer to 8.16.4.1 Removal and installation of mobile phone wireless charging module



3 Remove the control box front storage box assembly

a. Unscrew the fixing screws (see arrow A) of the control box front storage box assembly.

b. Disengage the fixing clips (see arrow B) and remove the control box front storage box assembly ①.

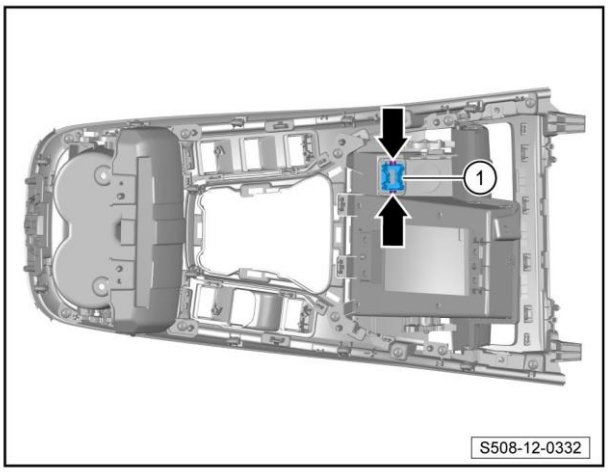
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.9.3.11 Removal and installation of USB mounting base

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



2 Remove USB mounting base

a. Disengage the fixing clips (see the arrow) and remove the USB mounting base ①.

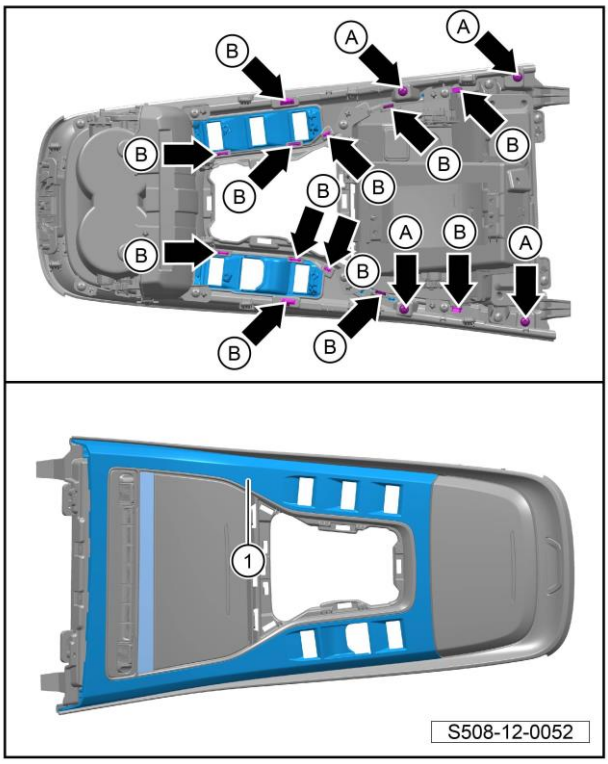
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.9.3.12 Removal and installation of control box large panel

Disassembly procedures

1 Remove the control box large panel assembly. Refer to 9.9.3.3 Removal and installation of control box large panel assembly



2 Remove the control box large panel

a. Unscrew the fixing screws (see arrow A) of the control box large panel.

b. Disengage the fixing clips (see arrow B) and remove the control box large panel ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

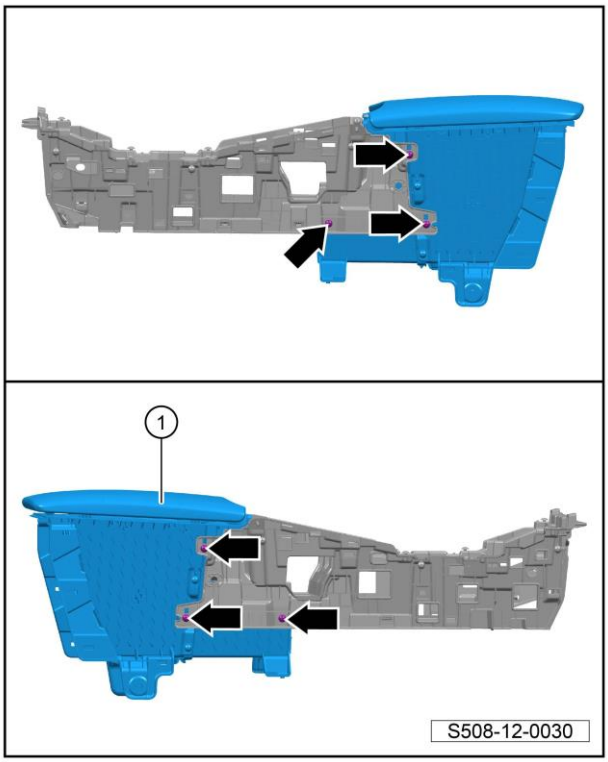
9.9.3.13 Removal and installation of control box storage box assembly

Disassembly procedures

1 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

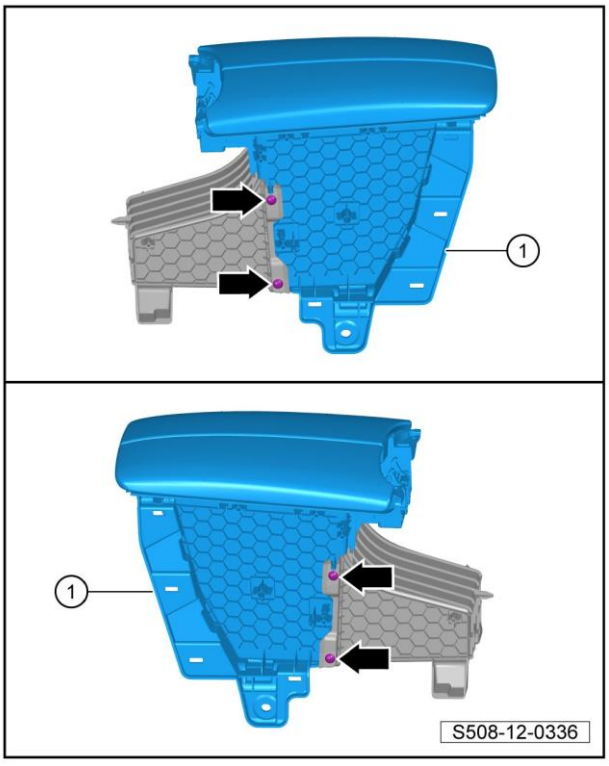
2 Remove the control box trim assembly. Refer to 9.9.3.5 Removal and installation of control box trim assembly

3 Remove the control box guard board assembly. Refer to 9.9.3.6 Removal and installation of control box guard board assembly

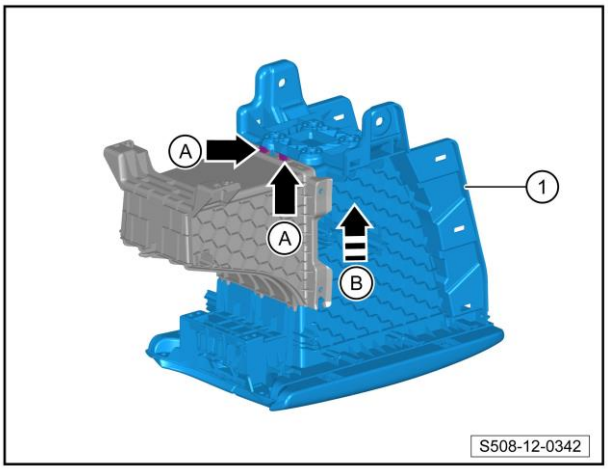


4 Remove the control box storage box assembly

a. Unscrew the left/right fixing screws (see the arrow) and remove the control box storage box assembly with sub-storage box assembly ①.



b. Unscrew the left/right fixing screws (see the arrow) of the control box storage box assembly ①.



c. Disengage the fixing clips (see arrow A) and remove the control box storage box assembly ① in the direction of arrow B.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

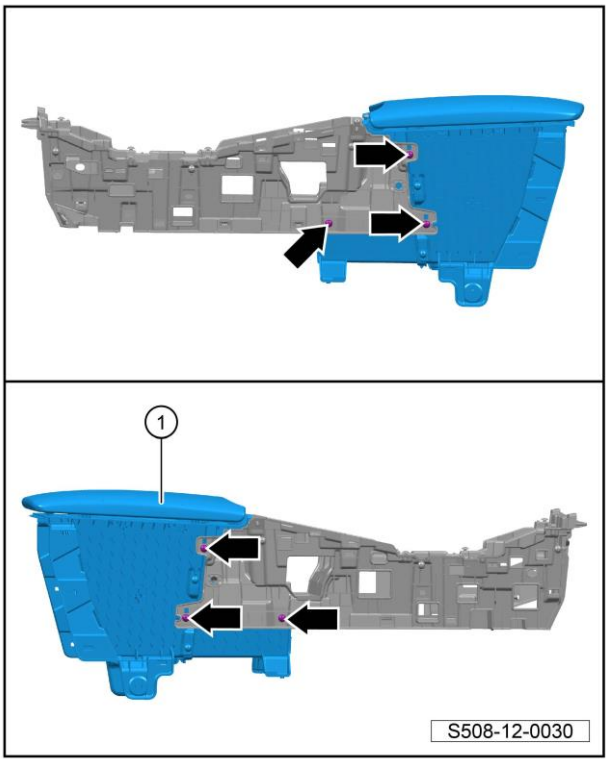
9.9.3.14 Removal and installation of control box sub-storage box assembly

Disassembly procedures

1 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

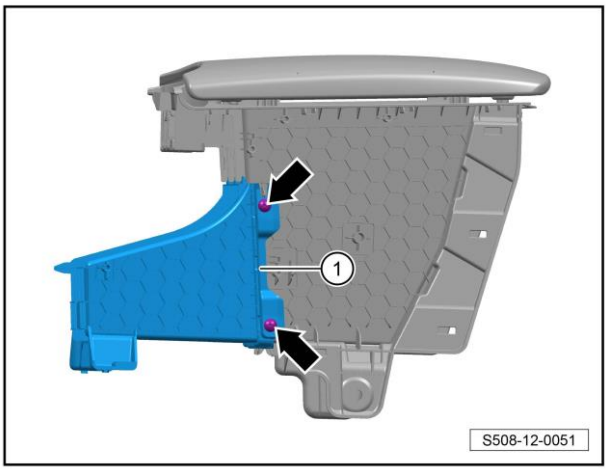
2 Remove the control box trim assembly. Refer to 9.9.3.5 Removal and installation of control box trim assembly

3 Remove the control box guard board assembly. Refer to 9.9.3.6 Removal and installation of control box guard board assembly

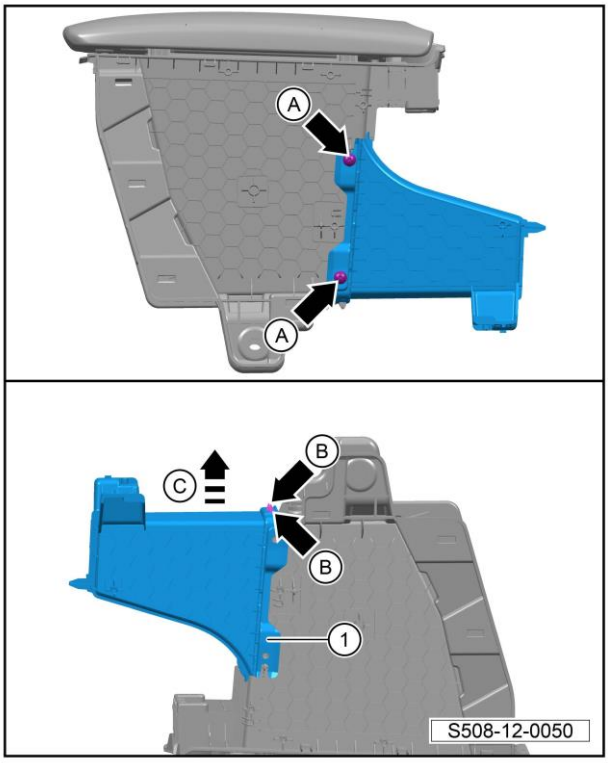


4 Remove the control box sub-storage box assembly

a. Unscrew the left/right fixing screws (see the arrow) of the control box storage box assembly and remove the control box storage box assembly with sub-storage box assembly ①.



b. Unscrew the left fixing screws (see the arrows) of the control box sub-storage box assembly ①.



c. Unscrew the right fixing screws (see arrow A) of the control box sub-storage box assembly.

d. Disengage the fixing clip (see arrow B) of the control box sub-storage box assembly.

e. Remove the control box sub-storage box assembly ① in the direction of arrow C.

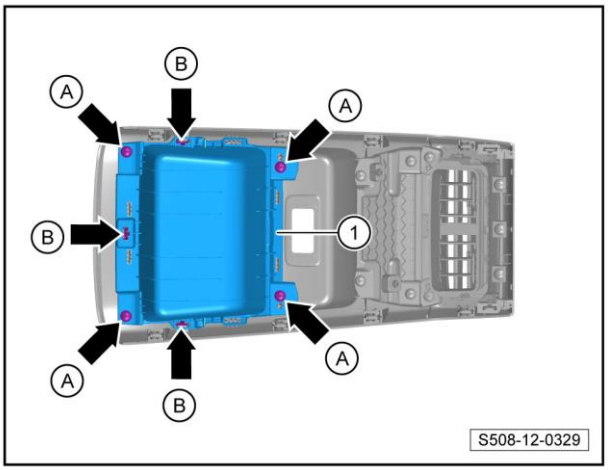
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.9.3.15 Removal and installation of control box rear storage box

Disassembly procedures

1 Remove the control box rear cover assembly. Refer to 9.9.3.4 Removal and installation of control box rear cover assembly



2 Remove the control box rear storage box

a. Unscrew the fixing screws (see arrow A) of the control box rear storage box.

b. Disengage the fixing clips (see arrow B) and remove the control box rear storage box ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.10 Front seat

9.10.1 Specification

9.10.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Front seat & backrest assembly	Hexagon head flange bolt M10×1.25×25	50±3

9.10.2 Exploded view

9.10.2.1 Exploded view

Exploded view of front-row seat

9.10.3 Removal and installation

9.10.3.1 Removal and installation of front seat and seat backrest assembly

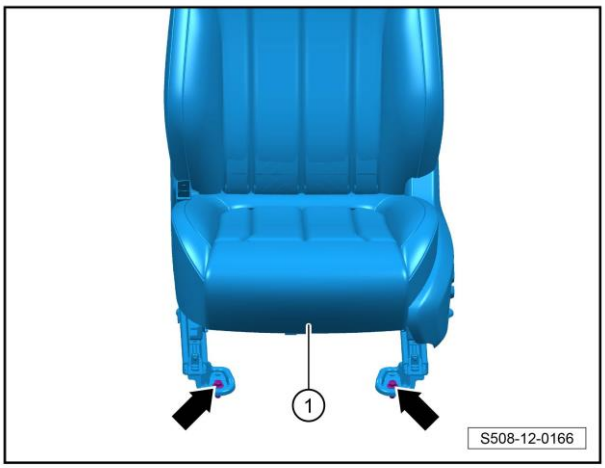
Disassembly procedures

Tip:

The removal and installation procedures are only for the front seat and backrest assembly (left), which can be basically referred to for the right one.

1 Turn off all the electrical appliances and turn off the Start switch.

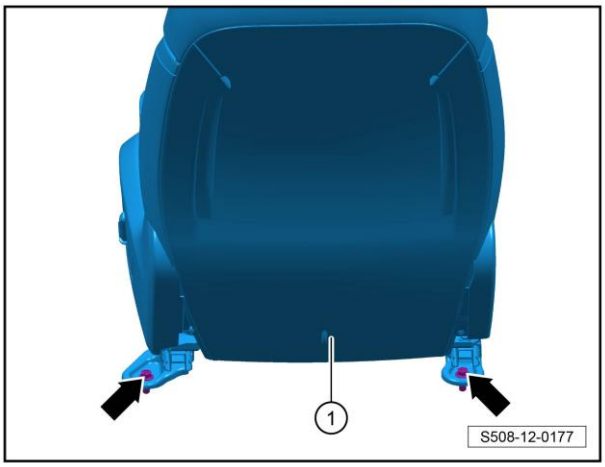
2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal



3 Remove the front seat and seat backrest assembly

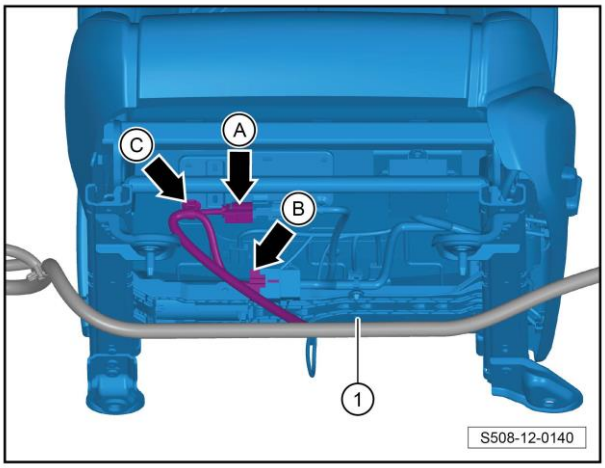
a. Move the seat to the rearmost end, and unscrew the front fixing bolt (see the arrow) of the front seat and seat backrest assembly ①.

- Tightening torque of bolt: 50±3 N·m



b. Move the seat forward as far as it goes, and unscrew the rear fixing bolt (see the arrow) of the front seat and seat backrest assembly ①.

- Tightening torque of bolt: 50±3 N·m



d. Disconnect the connectors (see arrows A and B) of front seat & backrest assembly.

e. Disengage the harness clip (see arrow C) and remove the front seat and seat backrest assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Tighten the fixing bolts of the front seat and backrest assembly to the specified torque.
- Perform functional check of the front left seat after installation.

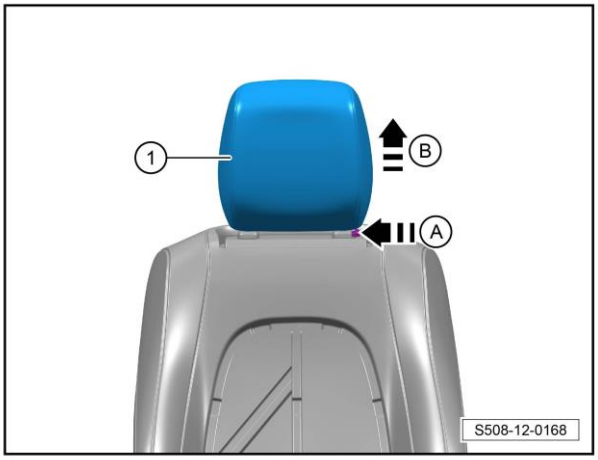
9.10.3.2 Removal and installation of front seat headrest assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left seat headrest assembly, which can be basically referred to for the front right one.

1 Adjust the front seat to a proper position.



2 Remove the front seat headrest assembly

a. Press the headrest height adjustment button in direction of arrow A.

b. Remove the front seat headrest assembly ① in the direction of arrow B.

Installation procedures

The installation procedure is to be performed

basically in the reverse order:

9.10.3.3 Removal and installation of plastic pipe for front seat headrest

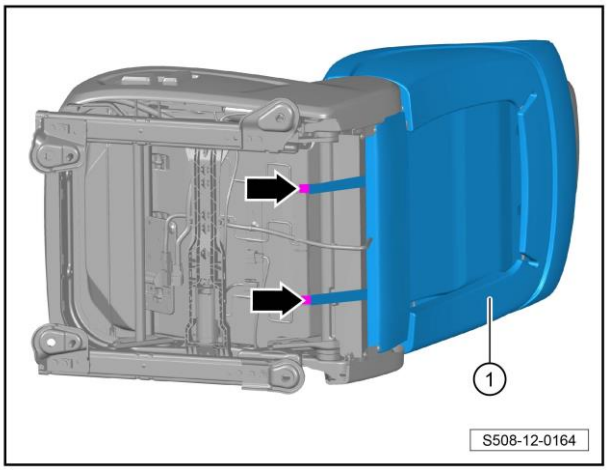
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left seat headrest plastic duct, which can be basically referred to for the front right one.

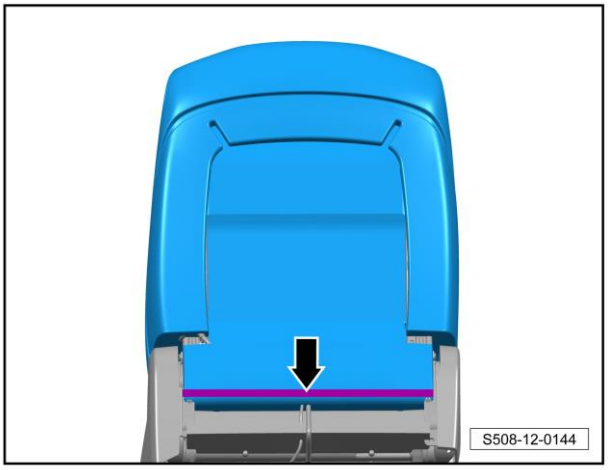
1 Remove the front seat and backrest assembly (left). Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

2 Remove the front left seat headrest assembly. Refer to 9.10.3.2 Removal and installation of front seat headrest assembly

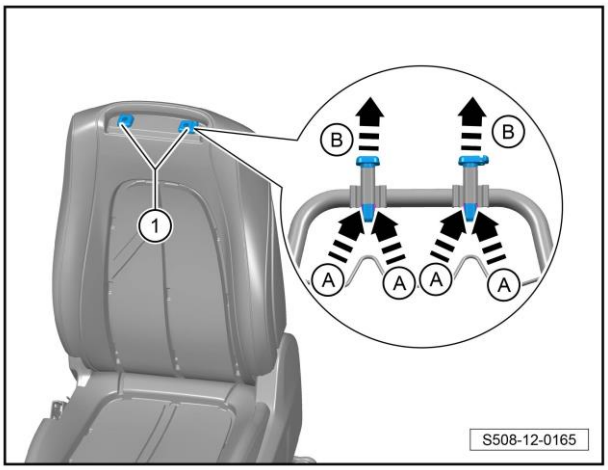


3 Remove the plastic pipe for front seat headrest

a. Disengage the fixing clip (see the arrow) of seat backrest covering ①.



b. Disengage the clamping plate (see the arrow) of the seat backrest covering.



c. Press the fixing clips on both sides in direction of the arrow A.

d. Remove the front seat headrest plastic conduit ① along the direction of arrow B.

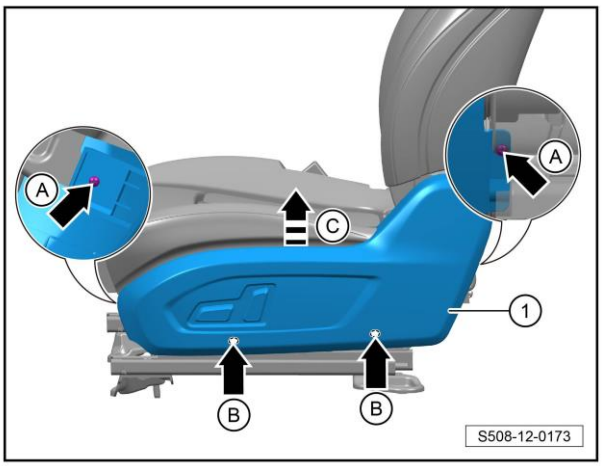
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.10.3.4 Removal and installation of driver's seat trim cover (left) (6-way electric adjustment)

Disassembly procedures

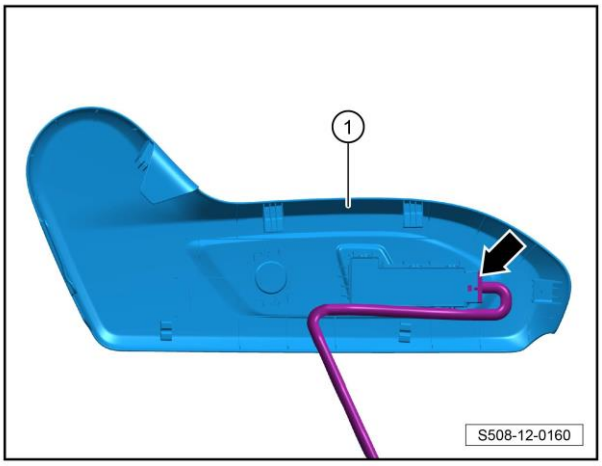
1 Remove the front seat and backrest assembly (left). Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly



2 Remove the driver's seat trim cover (left)

a. Unscrew the fixing screws (see arrow A) of the driver's seat trim cover (left).

b. Disengage the clips (see arrow B), and remove the left driver's seat trim cover ① in the direction of arrow C.



c. Disconnect the connector (see the arrow) of the driver's seat harness.

d. Remove the driver's seat trim cover ① (left).

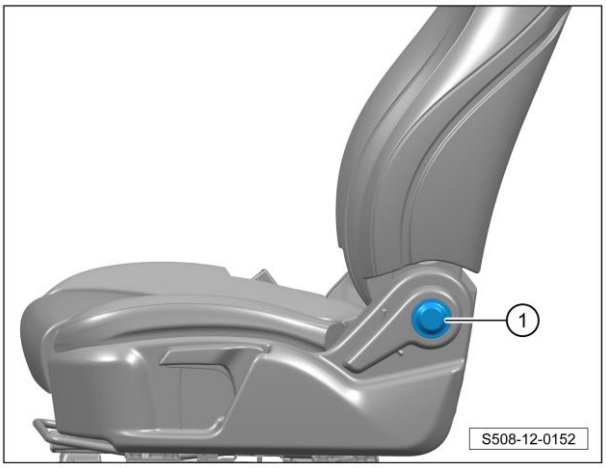
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.10.3.5 Removal and installation of driver manual large guard

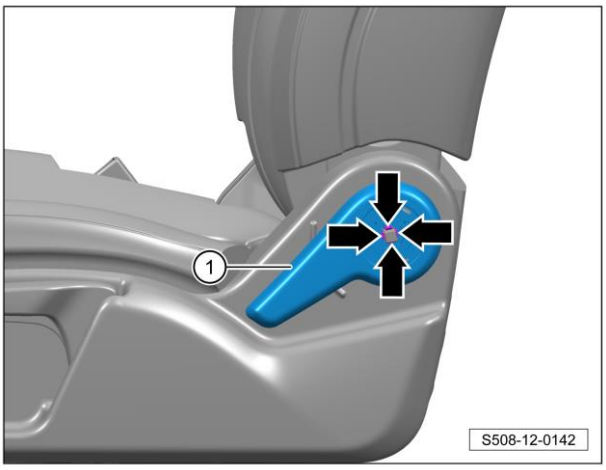
Disassembly procedures

1 Remove the front seat and backrest assembly (left). Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

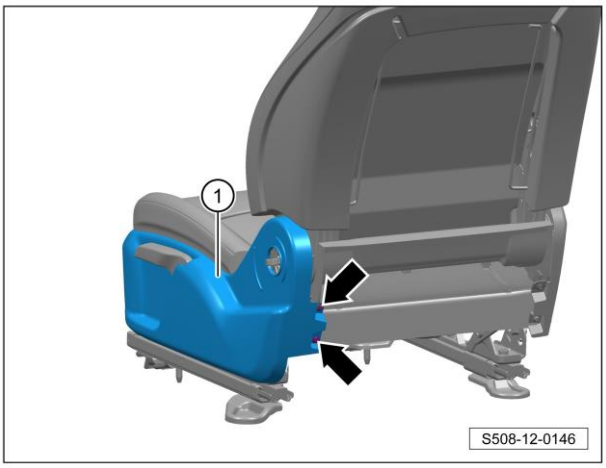


2 Remove the driver manual large guard

a. Use a mini straight screwdriver to remove the protective cover ① of recliner handle.



b. Disengage the fixing clip (see the arrow), and take out the recliner handle ①.



c. Open one corner of the seat backrest covering and unscrew the fixing screw of the driver manual large guard (see the arrow).

d. Remove the driver manual large guard ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

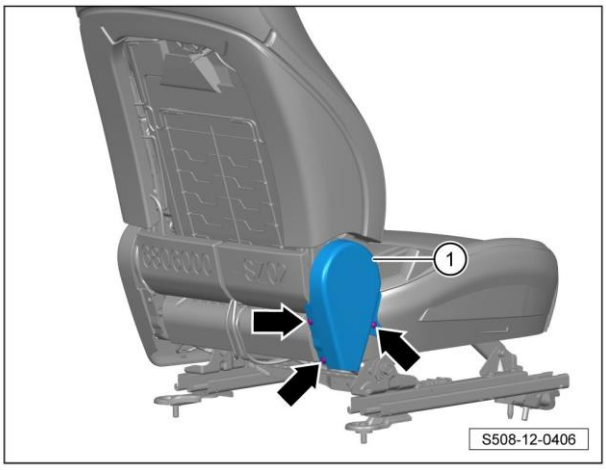
9.10.3.6 Removal and installation of driver's seat inner guard

Disassembly procedures

Tip:

The removal and installation procedures are only for the inner shield of the driver's seat, which can be basically referred to for that of the front passenger's seat.

1 Remove the front seat and backrest assembly. Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly



2 Remove the driver manual inner guard

a. Unscrew the fixing screws (see the arrow) and remove the driver's seat inner guard ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.10.3.7 Removal and installation of seat backrest foam covering assembly

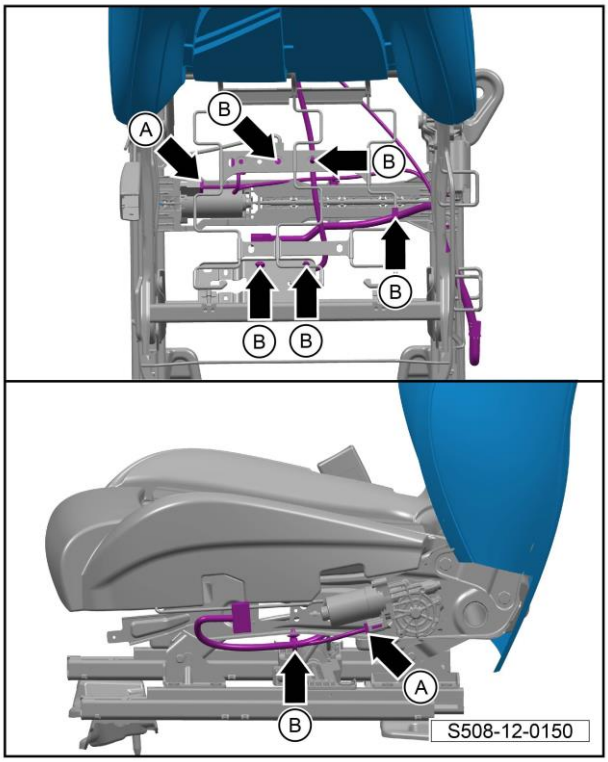
Disassembly procedures

1 Remove the front seat and backrest assembly. Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

2 Remove the left driver's seat trim cover. Refer to 9.10.3.4 Removal and installation of driver's seat trim cover (left) (6-way electric adjustment)

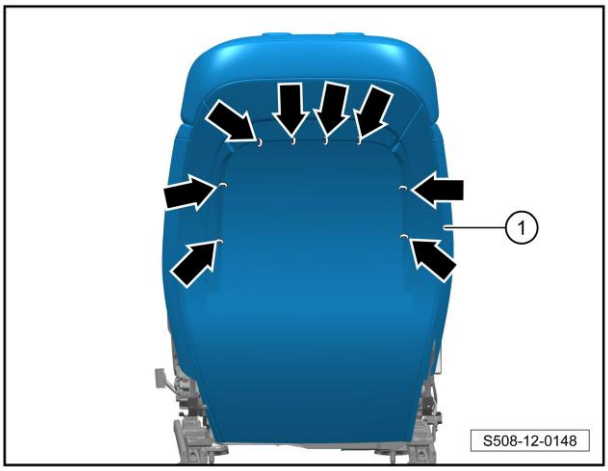
3 Remove the driver manual large guard. Refer to 9.10.3.5 Removal and installation of driver manual large guard

4 Remove the plastic pipe for front-row left seat headrest. Refer to 9.10.3.3 Removal and installation of plastic pipe for front-row seat headrest.



5 Remove the front seat backrest foam covering assembly

a. Disconnect the connector (see arrow A) of driver's seat harness and disengage its fixing clips (see arrow B).



b. Disengage the fixing metal clips (see the arrow) of front-row seat backrest foam and foam covering assembly, and remove the front-row seat backrest foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– After installation, check the seat function.

9.10.3.8 Removal and installation of seat backrest foam covering

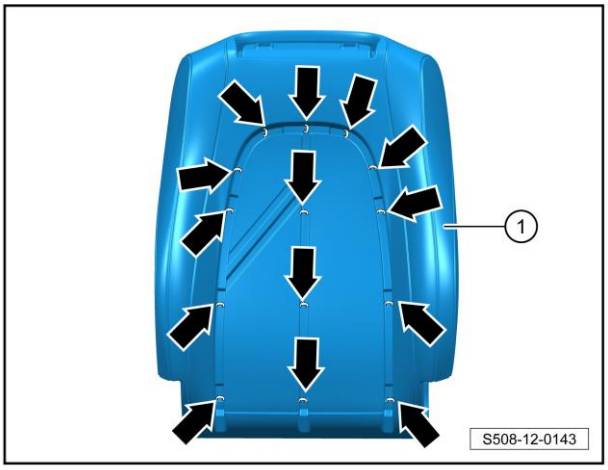
Disassembly procedures

Tip:

The removal and installation procedures are only for the front left seat backrest covering, which can be

basically referred to for the front right one.

1 Remove the front seat backrest foam and foam covering assembly. Refer to 9.10.3.7 Removal and installation of backrest foam covering assembly



2 Remove the front seat backrest foam covering assembly

a. Disengage the fixing metal clips (see the arrows) of front seat backrest foam covering assembly.

b. Remove the front seat backrest foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

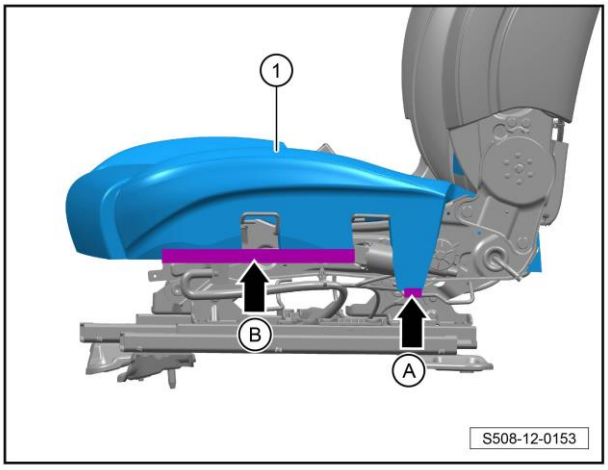
-The metallic clip is disposable and must be replaced with a new one.

9.10.3.9 Removal and installation of seat cushion foam covering assembly

Disassembly procedures

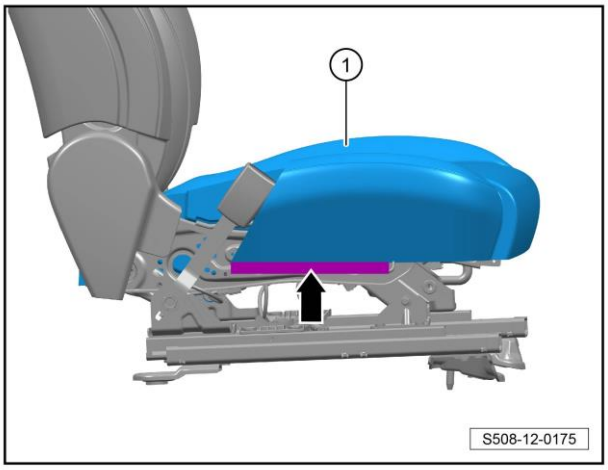
1 Remove the front seat and backrest assembly. Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

2 Remove the left driver's seat trim cover. Refer to 9.10.3.4 Removal and installation of driver's seat trim cover (left) (6-way electric adjustment)

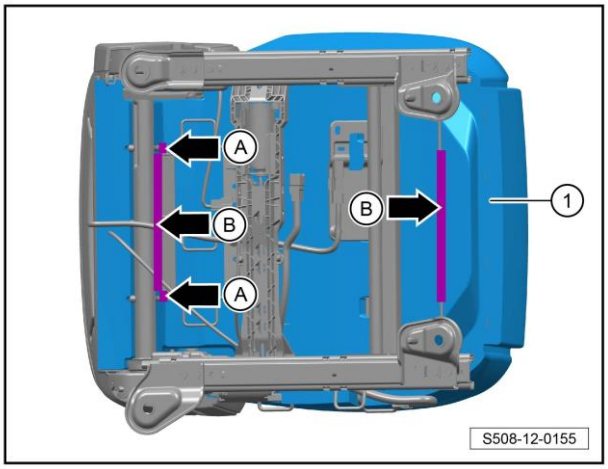


3 Remove the seat cushion foam covering assembly

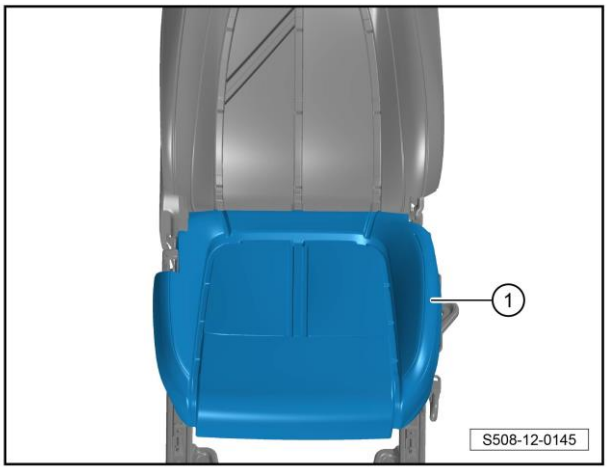
a. Disengage the left fixing clip (see arrow A) and batten (see arrow B) of seat cushion foam covering assembly ①.



b. Disengage the right fixing batten (see the arrow) of the seat cushion foam covering assembly ①.



c. Disengage the bottom fixing clips (see arrow A) and batten (see arrow B) of seat cushion foam covering assembly ①.



d. Remove the seat cushion foam covering assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

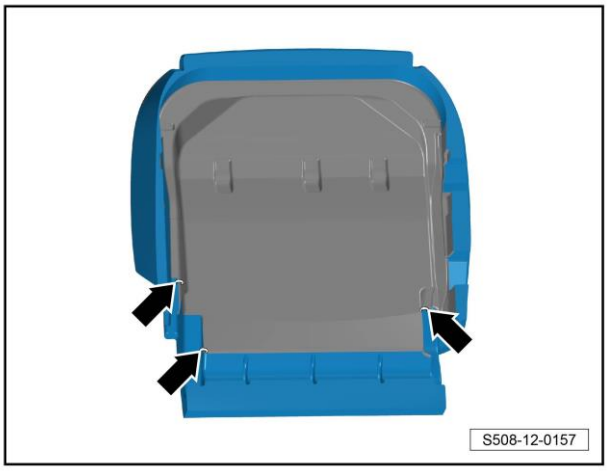
9.10.3.10 Removal and installation of seat cushion foam covering

Disassembly procedures

Tip:

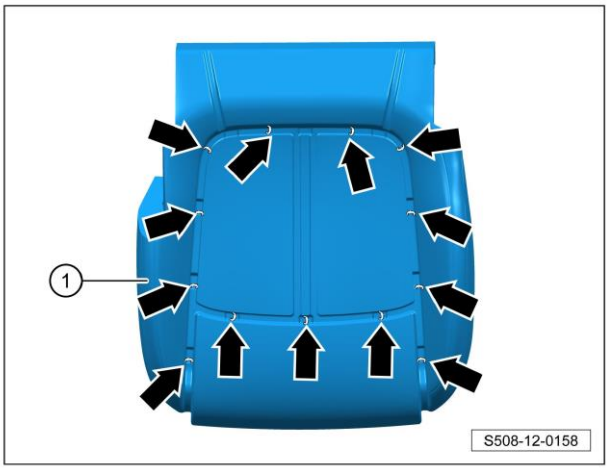
The removal and installation procedures are only for the left seat cushion covering, which can be basically referred to for the right one.

1 Remove the front-row left seat cushion foam covering assembly. Refer to 9.10.3.9 Removal and installation of seat cushion foam covering assembly



2 Remove the cushion covering

a. Disengage the bottom fixing metal clips (see arrow B) of seat cushion covering.



b. Disengage the front fixing metal clips (see the arrow) and remove the seat covering ①

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-The metallic clip is disposable and must be replaced with a new one.

9.11 Second-row seat

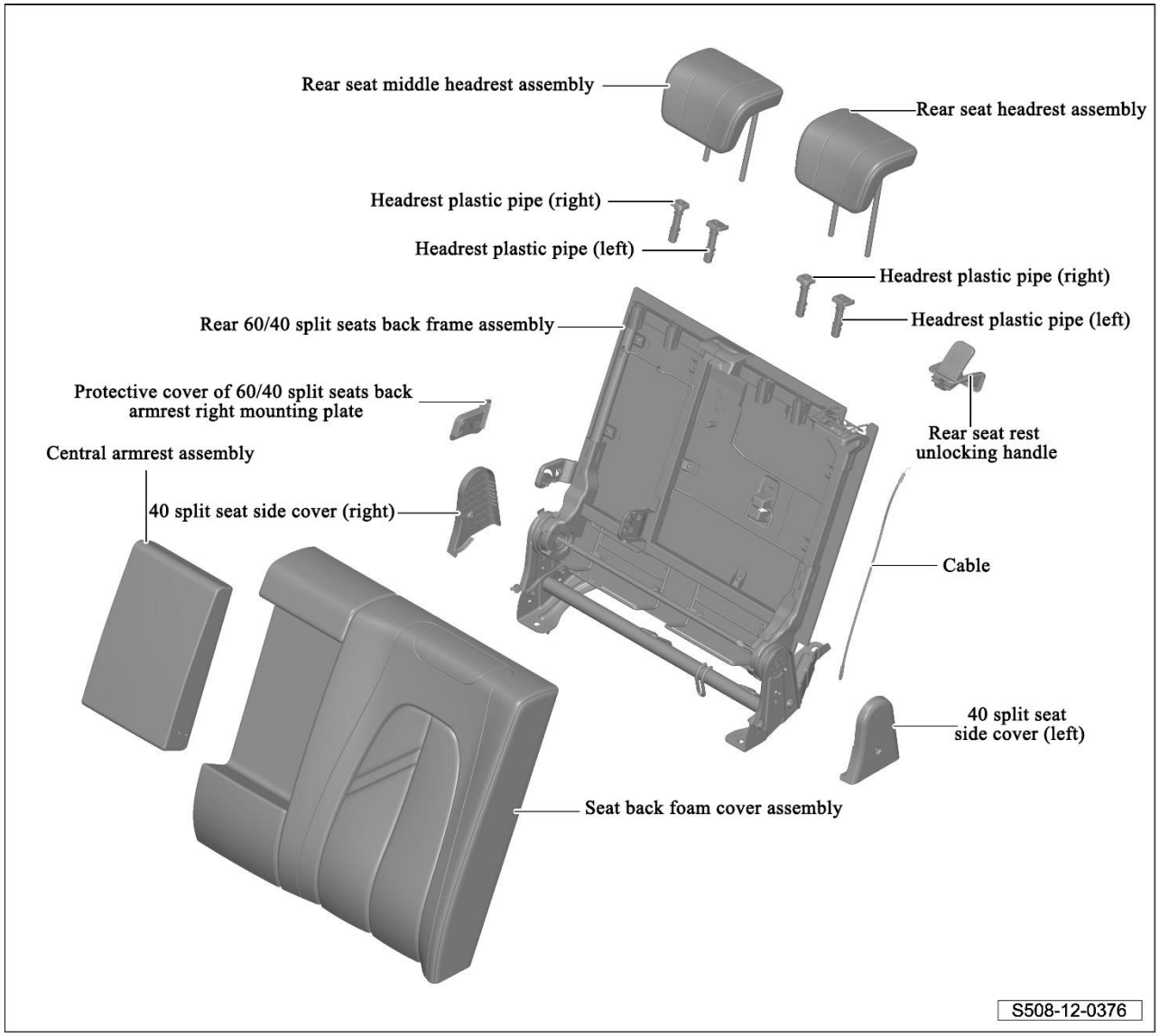
9.11.1 Specification

9.11.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
60 split seat assembly	Hexagon head flange bolt M10×1.25×2	50±3
40 split seat assembly	Hexagon head flange bolt M10×1.25×2	50±3

9.11.2 Exploded view

9.11.2.1 Exploded view



9.11.3 Removal and installation

9.11.3.1 Removal and installation of rear seat backrest assembly

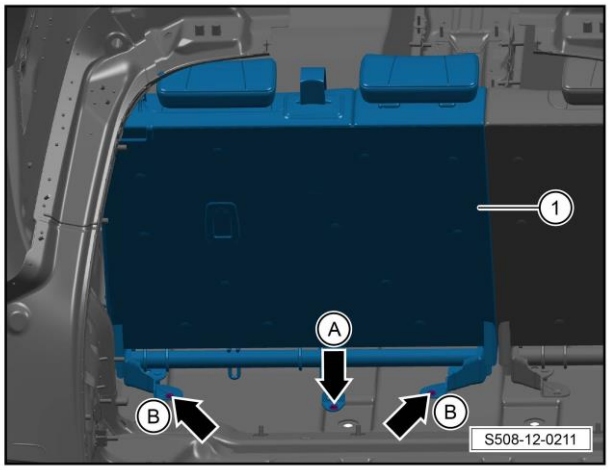
Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left seat backrest assembly, which can be basically referred to for the rear right one.

1 Remove the rear seat cushion assembly. Refer to 9.11.3.2 Removal and installation of second-row seat cushion assembly

2 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

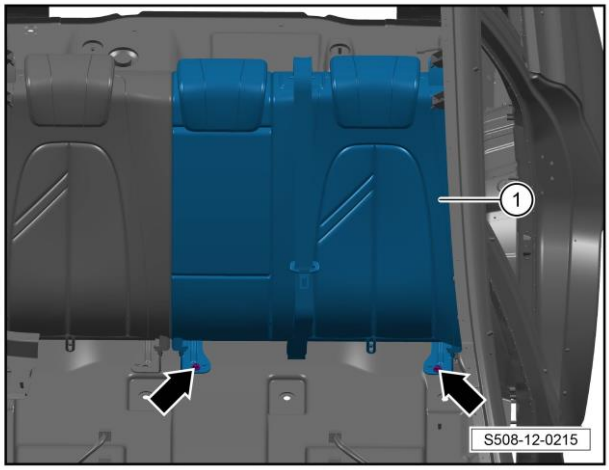


3 Remove the rear seat backrest assembly

a. Unscrew the fixing bolt (see arrow A) of the rear middle seat belt.

b. Unscrew the rear fixing bolts (see arrow B) of the rear seat backrest assembly ①.

- Tightening torque of bolt (see arrow A): 50±3 N·m
- Tightening torque of bolt (see arrow B): 50±3 N·m



c. Unscrew the front fixing bolts (see the arrows) of rear seat backrest assembly.

d. Remove the rear seat backrest assembly ①.

- Tightening torque of bolt: 50±3 N·m

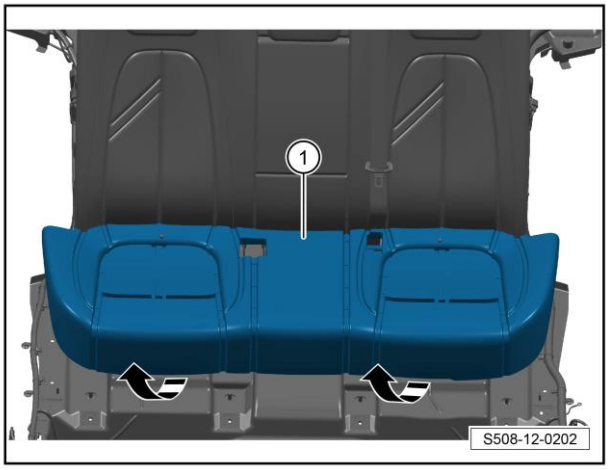
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.11.3.2 Removal and installation of rear seat

cushion assembly

Disassembly procedures



1 Remove the rear seat cushion assembly

a. Lift the rear seat cushion assembly (see the arrow) and remove the rear seat cushion assembly ①.

Installation procedures

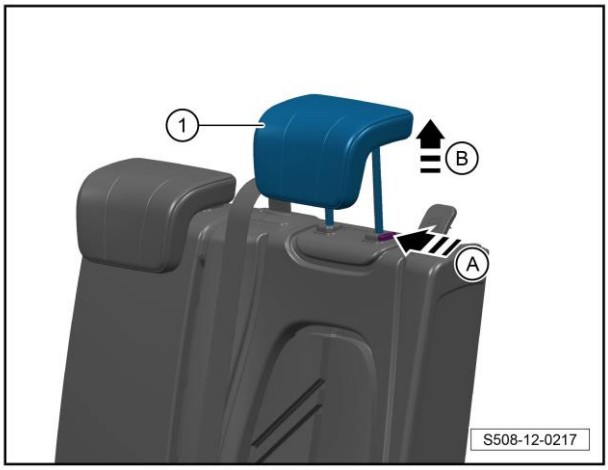
The installation procedure is to be performed basically in the reverse order:

9.11.3.3 Removal and installation of second-row left seat headrest assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the second-row left seat headrest assembly, which can be basically referred to for the second-row right one.



1 Remove the second-row left seat headrest assembly

a. Press the headrest height adjustment button (see arrow A) and remove the second-row left seat headrest assembly ① (see arrow B).

Installation procedures

The installation procedure is to be performed basically in the reverse order:

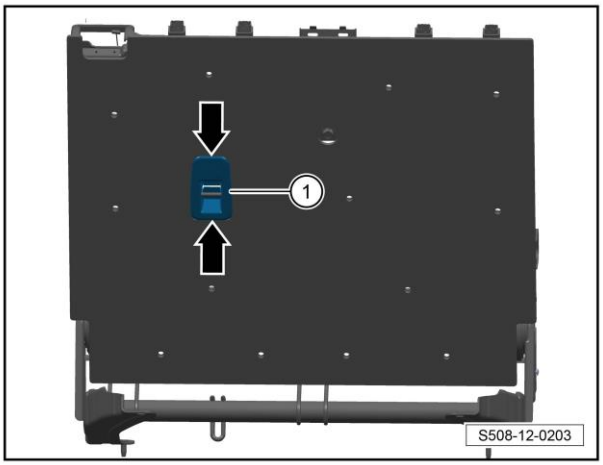
9.11.3.4 Removal and installation of headrest

plastic pipe

Disassembly procedures

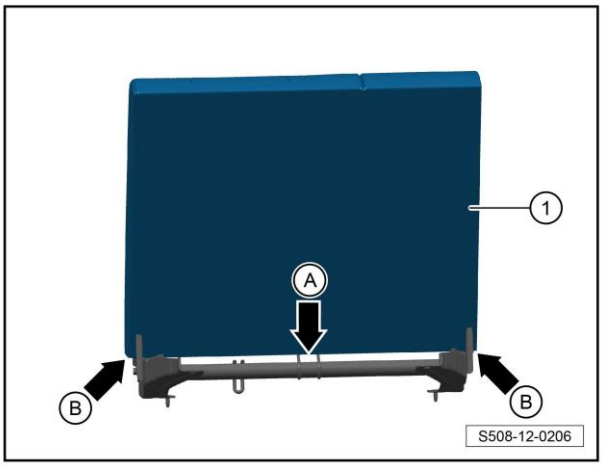
Tip:

The removal and installation procedures are only for the rear left seat headrest plastic pipe, which can be basically referred to for the rear right one.



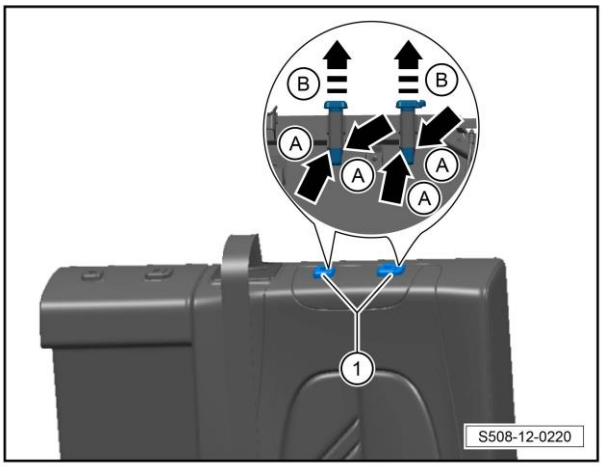
1 Remove the headrest plastic pipe

a. Disengage the fixing clips (see the arrow), and remove the fixing protective cover ① on the child seat.



b. Disengage the seat backrest foam covering ① batten (see arrow A).

c. Open the seat backrest foam covering ① zipper (see arrow B).



d. Press the locating block (see arrow A), and remove the headrest plastic pipe ① from the seat backrest (see arrow B).

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.11.3.5 Removal and installation of second-row left seat backrest foam and foam covering assembly

Disassembly procedures

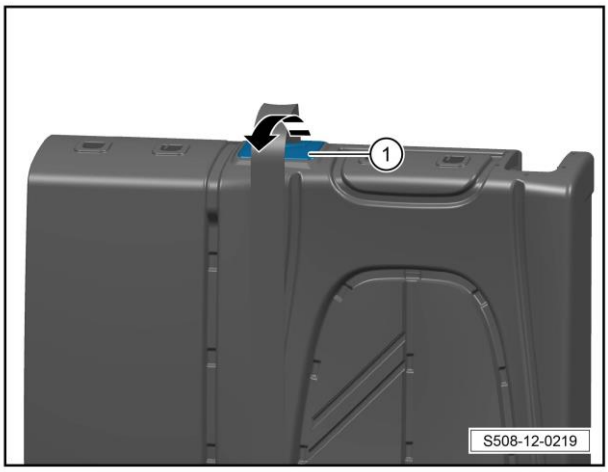
Tip:

The removal and installation procedures are only for the second-row left seat backrest foam and foam covering assembly, which can be basically referred to for the second-row right one.

1 Remove the rear seat cushion assembly. Refer to 9.11.3.2 Removal and installation of second-row seat cushion assembly

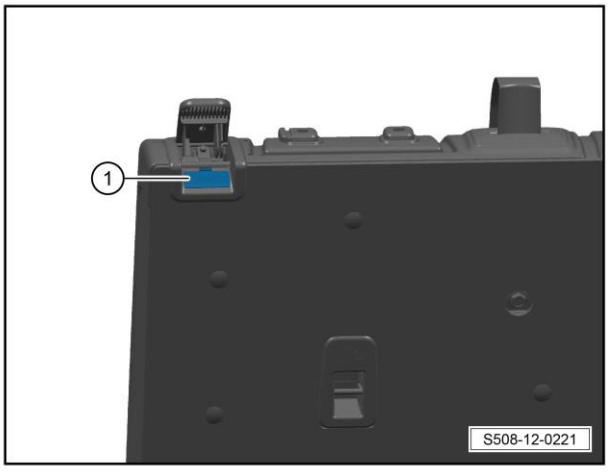
2 Remove the rear-row left seat backrest assembly. Refer to 9.11.3.1 Removal and installation of second-row seat backrest assembly.

3 Remove the plastic pipe for rear-row left seat headrest. Refer to 9.11.3.4 Removal and installation of headrest plastic pipe

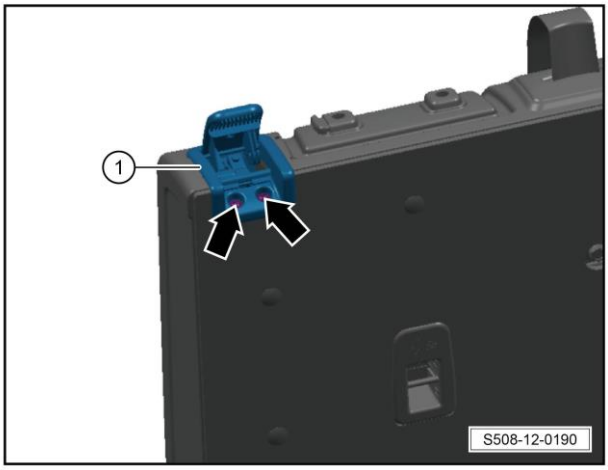


4 Remove the second-row left seat backrest foam and foam covering assembly

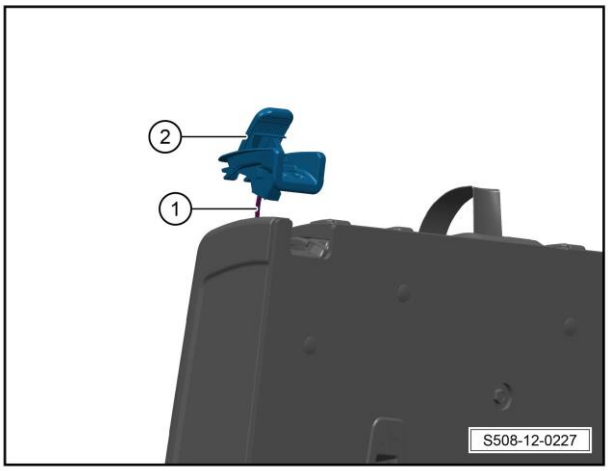
a. Remove the 60 split seat ELR protective cover ① (see the arrow).



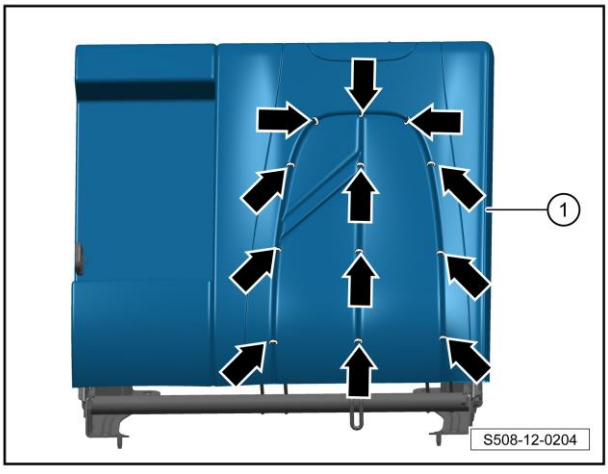
b. Remove the rear seat backrest unlocking handle screw trim cover ①.



c. Unscrew the fixing screws (see the arrow) and remove the rear-row seat backrest unlocking handle ①.



d. Separate the cable ① from the rear seat backrest unlocking handle ②.



e. Remove the rear seat backrest foam and foam covering assembly ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.11.3.6 Removal and installation of second-row left seat backrest foam covering assembly

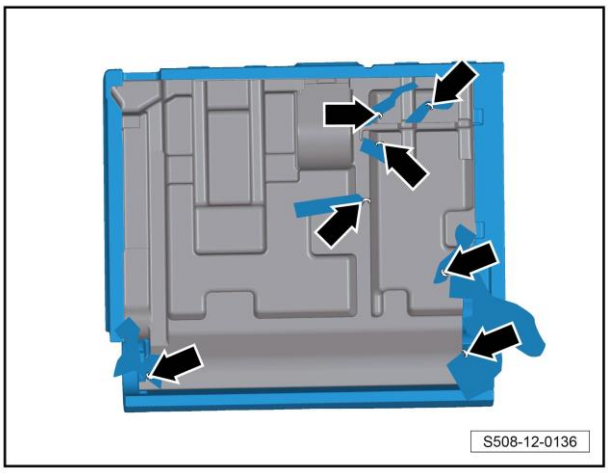
Disassembly procedures

Tip:

The removal and installation procedures are only for the second-row left seat backrest foam covering assembly, which can be basically referred to for the second-row right one.

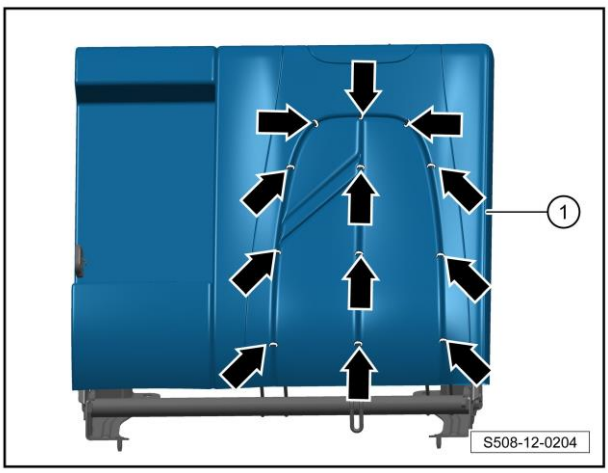
1 Remove the rear seat backrest assembly. Refer to 9.11.3.1 Removal and installation of second-row seat back assembly.

2 Remove the second-row left seat backrest foam and foam covering assembly. Refer to 9.11.3.5 Removal and installation of second-row left seat backrest foam and foam covering assembly



3 Remove the second-row left seat backrest foam covering assembly

a. Disengage the rear fixing metal clips (see the arrows) of the second-row left seat backrest foam covering.



b. Disengage the front fixing metal clips (see the arrows) of the second-row left seat backrest foam covering.

c. Remove the second-row left seat backrest foam covering assembly ①.

Installation procedures

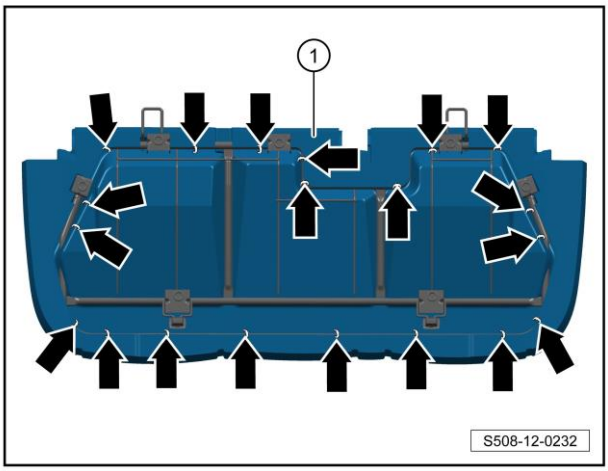
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- The metal clip is disposable and must be replaced with a new one.

9.11.3.7 Removal and installation of second-row seat foam and foam covering assembly

Disassembly procedures

1 Remove the second-row seat cushion assembly. Refer to 9.11.3.2 Removal and installation of second-row seat cushion assembly



2 Remove the second-row seat foam and foam covering assembly

a. Disengage the fixing clips (see the arrow) and remove the second-row seat foam and foam covering assembly ①.

Installation procedures

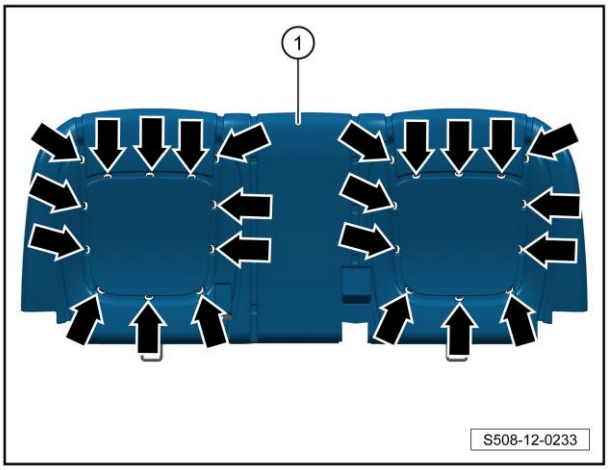
Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- The metal clip is disposable and must be replaced with a new one.

9.11.3.8 Removal and installation of second-row seat foam covering assembly

Disassembly procedures

1 Remove the second-row seat backrest foam and foam covering assembly. Refer to 9.11.3.7 Removal and installation of second-row seat backrest foam and foam covering assembly



2 Remove the second-row seat foam covering assembly

a. Disengage the fixing clips (see the arrow) and remove the second-row seat foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse

order of removal procedures and pay attention to the following items:
-The metallic clip is disposable and must be replaced with a new one.

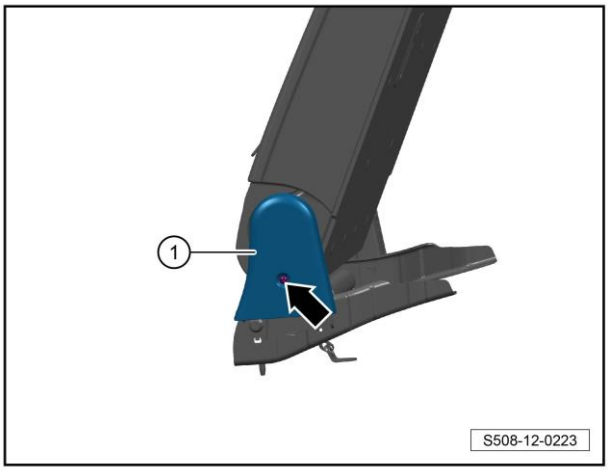
9.11.3.9 Removal and installation of second-row 40 split seat side cover (left)

Disassembly procedures

Tip:

The removal and installation procedures are only for the second-row 40 split seat side cover (left), which can be basically referred to for the right one.

1 Remove the rear seat backrest assembly. Refer to 9.11.3.1 Removal and installation of second-row seat back assembly.



2 Remove the second-row 40 split seat side cover (left)

a. Unscrew the fixing screw (see the arrow) and remove the second-row 40 split seat side cover (left) ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.12 Second-row seat (60/40 split)

9.12.1 Specification

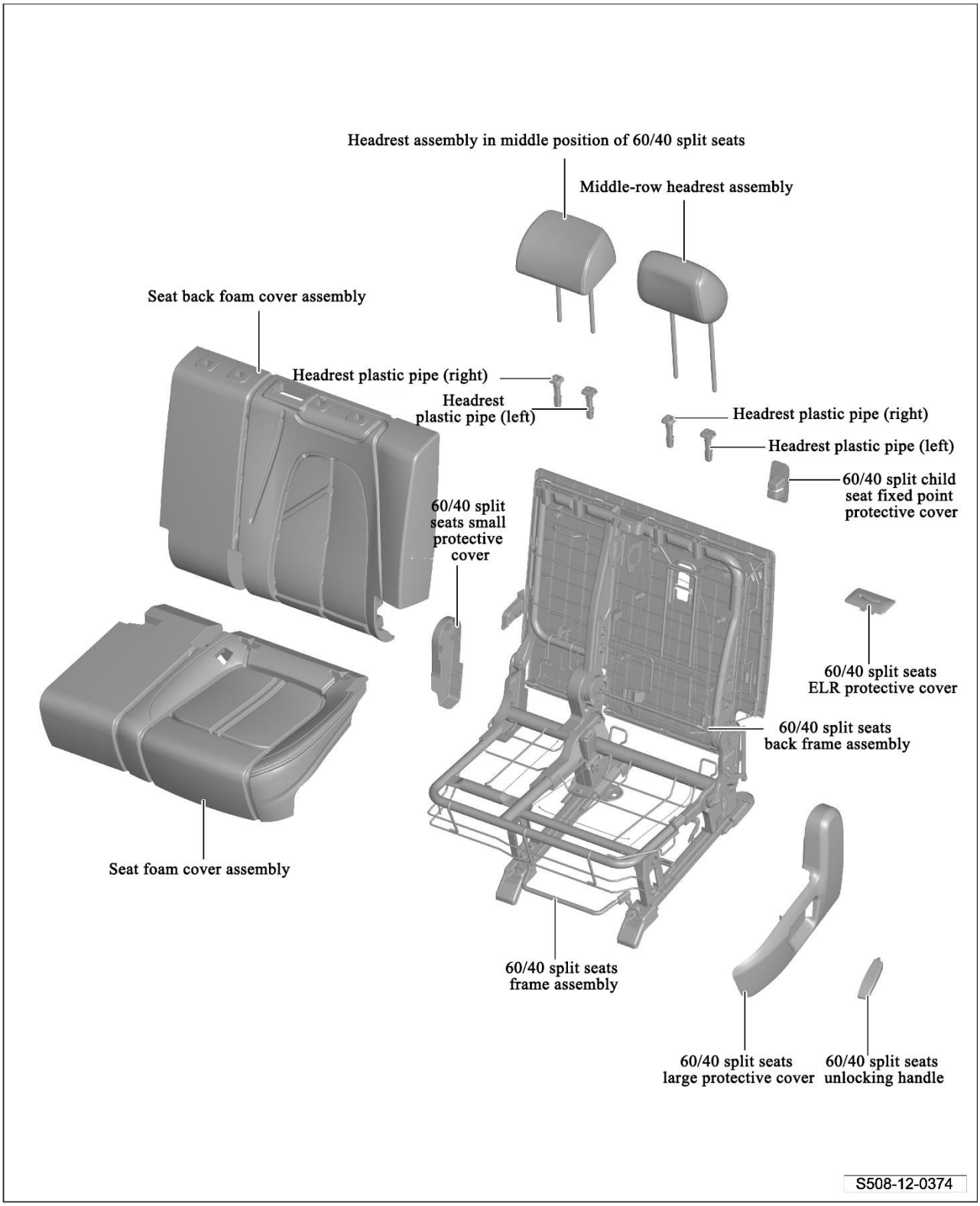
9.12.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
60 split seat assembly	Hexagon head flange bolt M10×1.25×2	50±3
40 split seat assembly	Hexagon head flange bolt M10×1.25×2	50±3

9.12.2 Exploded view

9.12.2.1 Exploded view

Exploded view of second-row seat (60/40 split)



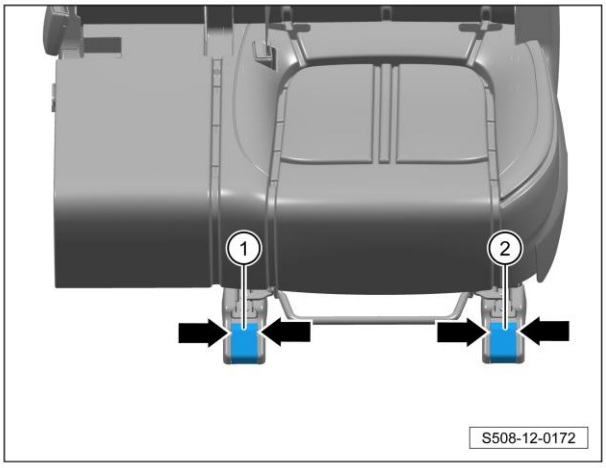
9.12.3 Removal and installation

9.12.3.1 Removal and installation of 60 split seat assembly

Disassembly procedures

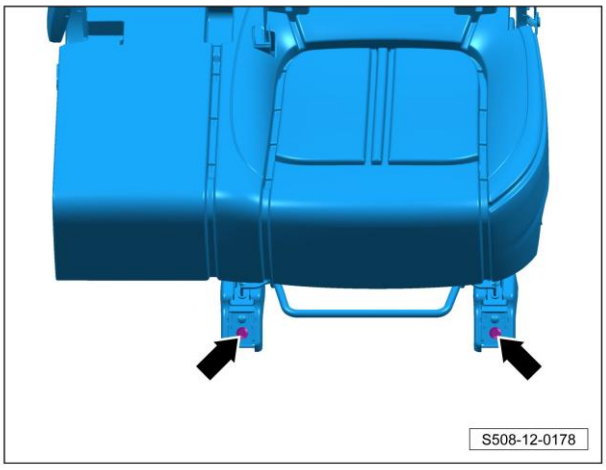
Tip:

The removal and installation procedures are only for the second-row 60 split seat assembly, which can be basically referred to for the 40 split one.



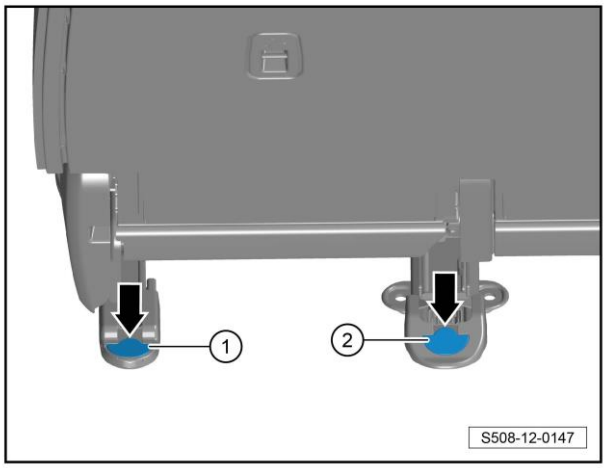
1 Remove the 60 split seat assembly

a. Move the 60 split seat assembly to the rearmost end, and open the 60 split seat slide rail front trim covers ① and ② (see the arrow).

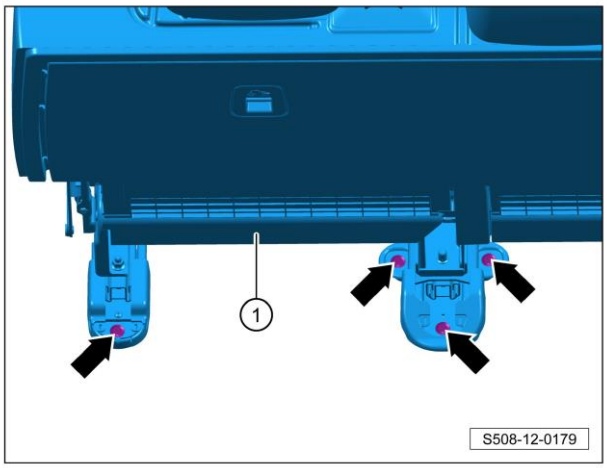


b. Unscrew the front fixing bolts (see the arrows) of 60 split seat assembly.

- Tightening torque of bolt: 50±3 N·m



c. Move the 60 split seat assembly to the foremost end, and open the 60 split seat slide rail rear trim covers ① and ② (see the arrow).



d. Unscrew the fixing bolt (see the arrow) at the rear of the 60 split seat assembly and remove the 60 split seat assembly ①.

- Tightening torque of bolt: 50±3 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Tighten the fixing bolts of the second-row left seat to the specified torque.

– Perform functional check of the second-row left seat after installation.

9.12.3.2 Removal and installation of 60 split seat cushion foam covering assembly

Disassembly procedures

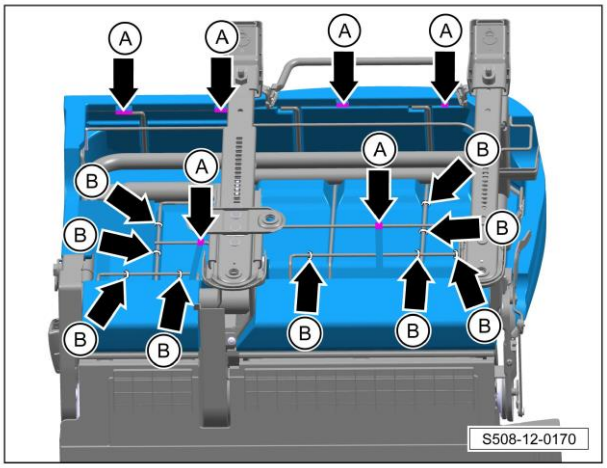
Tip:

The removal and installation procedures are only for the second-row 60 split seat cushion foam covering assembly, which can be basically referred to for the second-row 40 split seat cushion foam covering assembly.

1 Remove the 60 split seat assembly. Refer to 9.12.3.1

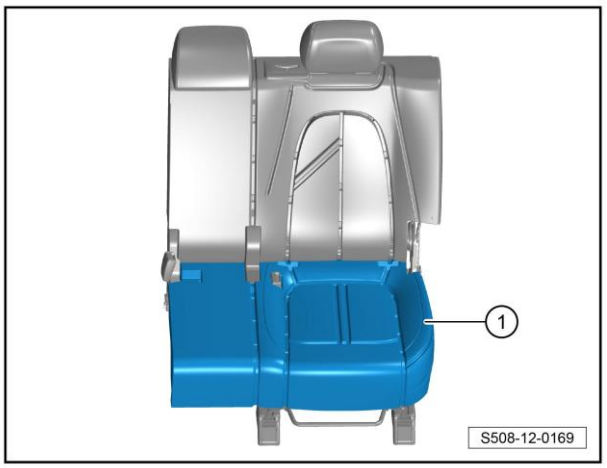
Removal and installation of 60 split seat assembly.

2 Remove the 60 split seat large protective cover. Refer to 9.12.3.6 Removal and installation of 60 split seat large protective cover



3 Remove the 60 split seat cushion foam covering assembly

a. Disengage the fixing clips (see arrow A) and the fixing metal clips (see arrow B) of 60 split seat cushion foam covering assembly



b. Remove the 60 split seat cushion foam covering assembly ①

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-The metallic clip is disposable and must be replaced with a new one.

9.12.3.3 Removal and installation of 60 split seat cushion covering assembly

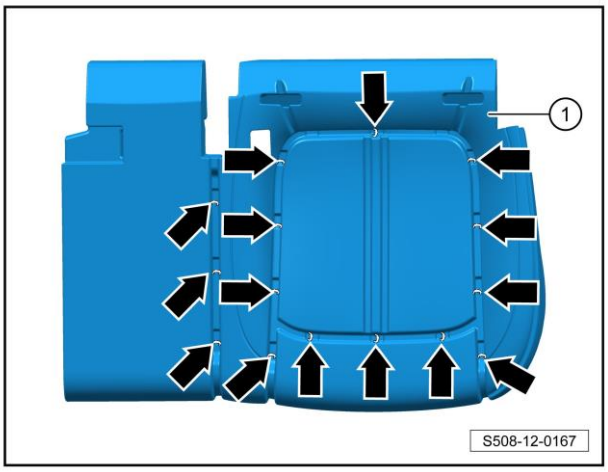
Disassembly procedures

Tip:

The removal and installation procedures are only for the second-row 60 split seat cushion covering assembly, which can be basically referred to for the second-row 40 split seat cushion covering assembly.

1 Remove the 60 split seat foam and foam covering

assembly. Refer to 9.12.3.2 Removal and installation of 60 split seat cushion foam covering assembly



2 Remove the 60 split seat cushion covering assembly

a. Disengage the metal clips (see the arrow) of the 60 split seat cushion covering assembly and remove the 60 split seat cushion covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- The metal clip is disposable and must be replaced with a new one.

9.12.3.4 Removal and installation of 60 split seat backrest foam covering assembly

Disassembly procedures

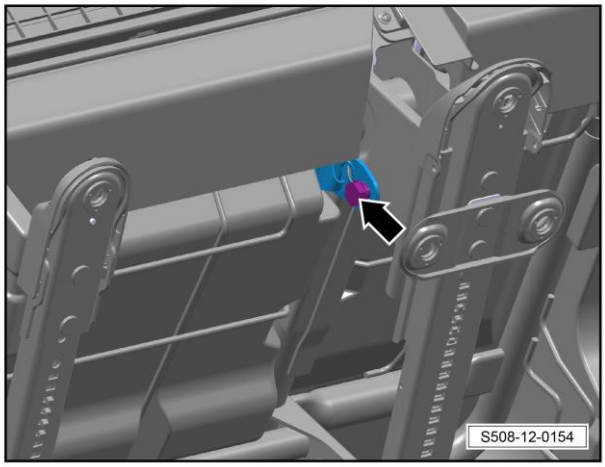
Tip:

The removal and installation procedures are only for the second-row 60 split seat backrest foam covering assembly, which can be basically referred to for the second-row 40 split seat backrest foam covering assembly.

1 Remove the 60 split seat assembly. Refer to 9.12.3.1 Removal and installation of 60 split seat assembly.

2 Remove the 60 split seat headrest assembly. Refer to 9.11.3.3 Removal and installation of second-row left seat headrest assembly

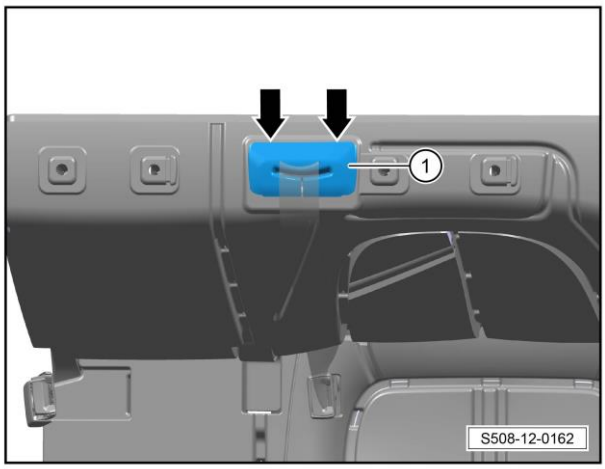
3 Remove the 60 split seat headrest plastic pipe. Refer to 9.12.3.5 Removal and installation of 60 split seat headrest plastic pipe



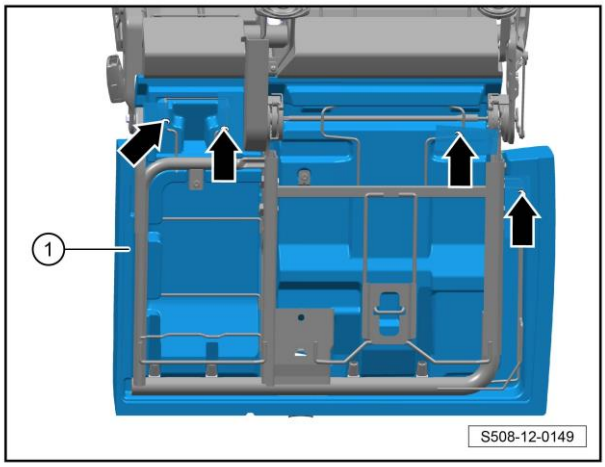
4 Remove the 60 split seat backrest foam covering assembly

a. Unscrew the fixing bolt (see the arrow) of the middle seat belt.

- Tightening torque of bolt: 50±3 N·m



b. Disengage the fixing clips (see the arrow), and remove the 60 split seat ELR protective cover ①.



c. Disengage the metal clips (see the arrow) of the 60 split seat backrest foam and foam covering assembly and remove the 60 split seat backrest foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-The metallic clip is disposable and must be replaced with a new one.

9.12.3.5 Removal and installation of 60 split

seat headrest plastic pipe

Disassembly procedures

Tip:

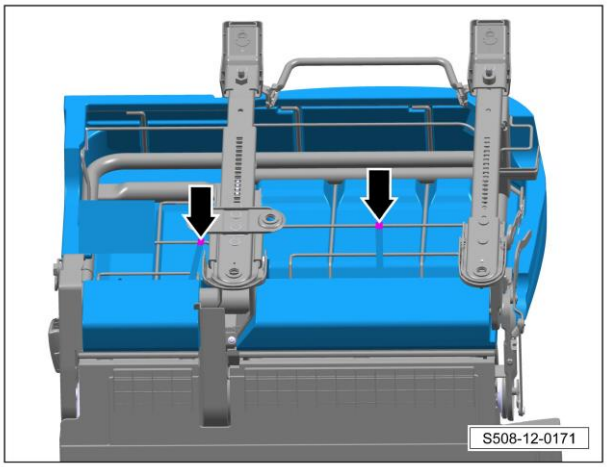
The removal and installation procedures are only for the second-row left 60 split seat headrest plastic pipe, which can be basically referred to for the second-row right and middle ones.

1 Remove the 60 split seat assembly. Refer to 9.12.3.1 Removal and installation of 60 split seat assembly.

2 Remove the 60 split seat headrest. Refer to 9.11.3.3 Removal and installation of second-row left seat headrest assembly

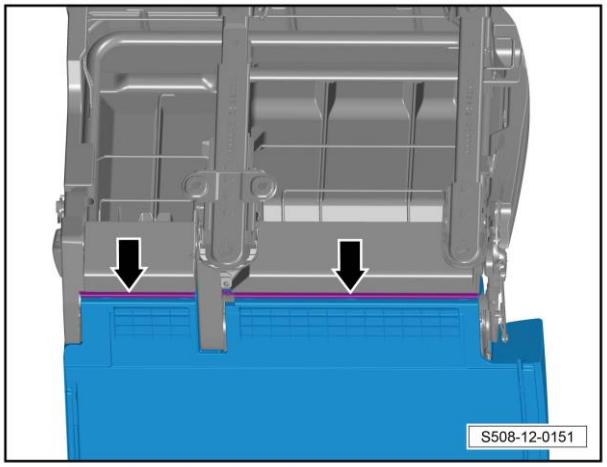
3 Remove the 60 split seat large protective cover. Refer to 9.12.3.6 Removal and installation of 60 split seat large protective cover

4 Remove the 60 split seat small protective cover. Refer to 9.12.3.7 Removal and installation of 60 split seat small protective cover

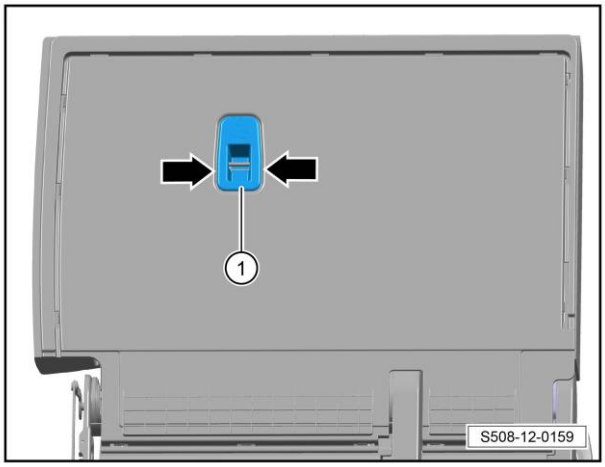


5 Remove the 60 split seat headrest plastic pipe

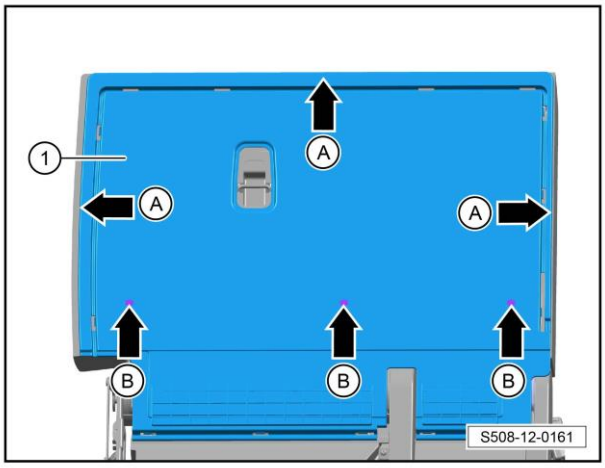
a. Disengage the seat backrest rear covering clip (see the arrow).



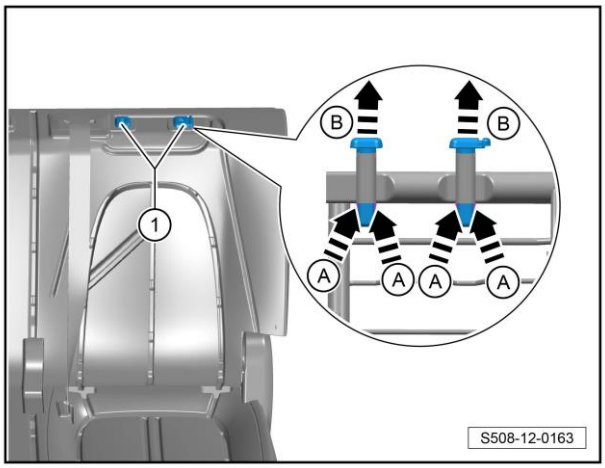
b. Disengage the seat backrest rear covering strips (see the arrows).



c. Disengage the clip (see the arrow), and remove the fixing protective cover ① on the 60/40 split child seat.



d. Disengage the seat backrest rear covering strips (see arrow A) and the fixing clips (see arrow B) and remove the seat backrest rear covering assembly ①.



e. Press the fixing clips on both sides (see arrow A).

f. Remove the 60 split seat headrest plastic pipe ① along the direction of arrow B.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the items.

-Check if the fixing clips are damaged and replace them if necessary.

9.12.3.6 Removal and installation of 60 split

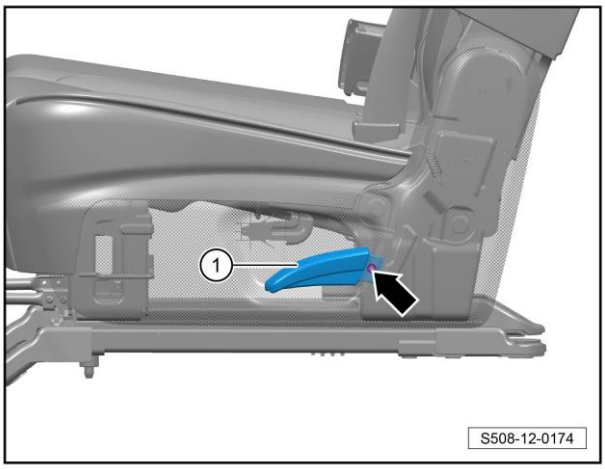
seat large protective cover

Disassembly procedures

Tip:

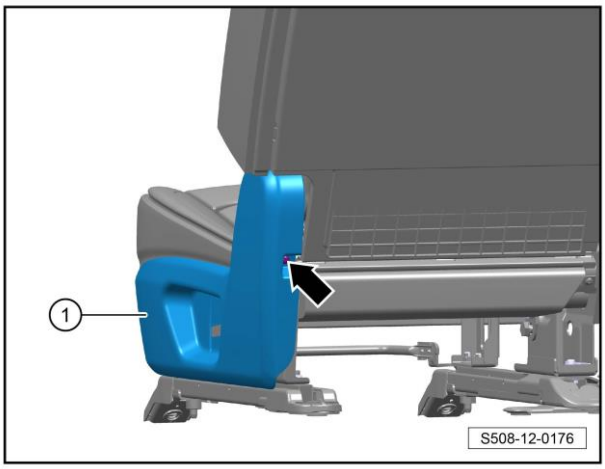
The removal and installation procedures are only for the second-row left 60 split seat large protective cover, which can be basically referred to for the second-row right one.

1 Remove the 60 split seat assembly. Refer to 9.12.3.1 Removal and installation of 60 split seat assembly.



2 Remove the 60 split seat large protective cover

a. Unscrew the fixing screw (see the arrow) of the recliner handle assembly and remove the recliner handle assembly ①.



b. Unscrew the fixing screw (see the arrow) and remove the 60 split seat large protective cover ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.12.3.7 Removal and installation of 60 split seat small protective cover

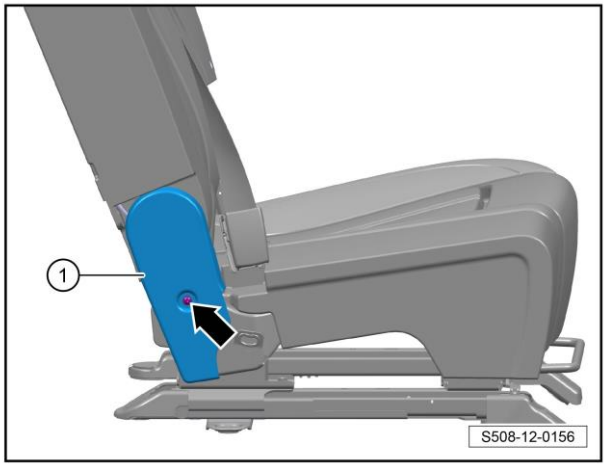
Disassembly procedures

Tip:

The removal and installation procedures are only for the second-row left 60 split seat small protective

cover, which can be basically referred to for the second-row right 40 split seat protective cover (left).

1 Remove the 60 split seat assembly. Refer to 9.12.3.1 Removal and installation of 60 split seat assembly.



2 Remove the 60 split seat small protective cover

a. Unscrew the fixing screw (see the arrow) and remove the 60 split seat small protective cover ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.13 Third-row seat

9.13.1 Specification

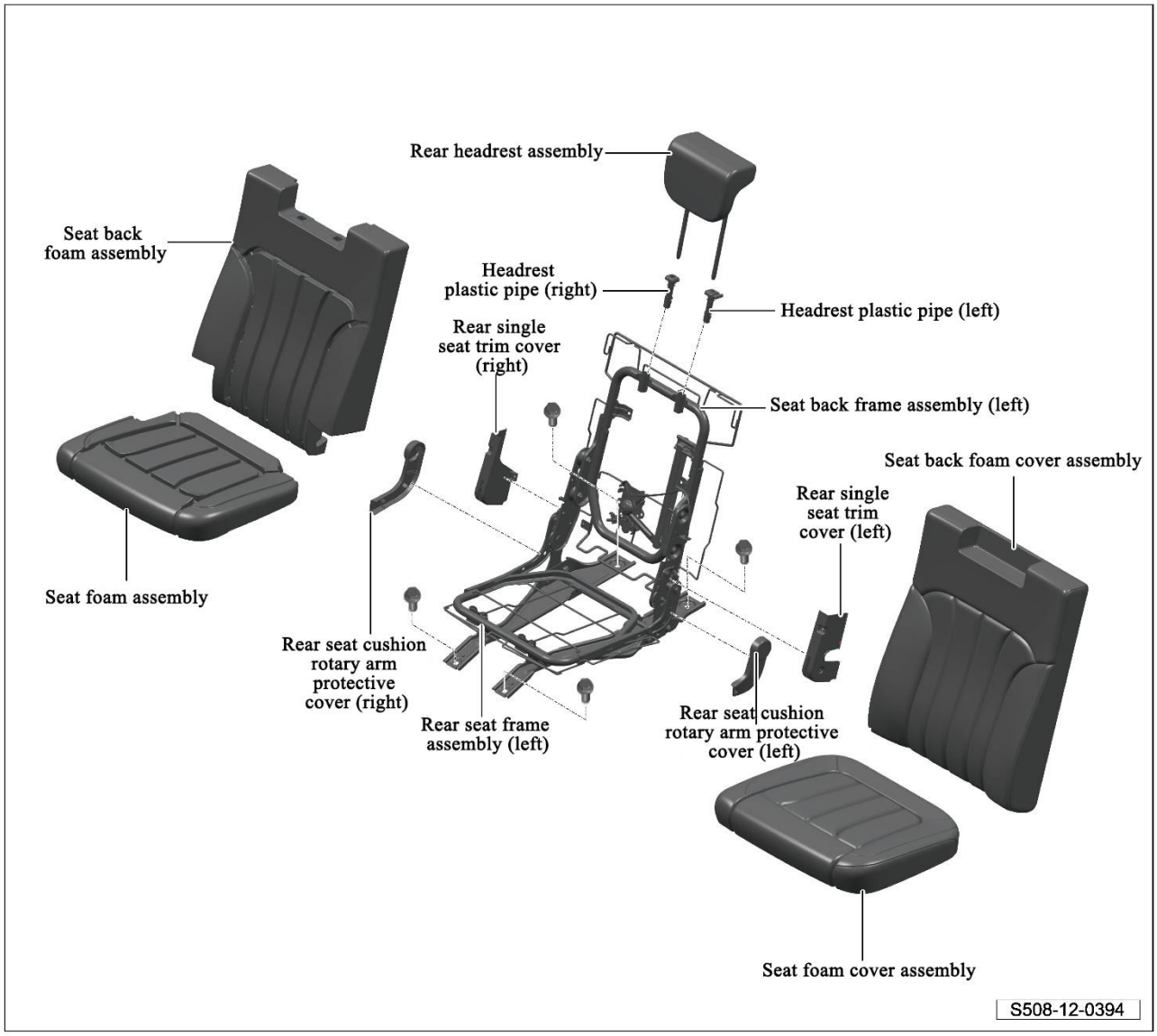
9.13.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Third-row split seat assembly	Hexagon head flange bolt M10×1.25×2	50±3

9.13.2 Exploded view

9.13.2.1 Exploded view

Exploded view of third-row seat



9.13.3 Removal and installation

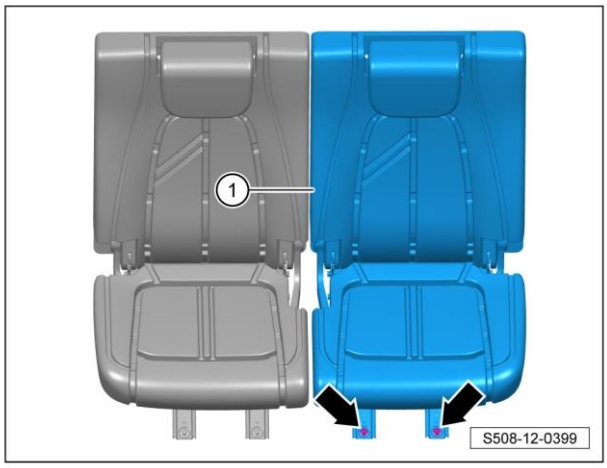
9.13.3.1 Removal and installation of third-row split seat assembly

Disassembly procedures

Tip:

The removal and installation procedures are for the left third-row split seat assembly, which can be basically referred to for the right third-row split seat assembly.

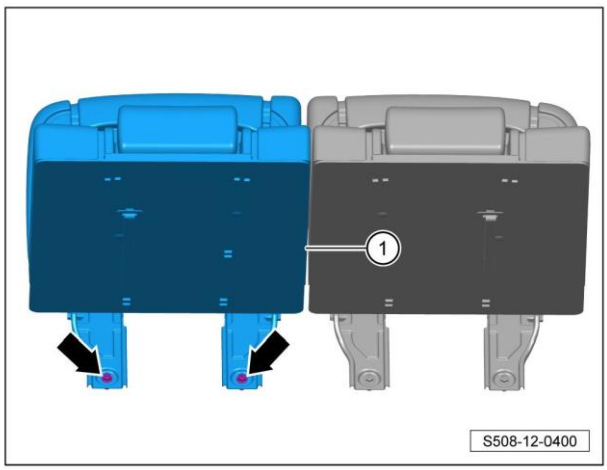
1 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body



2 Remove the third-row split seat assembly

a. Unscrew the front fixing bolts (see the arrow) of the third-row split seat assembly ①.

- Tightening torque of bolt: 50±3 N·m



b. Lower the seat backrest of the third-row split seat assembly, and unscrew the fixing bolts (see the arrow) at the rear of the third-row split seat assembly ①.

c. Remove the third-row left seat assembly ①.

- Tightening torque of bolt: 50±3 N·m

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Tighten the fixing bolts of the seat assembly to the specified torque.

9.13.3.2 Removal and installation of third-row

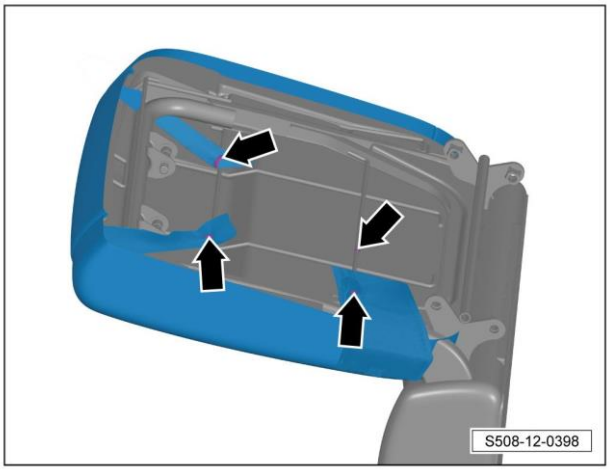
split seat foam and foam covering assembly

Disassembly procedures

Tip:

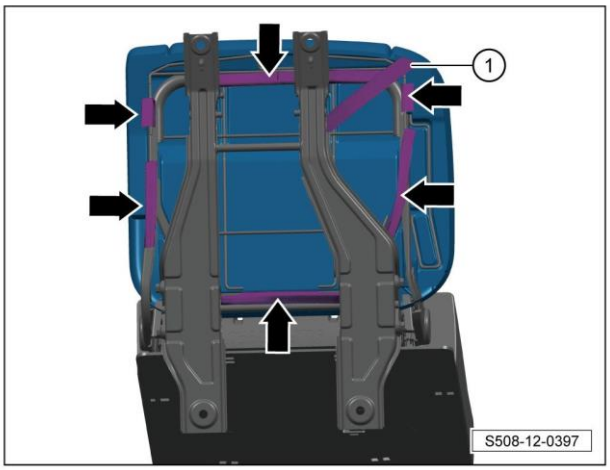
The removal and installation procedures are only for the left third-row split seat foam and foam covering assembly, which can be basically referred to for the right one.

1 Remove the third-row split seat assembly. Refer to 9.13.3.1 Removal and installation of third-row split seat assembly.



2 Remove the third-row split seat foam and foam covering assembly

a. Disengage the metal clips (see the arrow) of the third-row split seat foam and foam covering assembly.



b. Disengage the batten (see the arrow) of the third-row split seat foam and foam covering assembly, and remove the third-row split seat foam and foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-The metallic clip is disposable and must be replaced with a new one.

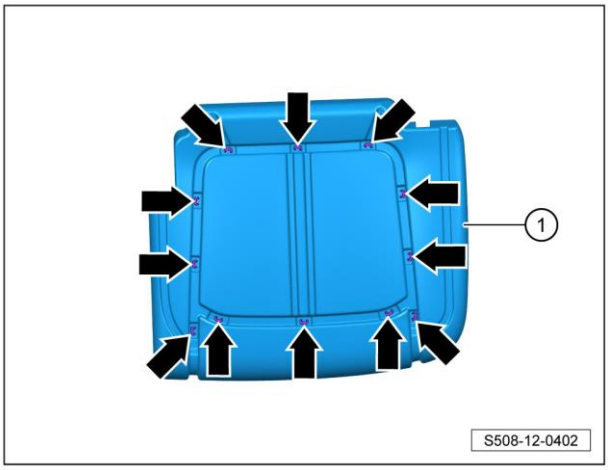
9.13.3.3 Removal and installation of third-row split seat cushion foam covering assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the left third-row split seat cushion foam covering assembly, which can be basically referred to for the right one.

1 Remove the third-row split seat backrest foam and foam covering assembly. Refer to 9.13.3.2 Removal and installation of third-row split seat foam and foam covering assembly



2 Remove the third-row split seat cushion foam covering assembly

a. Disengage the metal clips (see the arrow) of the third-row split seat cushion foam covering assembly ①.

b. Separate the third-row split seat cushion foam covering assembly ① from the third-row split seat cushion foam.

c. Remove the third-row split seat cushion foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

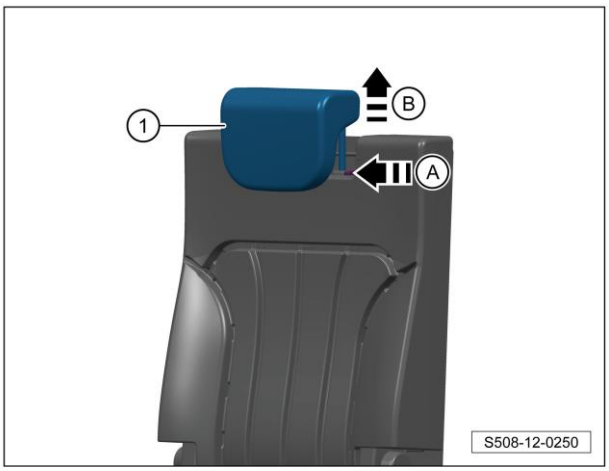
- The metal clip is disposable and must be replaced with a new one.

9.13.3.4 Removal and installation of third-row split seat headrest assembly

Disassembly procedures

Tip:

Here only introduces the removal and installation of the rear left headrest assembly, which can be basically referred to for the rear right one.



1 Remove the rear headrest assembly

a. Press the headrest height adjustment button in direction of arrow A.

b. Remove the rear headrest assembly ① in the direction of arrow B.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

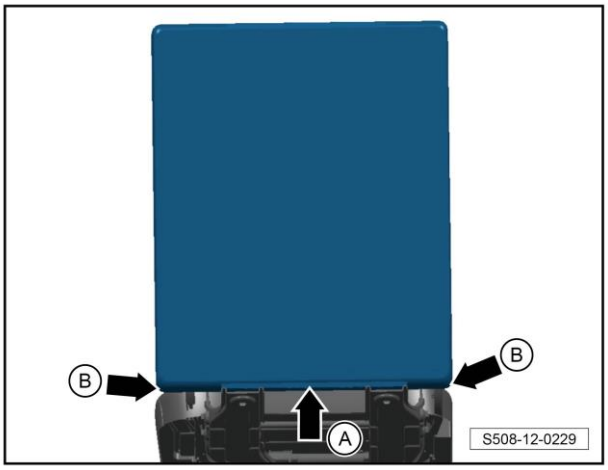
9.13.3.5 Removal and installation of third-row split seat headrest plastic pipe

Disassembly procedures

Tip:

The removal and installation procedures are only for the left third-row split seat headrest plastic pipe, which can be basically referred to for the right one.

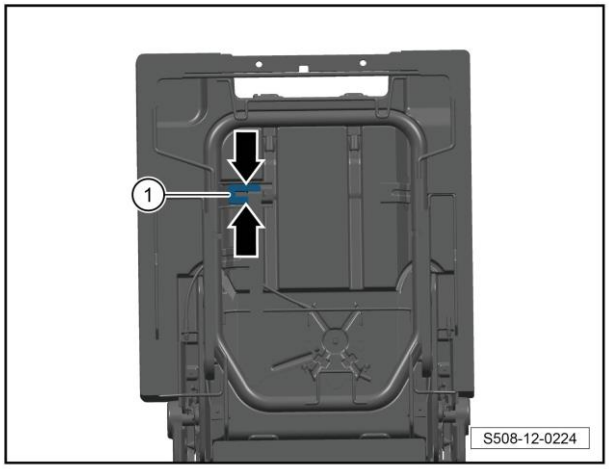
1 Remove the third-row split seat assembly. Refer to 9.13.3.1 Removal and installation of third-row split seat assembly.



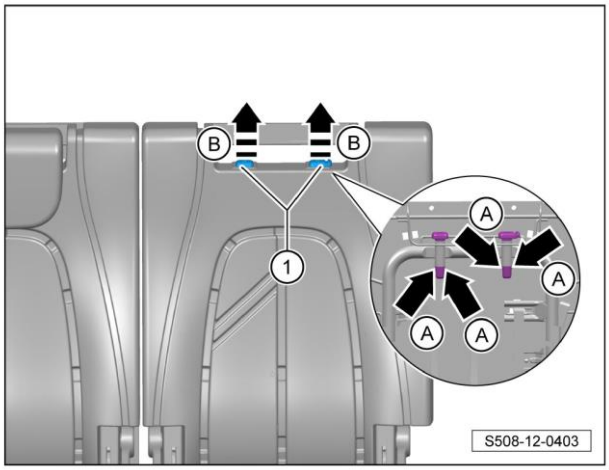
2 Remove the third-row split seat headrest plastic pipe

a. Disengage the batten (see arrow A) of the third-row split seat backrest foam covering assembly.

b. Open the third-row seat backrest foam covering zipper (see arrow B).



c. Remove the rear seat backrest unlocking cable guide cover ① (see the arrow).



d. Open the foam covering assembly of the third-row split seat backrest, press the locating block (see arrow A), and remove the third-row split seat headrest plastic pipe ① from the seat backrest (see arrow B).

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.13.3.6 Removal and installation of third-row split seat backrest foam and foam covering assembly

Disassembly procedures

Tip:

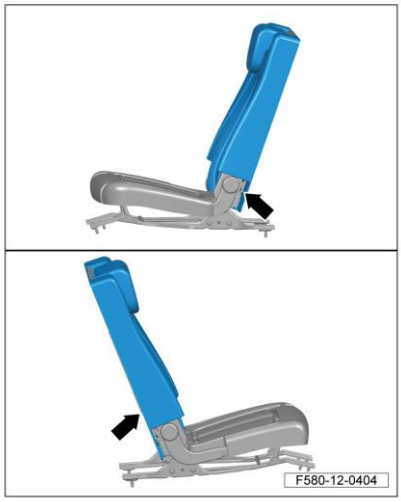
The removal and installation procedures are only for the left third-row split seat backrest foam and foam covering assembly, which can be basically referred to for the right one.

1 Remove the left third-row split seat headrest assembly. Refer to 9.13.3.4 Removal and installation of third-row split seat headrest assembly

2 Remove the left third-row split seat assembly. Refer to 9.13.3.1 Removal and installation of third-row split seat assembly

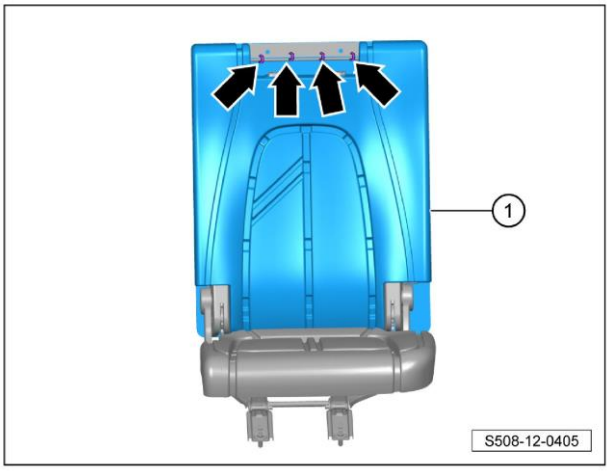
3 Remove the left third-row split seat headrest plastic

pipe. Refer to 9.13.3.5 Removal and installation of third-row split seat headrest plastic pipe



4 Remove the third-row split seat backrest foam and foam covering assembly

a. Disengage the left and right metal clips (see the arrows) of the third-row split seat backrest foam and foam covering assembly.



b. Disengage the top metal clips (see the arrow) of the third-row split seat backrest foam and foam covering assembly.

c. Remove the third-row split seat backrest foam and foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- The metal clip is disposable and must be replaced with a new one.

9.13.3.7 Removal and installation of third-row split seat backrest foam covering assembly

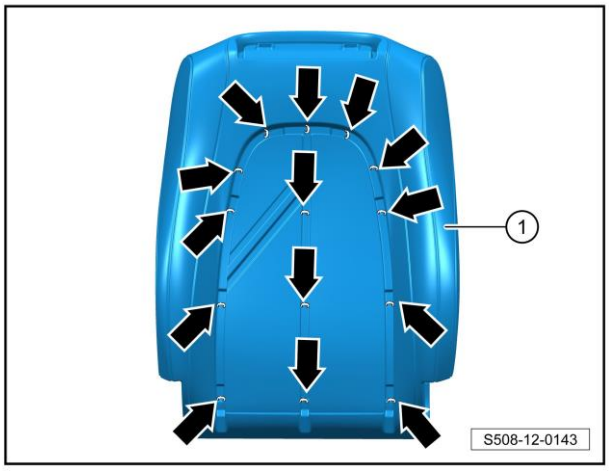
Disassembly procedures

Tip:

The removal and installation procedures are only for the left third-row split seat backrest foam covering assembly, which can be basically referred to for the right one.

1 Remove the third-row split seat backrest foam and

foam covering assembly. Refer to 9.13.3.6 Removal and installation of third-row split seat backrest foam and foam covering assembly



2 Remove the third-row split seat backrest foam covering assembly

a. Disengage the metal clips (see the arrow) of the third-row split seat backrest foam covering assembly.

b. Separate the third-row split seat backrest foam covering assembly from the third-row split seat backrest foam.

c. Remove the third-row split seat backrest foam covering assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items.

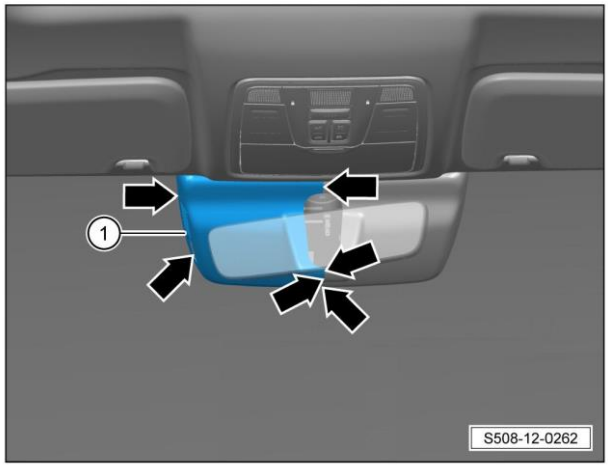
-The metallic clip is disposable and must be replaced with a new one.

9.14 Interior trim

9.14.1 Specification

9.14.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Interior trim panel on Column B	Cross recessed hexagon head flange bolt	6±1
Onboard tool box	Hexagon head flange bolt M8×35	6±1
Second-row seat belt	Hexagon head flange bolt	50±3
Third-row seat belt	Hexagon head flange bolt	50±3



9.14.2 Removal and installation

9.14.2.1 Removal and installation of front windshield mirror base trim cover I

Disassembly procedures

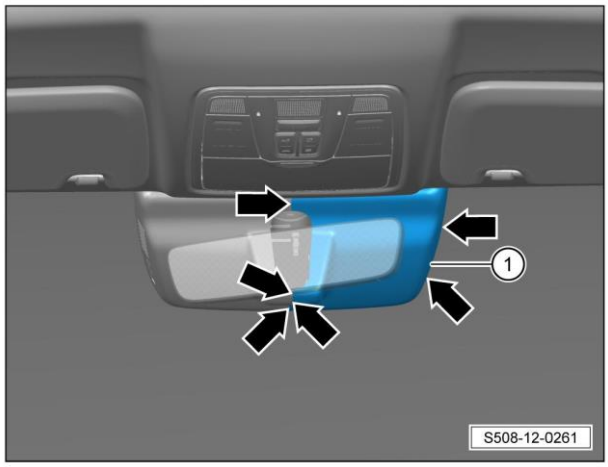
1 Removal and installation of front windshield mirror base trim cover I

a. Disengage the fixing clips (see the arrow) and remove the front windshield mirror base trim cover I ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.14.2.2 Removal and installation of front windshield mirror base trim cover II



Disassembly procedures

1 Removal and installation of front windshield mirror base trim cover II

a. Disengage the fixing clips (see the arrow) and remove the front windshield mirror base trim cover II ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.14.2.3 Removal and installation of panel roof lining assembly (model with panoramic sunroof)

Disassembly procedures

Tip:

Do not fold the ceiling assembly when taking out the roof panel lining assembly.

1 Adjust the front left and right seat backs to the lowest level.

2 Remove the left and right front door frame sealing strips. Refer to 9.6.3.10 Removal and installation of front door frame sealing strips

3 Remove the left and right rear door frame sealing strips. Refer to 9.7.3.9 Removal and installation of rear door frame sealing strips

4 Remove the lift gate frame sealing strip. Refer to 9.3.3.11 Removal and installation of lift gate frame sealing strip

5 Remove the front reading light assembly. Refer to 8.4.5.1 Removal and installation of front reading light assembly

6 Remove the rear left/right interior light assembly. Refer to 8.4.5.4 Removal and installation of the rear interior light assembly (panoramic sunroof)

7 Remove the left/right sun visor assembly. Refer to 9.14.2.6 Removal and installation of sun visor assembly

8 Remove the left/right sun visor hook. Refer to 9.14.2.7 Removal and installation of sun visor hook

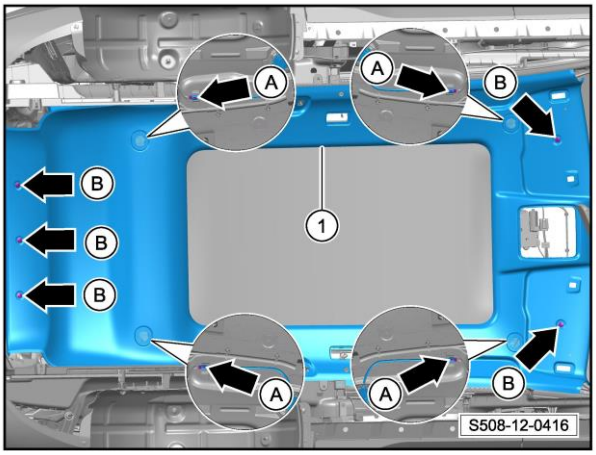
9 Remove the left and right safety handles. Refer to 9.14.2.5 Removal and installation of safety handles

10 Remove the left/right A-pillar interior trim panel assembly. Refer to 9.14.2.8 Removal and installation of A-pillar interior trim panel assembly

11 Remove the left/right B-pillar upper interior trim panel assembly. Refer to 9.14.2.10 Removal and installation of B-pillar upper interior trim panel assembly

12 Remove the rear left/right side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly

13 Remove the left and right rear side window roof strip assembly. Refer to 9.14.2.14 Removal and installation of rear side window roof strip assembly



14 Remove the panel roof lining assembly

a. Disconnect the connectors of the roof harness assembly and the sky loudspeaker (see arrow A).

b. Disengage the fixing clips (see arrow B) and remove the roof lining assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.14.2.4 Removal and installation of panel roof lining assembly (general sunroof)

Disassembly procedures

Tip:

Do not fold the ceiling assembly when taking out the roof panel lining assembly.

1 Adjust the front left and right seat backs to the lowest level.

2 Remove the left and right front door frame sealing strips. Refer to 9.6.3.10 Removal and installation of front door frame sealing strips

3 Remove the left and right rear door frame sealing strips. Refer to 9.7.3.9 Removal and installation of rear door frame sealing strips

4 Remove the lift gate frame sealing strip. Refer to 9.3.3.11 Removal and installation of lift gate frame sealing strip

5 Remove the front reading light assembly. Refer to 8.4.5.1 Removal and installation of front reading light assembly

6 Remove the rear left/right interior light assembly. Refer to 8.4.5.2 Removal and installation of the rear interior light assembly (power sunroof)

7 Remove the left/right sun visor assembly. Refer to 9.14.2.6 Removal and installation of sun visor

assembly

8 Remove the left/right sun visor hook. Refer to 9.14.2.7 Removal and installation of sun visor hook

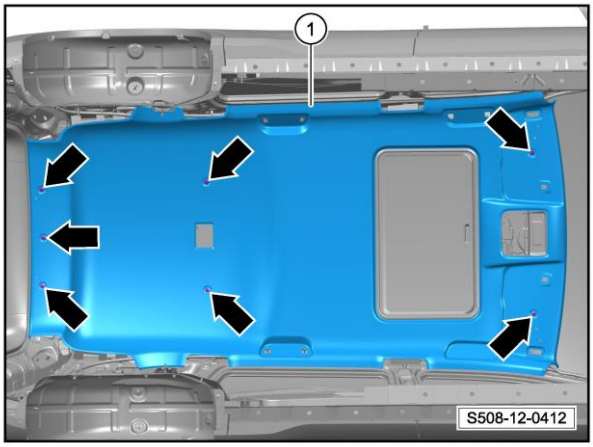
9 Remove the left and right safety handles. Refer to 9.14.2.5 Removal and installation of safety handles

10 Remove the left/right A-pillar interior trim panel assembly. Refer to 9.14.2.8 Removal and installation of A-pillar interior trim panel assembly

11 Remove the left/right B-pillar upper interior trim panel assembly. Refer to 9.14.2.10 Removal and installation of B-pillar upper interior trim panel assembly

12 Remove the rear left/right side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly

13 Remove the left and right rear side window roof strip assembly. Refer to 9.14.2.14 Removal and installation of rear side window roof strip assembly



14 Remove the panel roof lining assembly

a. Disengage the fixing clips (see the arrow) and remove the panel roof lining assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

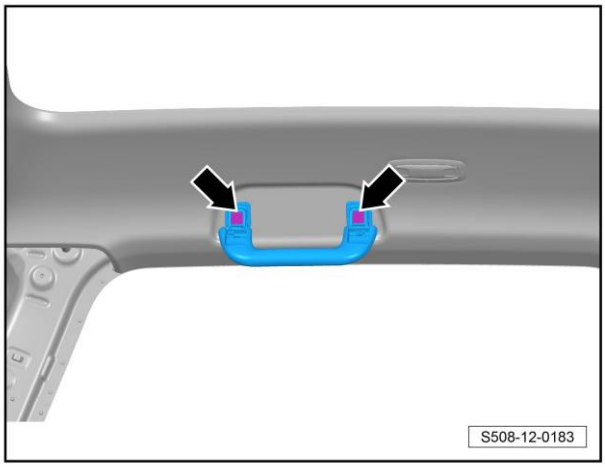
9.14.2.5 Removal and installation of safety handle

Disassembly procedures

Tip:

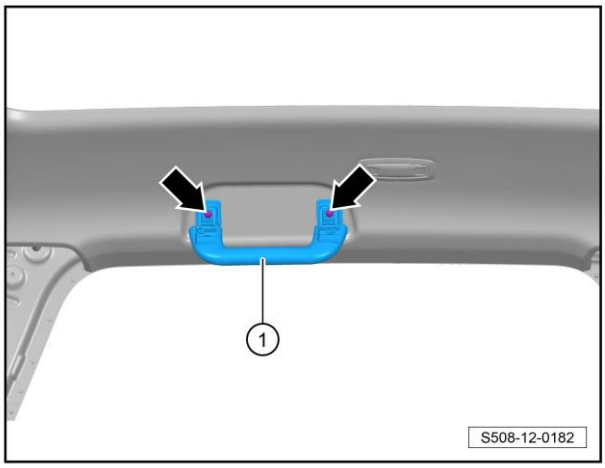
The removal and installation procedures are only for the left rear-row safety handle, and those for the front

row can be basically referred to for the other handles.



1 Remove the safety handle

a. Disengage the screw trim cover (see the arrow).



b. Unscrew the fixing screws (see the arrows), and remove the safety handle ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.14.2.6 Removal and installation of sun visor assembly

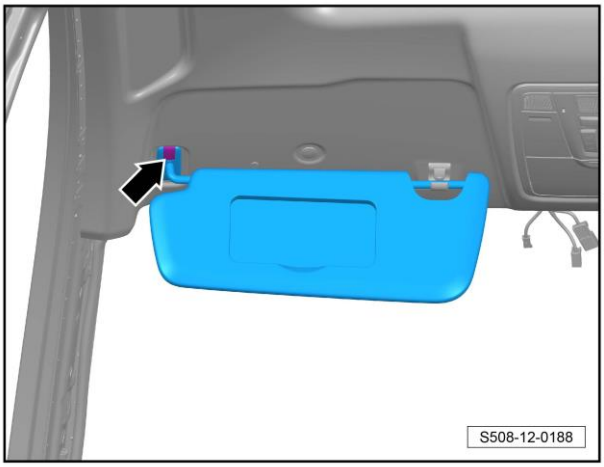
Disassembly procedures

Tip:

The removal and installation procedures are only for the left sun visor assembly, which can be basically referred to for the right one.

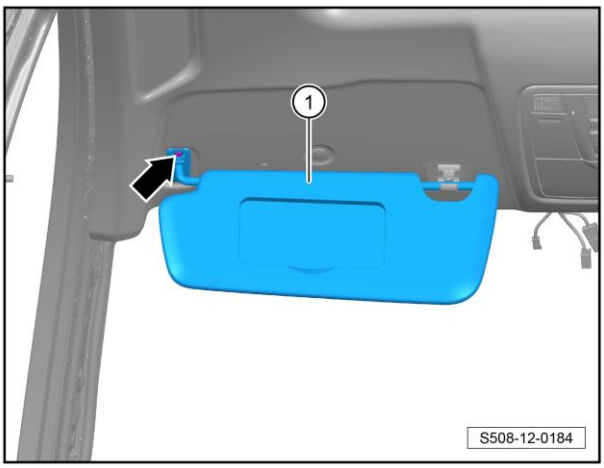
1 Turn off all the electrical appliances and turn off the Start switch.

2 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

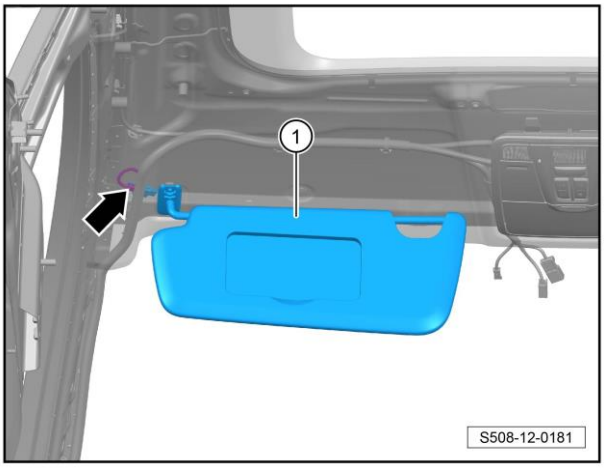


3 Remove the sun visor assembly

a. Remove the sun visor assembly screw trim cover (see the arrow).



b. Unscrew the fixing screws (see the arrows) and remove sun visor assembly ①.



c. Disconnect the connector (see the arrow) and take out the sun visor assembly ①.

Installation procedures

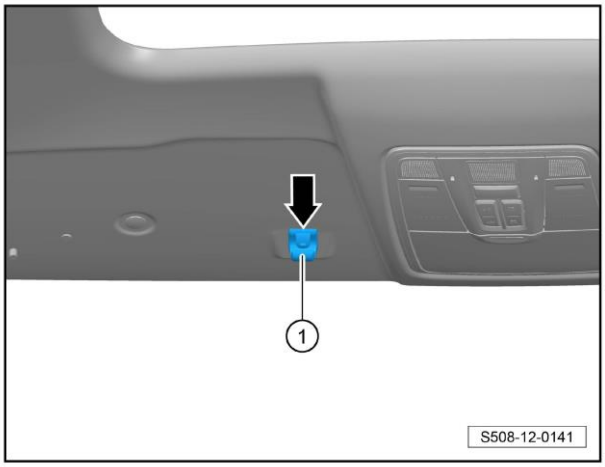
The installation procedure is to be performed basically in the reverse order:

9.14.2.7 Removal and installation of sun visor hook

Disassembly procedures

Tip:

The removal and installation procedures are only for the left sun visor hook, which can be basically referred to for the right one.



1 Remove the sun visor hook

a. Disengage the sun visor from the sun visor hook.

b. Remove the sun visor hook ① (see the arrow).

Installation procedures

The installation procedure is to be performed basically in the reverse order:

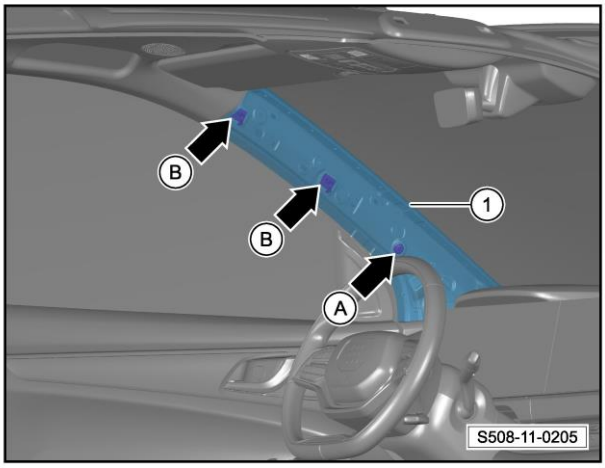
9.14.2.8 Removal and installation of A-pillar interior trim panel assembly

Disassembly procedures

Tip:

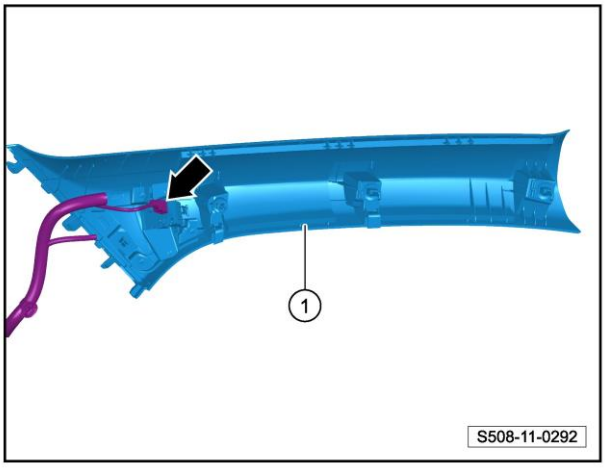
The removal and installation procedures are only for the left A-pillar interior trim panel assembly, which can be basically referred to for the right one.

1 Open the front door, and disengage a corner of front door frame sealing strip.

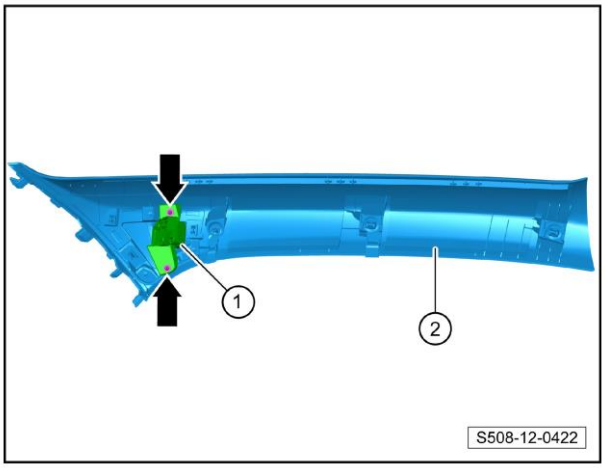


2 Remove the A-pillar interior trim panel assembly

a. Disengage the fixing clip (see arrows A and B), and remove the A-pillar interior trim panel assembly with face recognition camera ①.



b. Disconnect the connector (see arrow), and take out the A-pillar interior trim panel assembly with face recognition camera ①.



c. Unscrew the fixing screws (see the arrow), detach the face recognition camera ①, and remove the A-pillar interior trim panel assembly ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

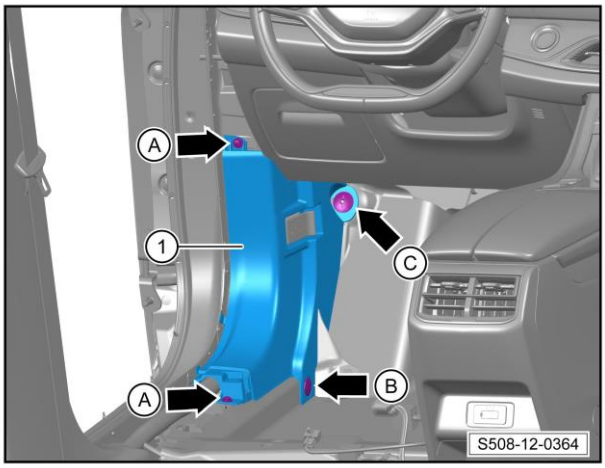
- Check whether the fixing clips are damaged and replace them if necessary.

9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly

Disassembly procedures

1 Remove the front door sill assembly. Refer to 9.14.2.18 Removal and installation of front door sill assembly

2 Remove the instrument panel end cover assembly. Refer to 9.8.3.5 Removal and installation of instrument panel end cover assembly



3 Remove the A-pillar lower interior trim panel assembly

a. Disengage one corner of the sealing strip of the front door frame.

b. Unscrew the fixing screws (see arrow A) of A-pillar lower interior trim panel assembly ①.

c. Disengage the fixing clip (see arrow B) of A-pillar lower interior trim panel assembly ①.

d. Disengage the fixing clip (see arrow C) and remove the A-pillar lower interior trim panel assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.14.2.10 Removal and installation of B-pillar upper interior trim panel assembly

Disassembly procedures

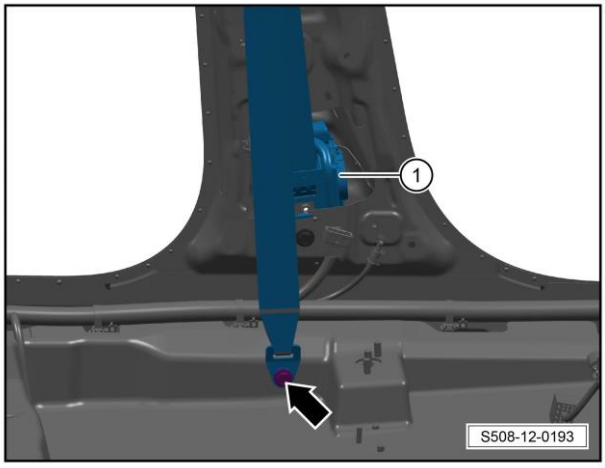
Tip:

The removal and installation procedures are only for the left B-pillar upper interior trim panel assembly,

which can be basically referred to for the right one.

1 Disengage one corner of the sealing strip of the front/rear door frame.

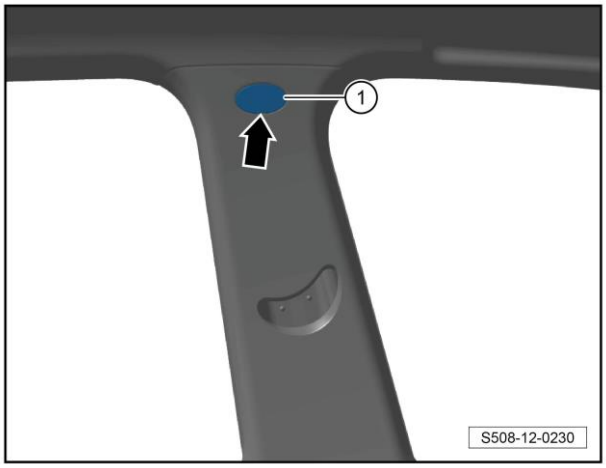
2 Remove the B-pillar lower interior trim panel assembly. Refer to 9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly



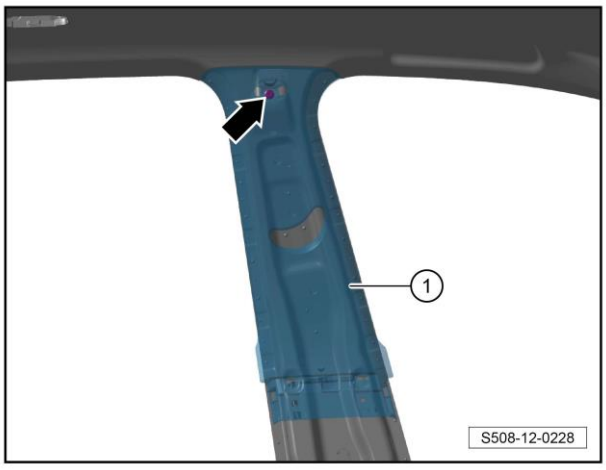
3

a. Unscrew the fixing bolt (see the arrows) of the seat belt assembly in the first row ①.

- Tightening torque of bolt: 50±3 N·m



b. Disengage the B-pillar upper interior trim panel assembly bolt trim cover ① (see the arrow).



c. Unscrew the fixing bolt (see the arrow) of B-pillar upper interior trim panel assembly ①.

d. Remove the B-pillar upper interior trim panel assembly ①.

- Tightening torque of bolt: 6±1 N·m

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the left B-pillar lower interior trim panel assembly,

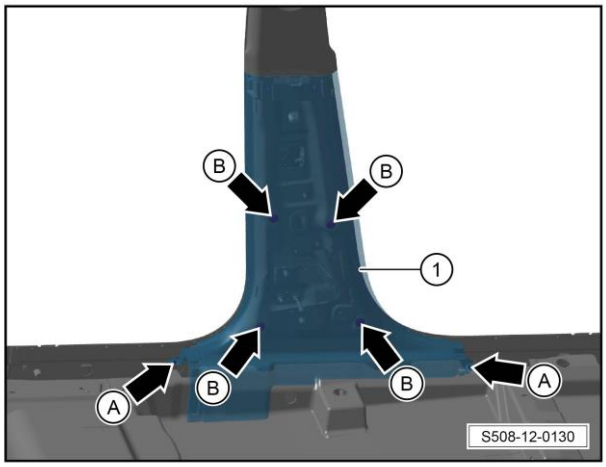
which can be basically referred to for the right one.

1 Move the front seat assembly forward as far as it goes.

2 Remove the front door sill assembly. Refer to 9.14.2.18 Removal and installation of front door sill assembly

3 Remove the rear door sill assembly. Refer to 9.14.2.19 Removal and installation of rear door sill assembly

4 Disengage one corner of the sealing strip of the front/rear door frame.



5 Remove the B-pillar lower interior trim panel assembly

a. Unscrew the fixing screws (see arrow A) of B-pillar lower interior trim panel assembly.

b. Disengage the fixing clips (see arrow B) and remove the B-pillar lower interior trim panel assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Check if the fixing clips are damaged and replace them if necessary.

9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly

Disassembly procedures

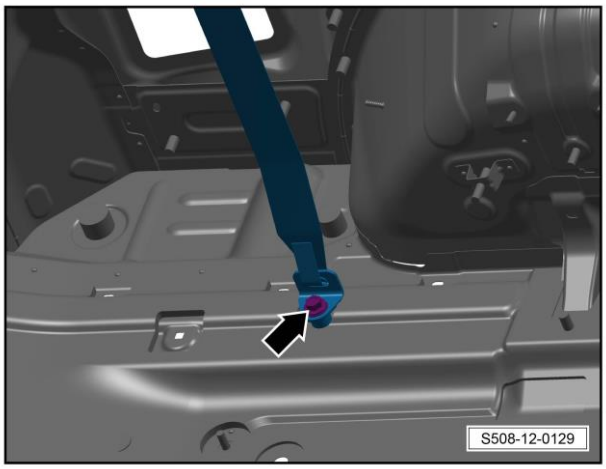
Tip:

The removal and installation procedures are only for the rear left wall upper interior trim panel assembly, which can be basically referred to for the rear right one.

1 Disengage one corner of the sealing strip of the rear door frame.

2 Remove the rear side wall lower interior trim panel

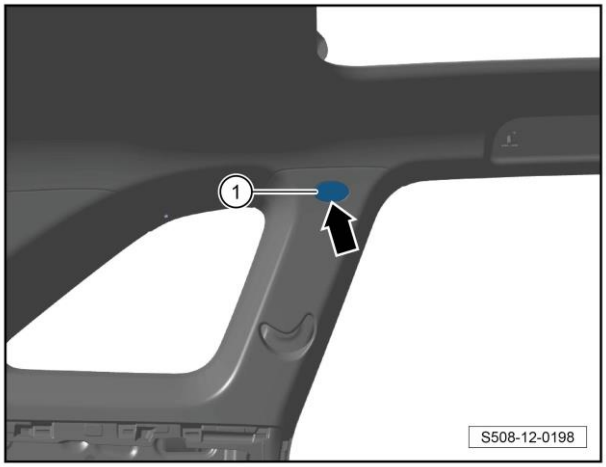
assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly



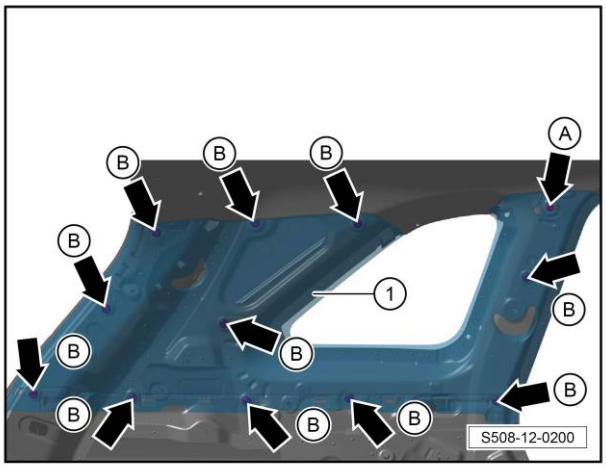
3 Remove the rear side wall upper interior trim panel assembly

a. Unscrew the fixing bolts (see the arrows) at the lower end of the third-row seat belt.

- Tightening torque of bolt: 50±3 N·m



b. Disengage the rear side wall upper interior trim panel bolt blank cover ① (see the arrow).



c. Unscrew the fixing bolt (see arrow A) of rear side wall upper interior trim panel assembly.

d. Disengage the fixing clips (see arrow B) and remove the rear side wall upper interior trim panel assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left side wall lower interior trim panel assembly, which can be basically referred to for the rear right one.

1 Remove the rear door sill. Refer to 9.14.2.19 Removal and installation of rear door sill assembly

2 Remove the 60 split seat assembly. Refer to 9.12.3.1 Removal and installation of 60 split seat assembly.

3 Remove the third-row split seat assembly (left). Refer to 9.13.3.1 Removal and installation of third-row split seat assembly

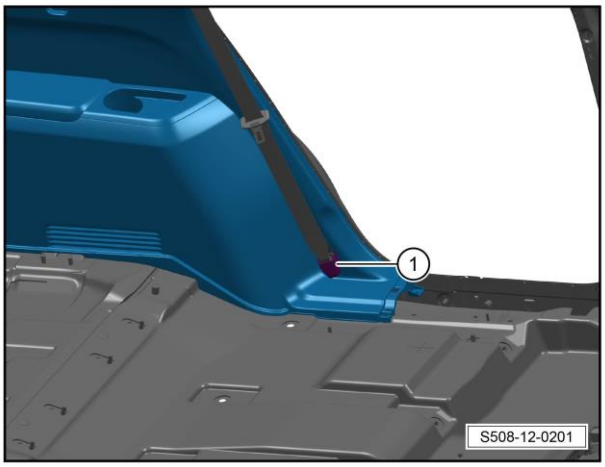
4 Remove the rear side wall ventilation cover (left). Refer to 9.14.2.16 Removal and installation of rear side wall ventilation cover (left)

5 Remove the lift gate sill assembly. Refer to 9.14.2.20 Removal and installation of lift gate sill assembly

6 Remove the driver's tool box. Refer to 9.14.2.26 Removal and installation of driver's tool box.

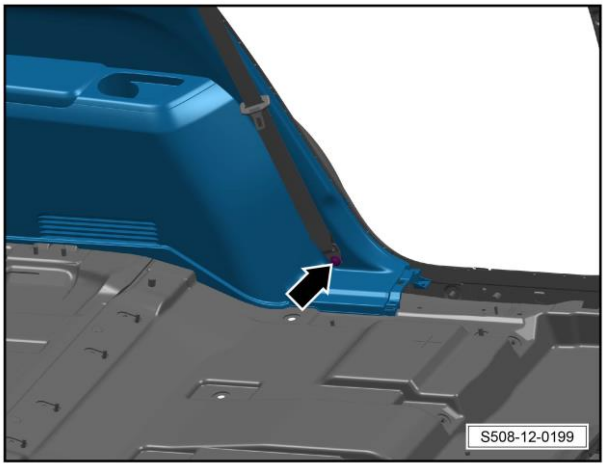
7 Disengage one corner of the sealing strip of the rear door frame.

8 Disengage one corner of the sealing strip of the lift gate frame.



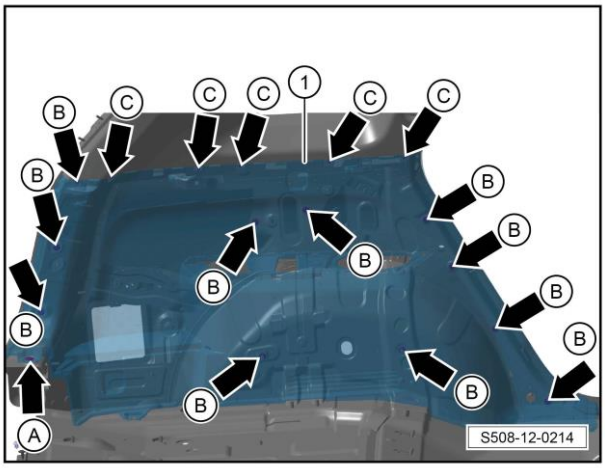
9 Remove the rear side wall lower interior trim panel assembly

a. Disengage the second-row seat belt bolt cover ①.



b. Unscrew the fixing bolts (see the arrows) at the lower end of the second-row seat belt.

- Tightening torque of bolt: 50±3 N·m



c. Disengage the fixing clips (see arrows A, B and C) and remove the rear side wall lower interior trim panel assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the clip is damaged and replace it if necessary.

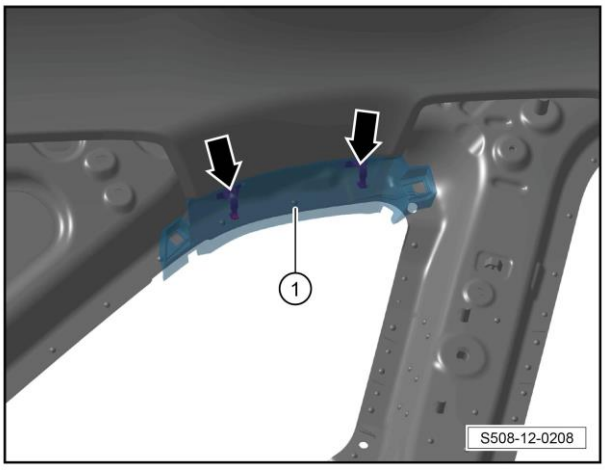
9.14.2.14 Removal and installation of rear side window roof strip assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left side window roof strip assembly, which can be basically referred to for the rear right one.

1 Remove the rear side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly



2 Remove the rear side window roof strip assembly

a. Disengage the fixing clips (see the arrow) and remove the rear side window roof strip assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Check if the fixing clips are damaged and replace them if necessary.

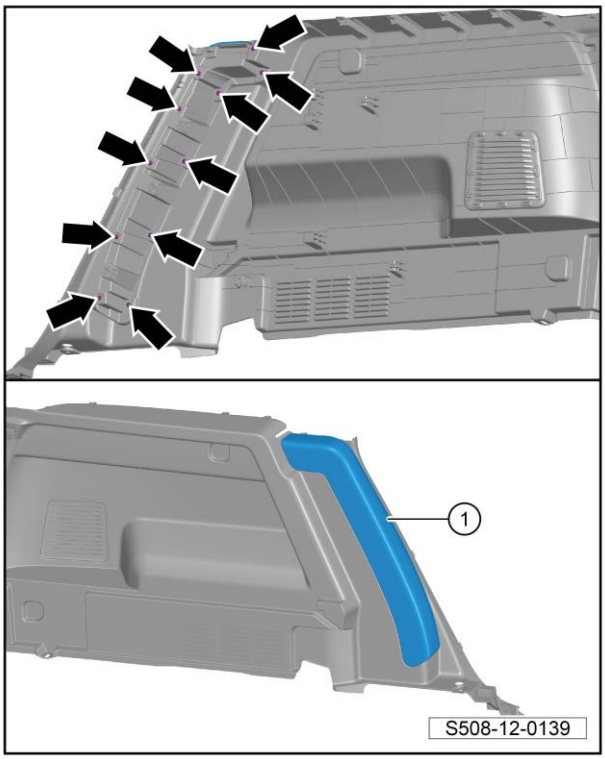
9.14.2.15 Removal and installation of rear side wall lower interior trim panel cladding

Disassembly procedures

Tip:

The removal and installation procedures are only for the left lower interior trim panel cladding, which can be basically referred to for the right one.

1 Remove the rear side wall lower interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall lower interior trim panel assembly



2 Remove the rear side wall lower interior trim panel cladding

a. Unscrew the fixing screws (see the arrow) and remove the rear side wall lower interior trim panel cladding ①.

Installation procedures

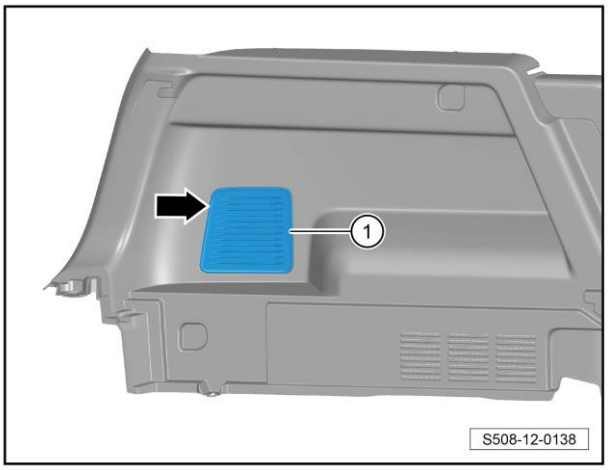
The installation procedure is to be performed basically in the reverse order:

9.14.2.16 Removal and installation of rear side wall ventilation cover (left)

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left side wall ventilation cover, which can be basically referred to for the right one.



1 Remove the rear side wall ventilation cover (left)

a. Disengage the fixing clips (see the arrow) and remove the rear side wall ventilation cover (left) ①.

Installation procedures

The installation procedure is to be performed

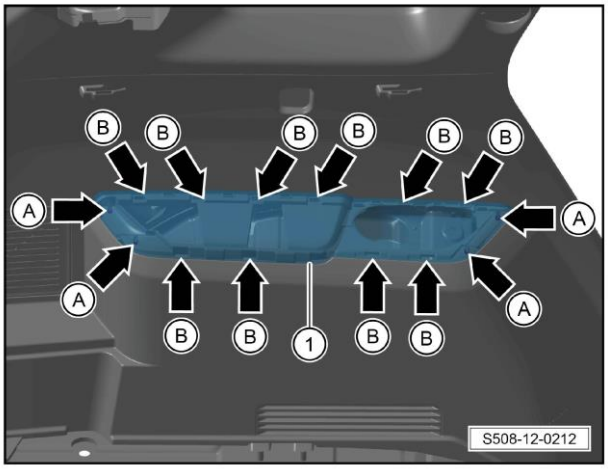
basically in the reverse order:

9.14.2.17 Removal and installation of rear side wall cup holder box

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left side wall cup holder box, which can be basically referred to for the right one.



1 Remove the rear side wall cup holder box

a. Disengage the fixing clips (see arrows A and B) and remove the rear side wall cup holder box ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

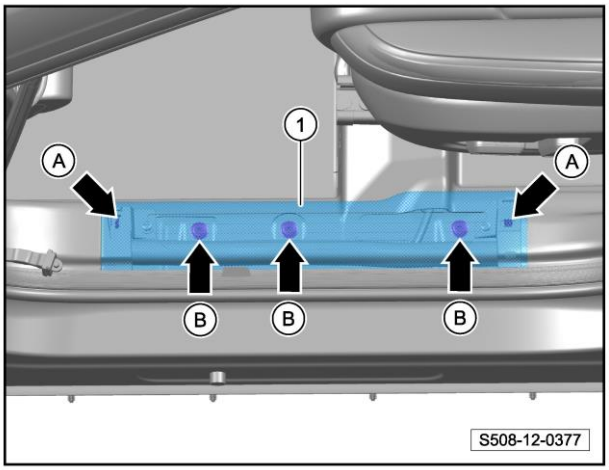
9.14.2.18 Removal and installation of front door sill assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left door sill assembly, which can be basically referred to for the front right one.

1 Open the front door.



2 Remove the front door sill assembly

a. Disengage one corner of the sealing strip of the front door frame.

b. Disengage the fixing clips (see arrows A and B) and remove the front door sill assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Check if the fixing clips are damaged and replace them if necessary.

9.14.2.19 Removal and installation of rear door sill assembly

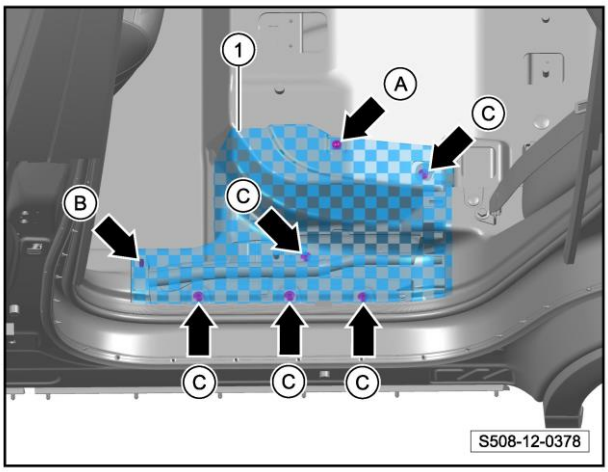
Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left door sill assembly, which can be basically referred to for the rear right one.

1 Open the rear door.

2 Remove the second-row seat cushion assembly. Refer to 9.11.3.2 Removal and installation of second-row seat cushion assembly



3 Remove the rear door sill assembly

a. Disengage one corner of the door frame sealing strip.

b. Unscrew the fixing screws (see arrow A) of the rear door sill assembly.

c. Disengage the fixing clips (see arrows B and C) and remove the rear door sill assembly ①.

Installation procedures

Perform the installation procedures in the reverse

order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

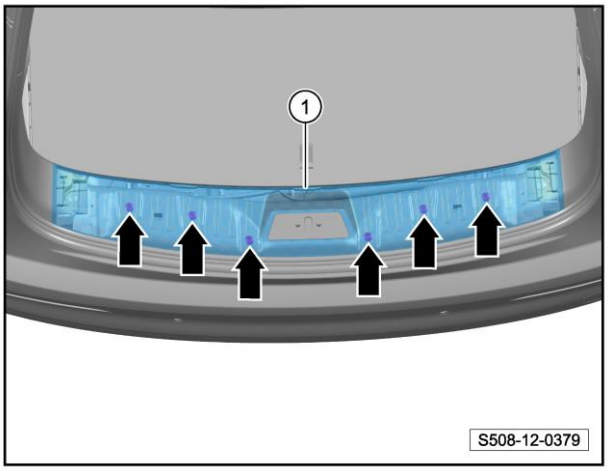
9.14.2.20 Removal and installation of lift gate sill assembly

Disassembly procedures

1 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

2 Remove the driver's tool box. Refer to 9.14.2.26 Removal and installation of driver's tool box.

3 Disengage one corner of the sealing strip of the lift gate frame.



4 Remove the lift gate sill assembly

a. Disengage the fixing clips (see the arrow) of the lift gate sill assembly and remove the lift gate sill assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

Check the fixing clip. If it is damaged, replace it with a new one.

9.14.2.21 Removal and installation of air guide

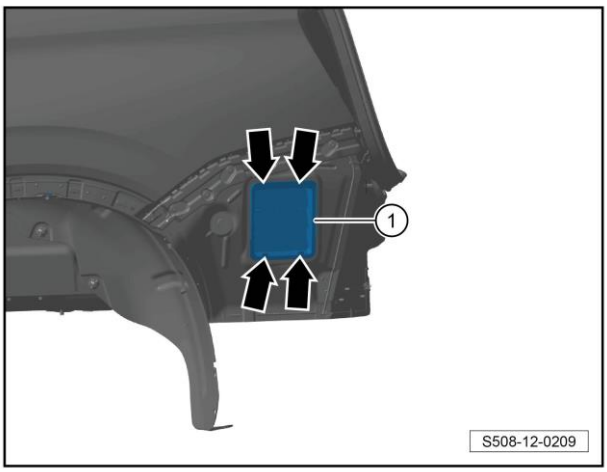
Disassembly procedures

Tip:

The removal and installation procedures are only for the left air guide, which can be basically referred to for the right one.

1 Remove the rear bumper assembly with accessories.

Refer to 9.5.3.1 Removal and installation of rear bumper assembly with accessories



2 Remove the air guide

a. Disengage the fixing clips (see the arrows) and remove the air guide ①.

Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.14.2.22 Removal and installation of front floor carpet

Disassembly procedures

1 Remove the gearshift control mechanism assembly. Refer to 4.3.5.1 Removal and installation of gearshift control mechanism assembly

2 Remove the control box assembly. Refer to 9.9.3.2 Removal and installation of control box assembly

3 Remove the front-row seat. Refer to 9.10.3.1 Removal and installation of front seat and backrest assembly

4 Remove the front door sill assembly. Refer to 9.14.2.18 Removal and installation of front door sill assembly

5 Remove the rear-row seat. Refer to 9.11.3.1 Removal and installation of the rear-row seat backrest assembly. Remove the second-row seat (60/40 split). Refer to 9.12.3.1 Removal and installation of 60 split seat assembly. Remove the third-row seat.

Refer to 9.13.3.1 Removal and installation of the third-row split seat assembly

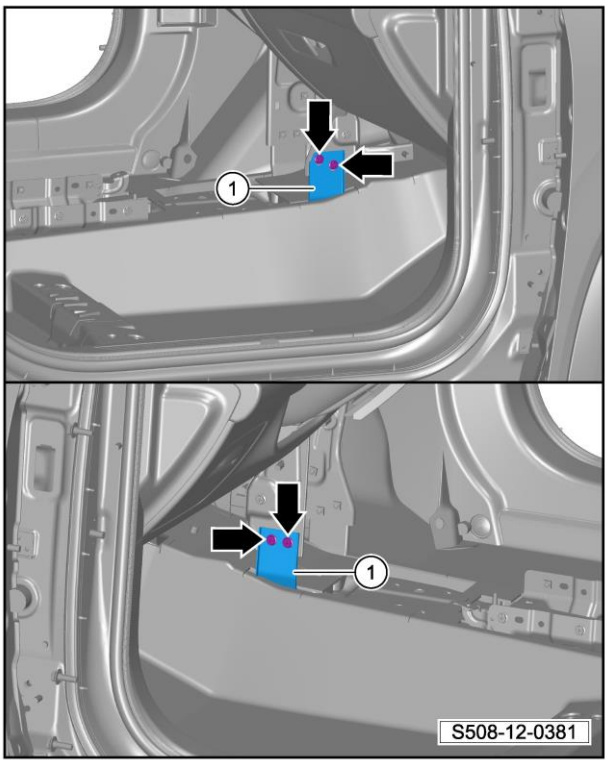
6 Remove the rear door sill assembly. Refer to 9.14.2.19 Removal and installation of rear door sill assembly

7 Remove the A-pillar lower interior trim panel

assembly. Refer to 9.14.2.9 Removal and installation of A-pillar lower interior trim panel assembly

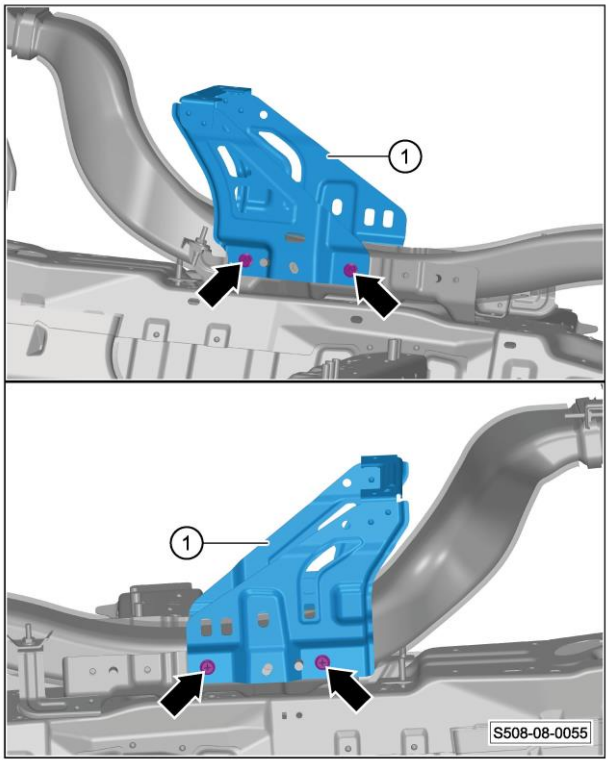
8 Remove the B-pillar lower interior trim panel assembly. Refer to 9.14.2.11 Removal and installation of B-pillar lower interior trim panel assembly

9 Remove the rear side wall lower interior trim panel assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

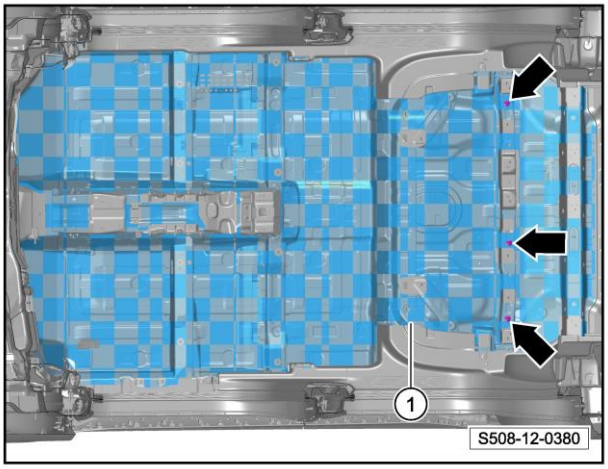


10 Remove the front floor carpet

a. Unscrew the fixing screws (see the arrow) and move out the tubular beam lower connection bracket ①.



b. Unscrew the fixing screws (see the arrow) and remove the TBOX mounting bracket ①.



c. Disengage the fixing clips (see the arrow) and remove the front floor carpet ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

Check the fixing clip. If it is damaged, replace it with a new one.

9.14.2.23 Removal and installation of rear floor carpet

Disassembly procedures

1 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body

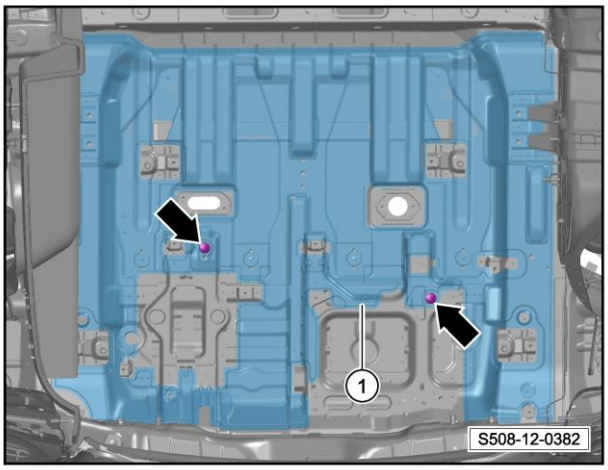
2 Remove the driver's tool box. Refer to 9.14.2.26 Removal and installation of driver's tool box.

3 Remove the battery. Refer to 8.29.3.1 Removal and installation of battery

4 Remove the HV electrical appliance two-in-one assembly. Refer to 5.5.7.1 Removal and installation of HV electrical appliance two-in-one assembly

5 Remove the third-row seat. Refer to 9.13.3.1 Removal and installation of third-row split seat assembly

6 Remove the rear side wall lower interior trim panel moulding. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly



7 Remove the rear floor carpet

a. Disengage the fixing clips (see the arrow) and remove the rear floor carpet ①.

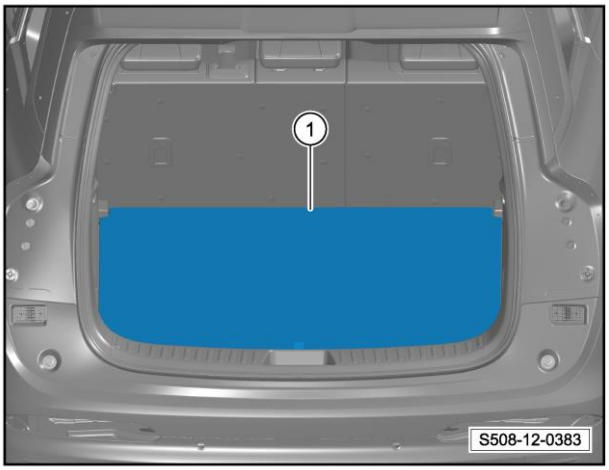
Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-Check the fixing clip. If it is damaged, replace it with a new one.

9.14.2.24 Removal and installation of storage box cover body

Disassembly procedures



1 Remove the storage box cover body

a. Open the lift gate.

b. Take out the storage box cover body ①.

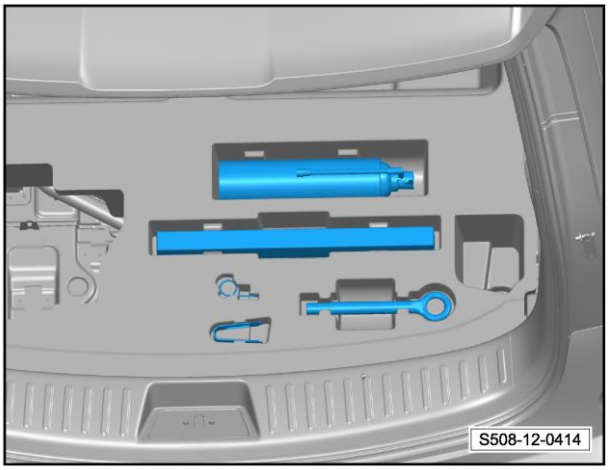
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.14.2.25 Removal and installation of driver's tools

Disassembly procedures

1 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body



2 Remove the driver's tools

a. Take out the driver's tools.

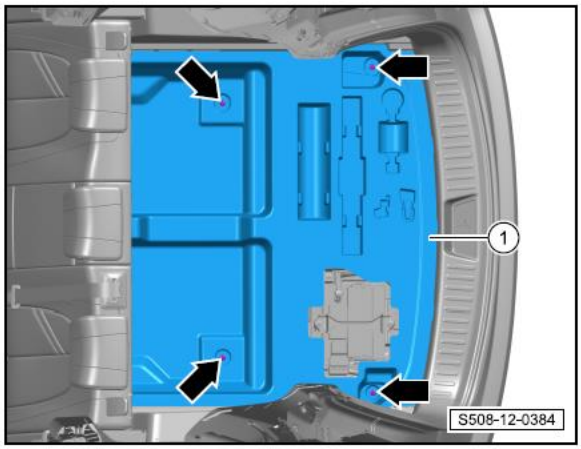
Installation procedures

The installation procedure is to be performed basically in the reverse order:

9.14.2.26 Removal and installation of driver's tools box

Disassembly procedures

1 Remove the glove box cover body. Refer to 9.14.2.24 Removal and installation of glove box cover body



2 Remove the driver's tools box

a. Take out the driver's tools.

b. Unscrew the fixing bolts (see the arrows), and remove the driver's tools box ①.

– Tightening torque of bolt: **6±1 N·m**

Installation procedures

The installation procedure is to be performed basically in the reverse order.

9.15 Vehicle body exterior trim

9.15.1 Specification

9.15.1.1 Fastener specifications

Tightening position	Specification	Tightening torque: N·m
Engine guard	Cross recessed hexagon head flange bolt	6±1
Spoiler assembly	Hexagon flange nut M6	10±1

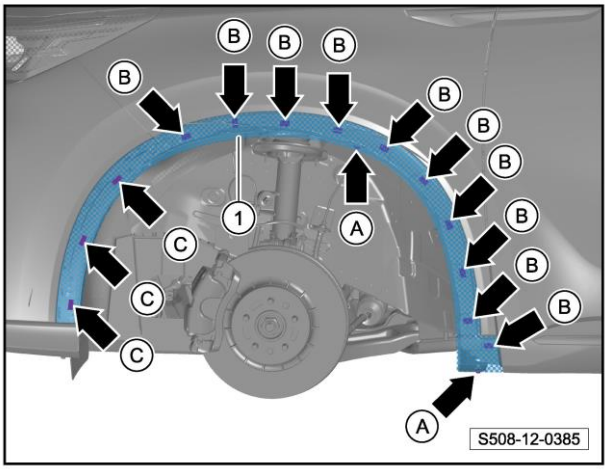
9.15.2 Removal and installation

9.15.2.1 Removal and installation of front wheel arch trim assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left wheel arch trim assembly, which can be basically referred to for the front right one.



1 Remove the front wheel brow trim assembly

a. Unscrew the fixing screws (see arrow A) of the front wheel arch trim assembly ①.

b. Disengage the fixing clips (see arrows B and C) and remove the front wheel arch trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– When installing, the location pin shall be inserted into the corresponding sheet metal hole first (see the arrow). To avoid damage to the clips during installation, they shall be tapped into place at one time.

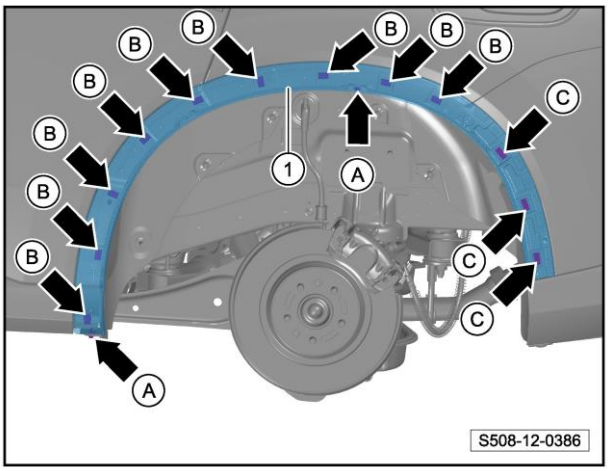
– Check if the fixing clips are damaged and replace them if necessary.

9.15.2.2 Removal and installation of rear wheel arch trim assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left wheel arch trim assembly, which can be basically referred to for the rear right one.



1 Remove the rear wheel arch trim assembly

a. Unscrew the fixing screws (see arrow A) of the rear wheel arch trim assembly ①.

b. Disengage the fixing clips (see arrows B and C) of the rear wheel arch trim assembly and remove the rear wheel arch trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

When installing, the location pin shall be inserted into the corresponding sheet metal hole first. To avoid damage to the clips during installation, they shall be tapped into place at one time.

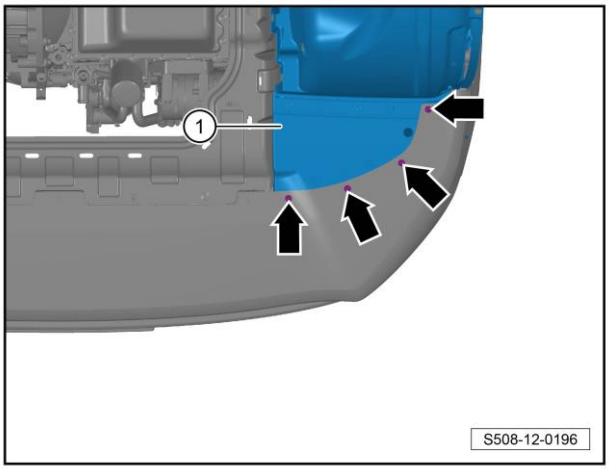
9.15.2.3 Removal and installation of front hub trim

Disassembly procedures

Tip:

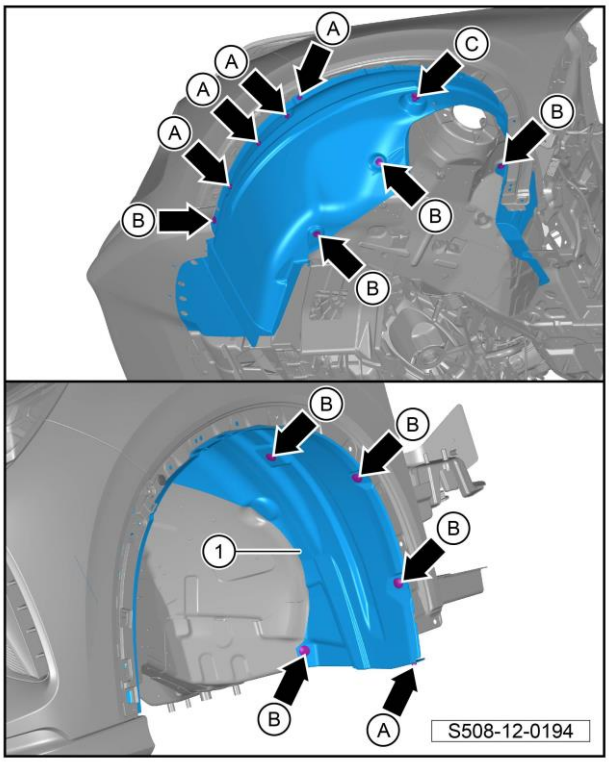
The removal and installation procedures are only for the front left hub trim, which can be basically referred to for the front right one.

1 Remove the left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the front hub trim

a. Unscrew the lower fixing screws (see the arrow) of the front hub trim ①.



b. Unscrew the fixing screws (see arrow A) of the front hub trim.

c. Disengage the fixing clips (see arrow B), screw seat (see arrow C), and remove the front hub trim ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

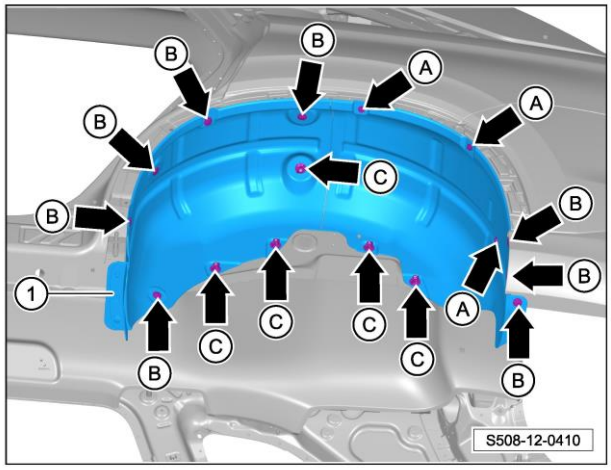
9.15.2.4 Removal and installation of rear hub trim

Disassembly procedures

Tip:

The removal and installation procedures are only for the rear left hub trim, which can be basically referred to for the rear right one.

1 Remove the rear left wheel assembly. Refer to 3.4.4.1 Removal and installation of wheel assembly



2 Remove the rear hub trim

a. Unscrew the fixing screws (see arrow A) of the rear hub trim ①.

b. Disengage the fixing clips (see arrow B), screw seat (see arrow C), and remove the rear hub trim ①.

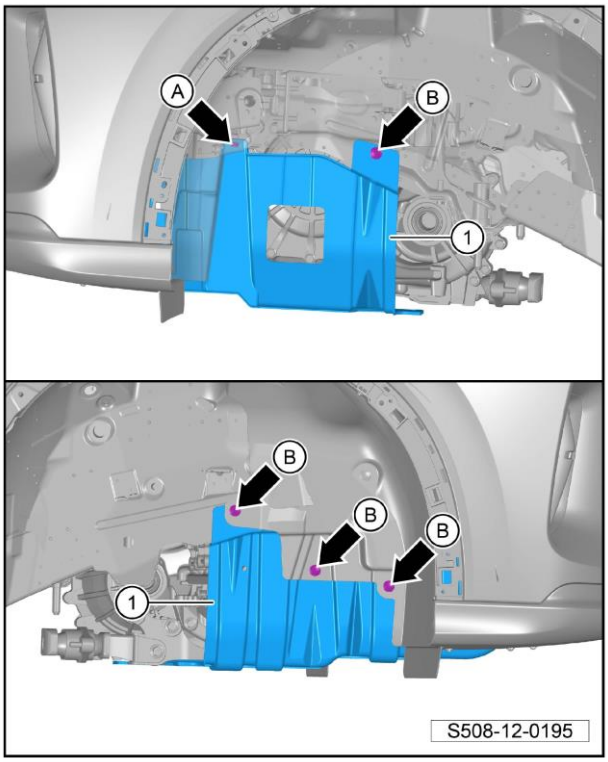
Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.15.2.5 Removal and installation of engine guard

Disassembly procedures

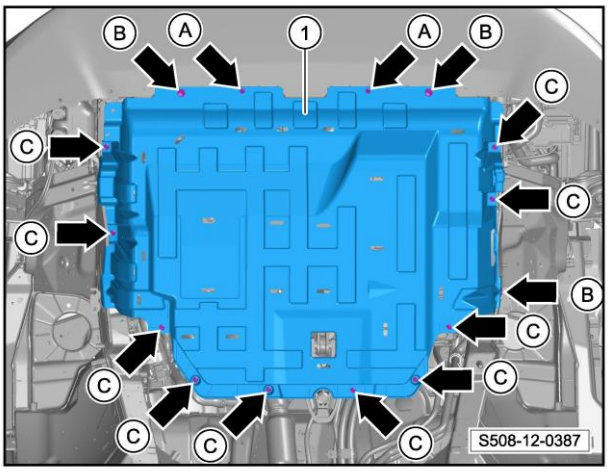


1 Remove the engine guard

a. Unscrew the fixing bolt (see arrow A) of the engine guard ①.

b. Disengage the fixing clips (see arrow B) of the engine guard ①.

- Tightening torque of bolt (see arrow A): 6±1 N·m



c. Unscrew the fixing bolt (see arrow A) of the engine guard ①.

d. Disengage the fixing clips (see arrow B) of the engine guard ①.

e. Unscrew the fixing screws (see arrow C) and remove the engine guard ①.

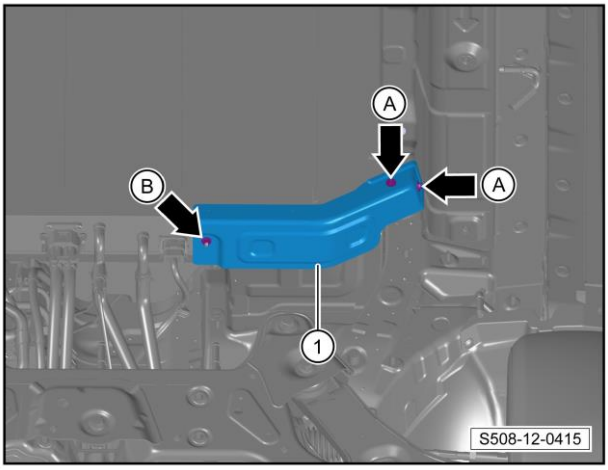
Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.15.2.6 Removal and installation of front section assembly of battery pack heat shield

Disassembly procedures



1 Remove the front section assembly of the battery pack heat shield

a. Unscrew the fixing bolts of the front section assembly of the battery pack heat shield (see arrow A).

b. Unscrew the fixing nut (see arrow B) and remove the front section assembly ① of the battery pack heat shield.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

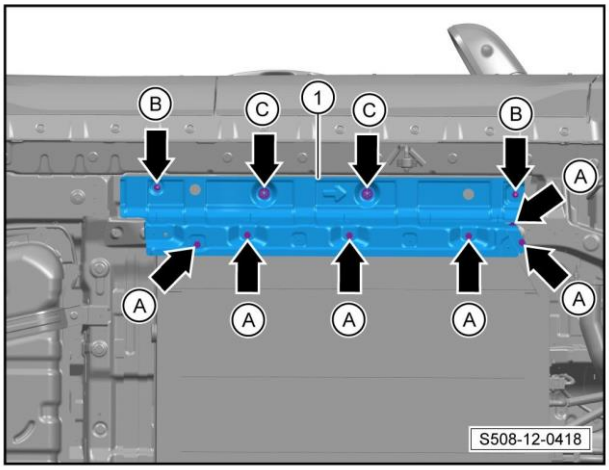
-After installation is completed, check to make sure it is firmly installed.

9.15.2.7 Removal and installation of middle

section assembly of battery pack heat shield

Disassembly procedures

1 Remove and install the front section assembly of the battery pack heat shield. Refer to 9.15.2.6 Removal and installation of front section assembly of battery pack heat shield



2 Remove the middle section assembly of the battery pack heat shield

a. Unscrew the fixing bolts of the front section assembly ① of the battery pack heat shield (see arrow A).

b. Unscrew the fixing nuts of the front section assembly ① of the battery pack heat shield (see arrow B).

c. Disengage the fixing clips (see arrow C) and remove the middle section assembly ① of the battery pack heat shield.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

-After installation is completed, check to make sure it is firmly installed.

9.15.2.8 Removal and installation of rear side wall upper trim strip assembly

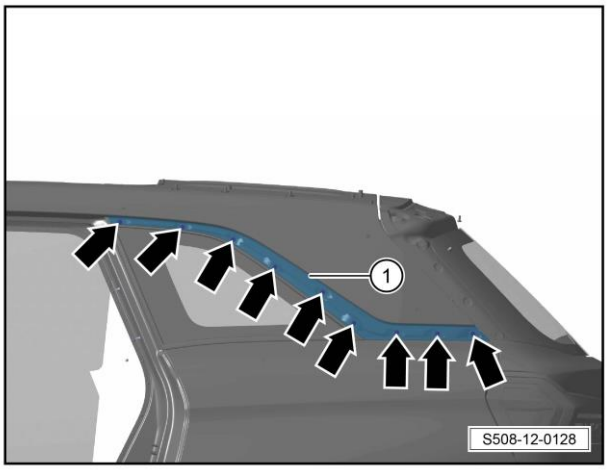
Disassembly procedures

Tip:

The removal and installation procedures are only for the left rear side wall upper trim strip assembly, which can be basically referred to for the right one.

1 Open the lift gate.

2 Open the rear door.



3 Remove the rear side wall upper trim strip assembly

a. Disengage the fixing clips (see the arrow) and remove the rear side wall upper trim strip assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and replace them if necessary.

9.15.2.9 Removal and installation of spoiler assembly

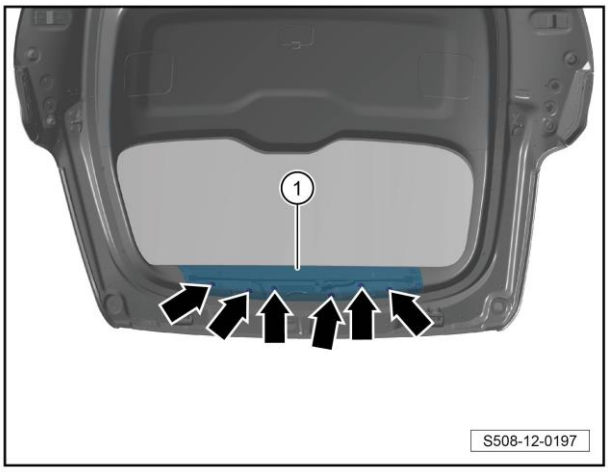
Disassembly procedures

1 Open the lift gate.

2 Turn off all the electrical appliances and turn off the Start switch.

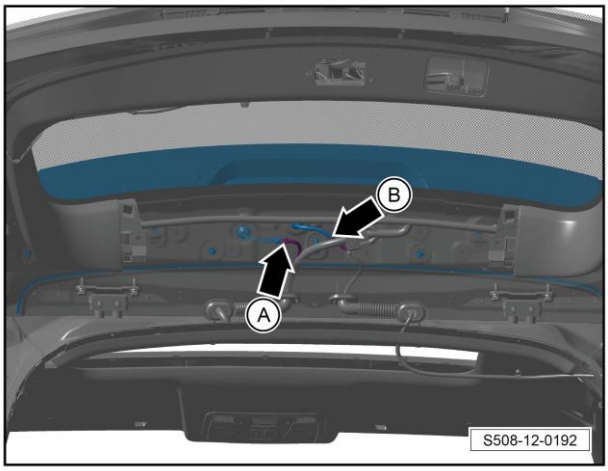
3 Disconnect the battery negative terminal. Refer to 8.29.3.5 Disconnecting battery negative terminal

4 Remove the lift gate glass trim assembly. Refer to 9.15.2.11 Removal and installation of lift gate glass trim assembly



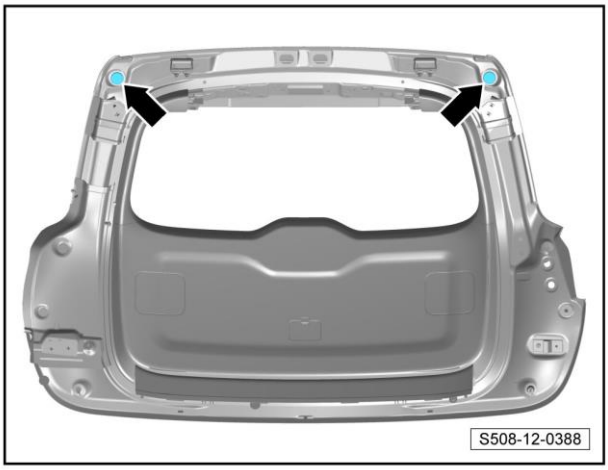
5 Remove the spoiler assembly

a. Disengage the fixing clips (see the arrow) and remove the lift gate frame upper interior trim panel ①.

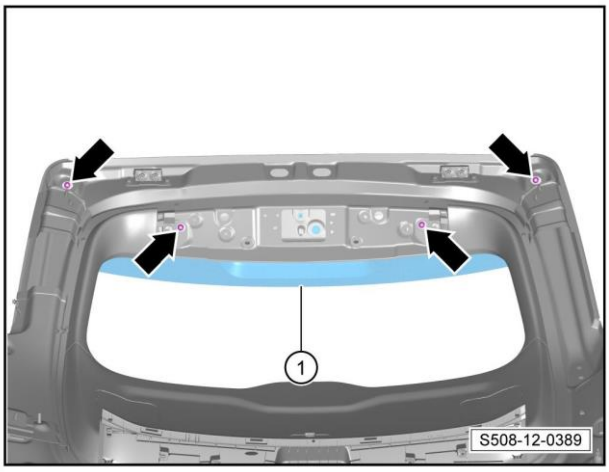


b. Disconnect the connector (see arrow A) of the CHMSL, and disengage the fixing clip of the connector.

c. Disengage washing hose 2 at the position of arrow B.

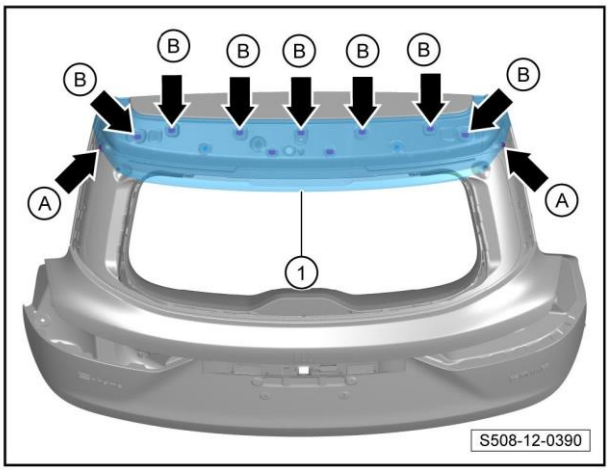


d. Remove the front wall panel hole plug (see the arrow).



e. Unscrew the fixing nuts (see the arrow) of the spoiler assembly ①.

- Tightening torque of nut: **10±1 N·m**



f. Unscrew the fixing screws (see arrow A) of the spoiler assembly ①.

g. Disengage the fixing clips (see arrow B) and remove the spoiler assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

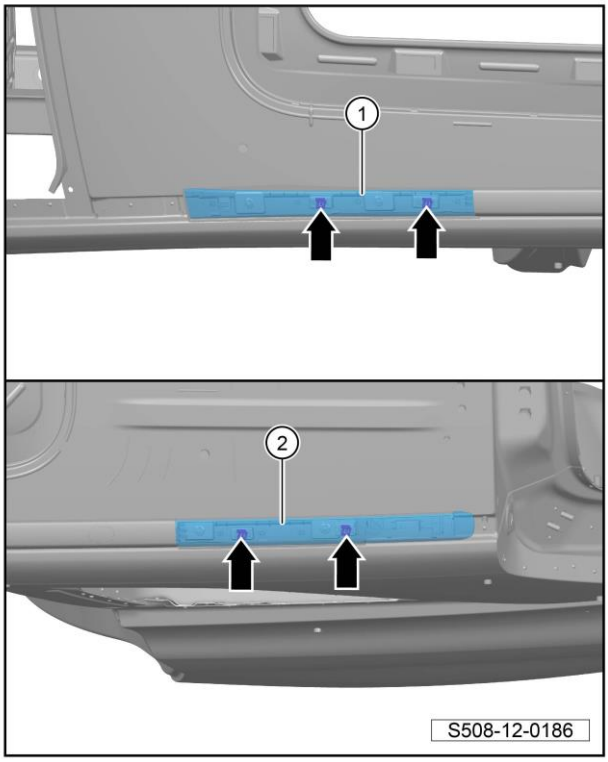
-Check if the fixing clips are damaged and replace them if necessary.

9.15.2.10 Removal and installation of luggage rack assembly

Disassembly procedures

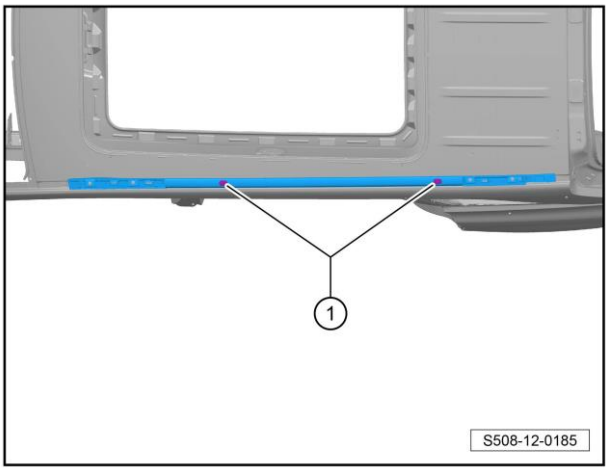
Tip:

The removal and installation procedures are only for the left luggage rack assembly, which can be basically referred to for the right one.

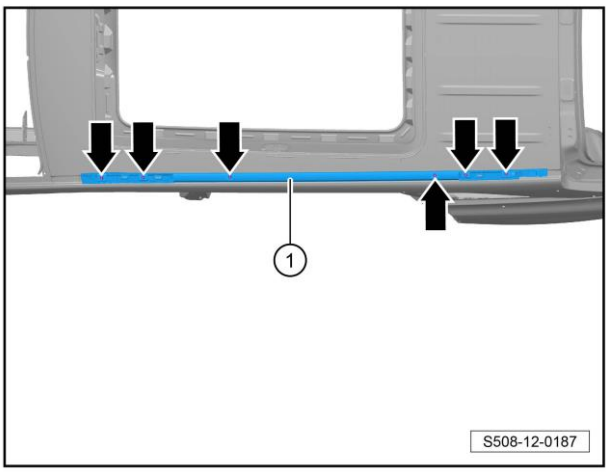


1 Remove the luggage rack assembly

a. Disengage the fixing clips and remove the luggage rack front cover ① and the luggage rack rear cover ②.



b. Remove the luggage rack mounting blank cover ①.



c. Unscrew the fixing nut (see the arrow) of the luggage rack assembly and remove the luggage rack assembly ①.

Installation procedures

Perform the installation procedures in the reverse

order of removal procedures and pay attention to the following items:

-After installation is completed, check to make sure it is firmly installed.

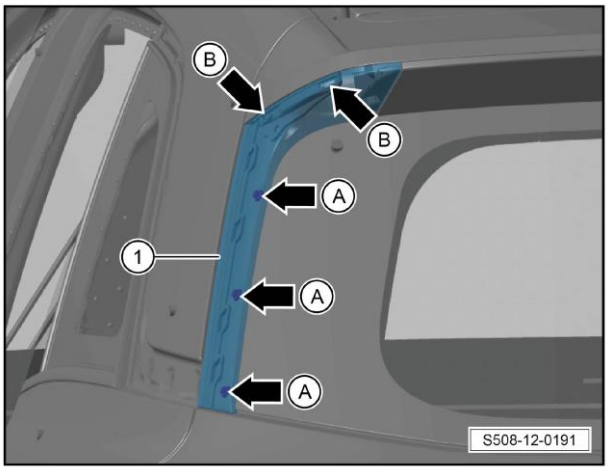
9.15.2.11 Removal and installation of lift gate glass trim assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the lift gate glass trim assembly (left), which can be basically referred to for the right one.

1 Open the lift gate (it is not necessary to open it fully).



2 Remove the lift gate glass trim assembly

a. Disengage the fixing clips (see arrows A and B) and remove the lift gate glass trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

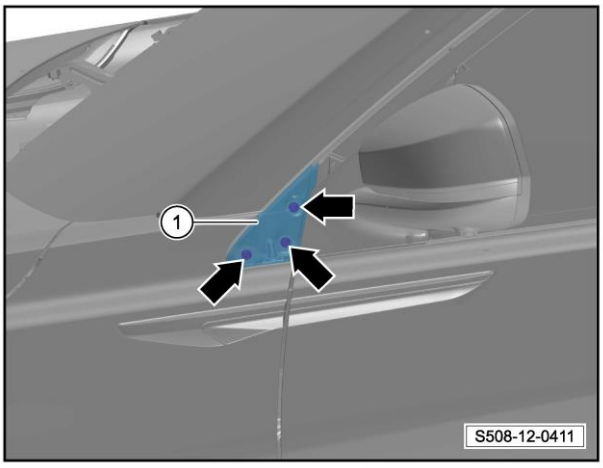
- Check whether the fixing clips are damaged and replace them if necessary.

9.15.2.12 Removal and installation of front triangular window trim assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the front left quarter window trim assembly, which can be basically referred to for the rear right one.



1 Remove the front quarter window trim assembly

a. Disengage the fixing clips (see the arrow) and remove the front quarter window trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

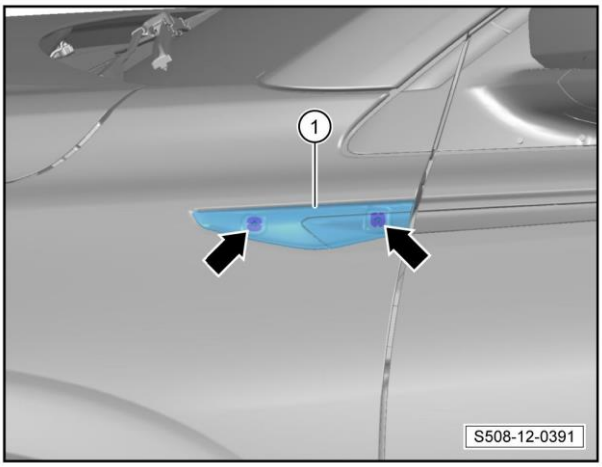
- Check whether the fixing clips are damaged and replace them if necessary.

9.15.2.13 Removal and installation of fender exterior trim assembly

Disassembly procedures

Tip:

The removal and installation procedures are only for the left fender exterior trim assembly, which can be basically referred to for the right one.



1 Remove the fender exterior trim assembly

a. Disengage the fixing clips (see the arrow) and remove the fender exterior trim assembly ①.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Check whether the fixing clips are damaged and

replace them if necessary.

9.15.2.14 Removal and installation of front windshield

Disassembly procedures

1 Remove the left/right A-pillar interior trim panel assembly. Refer to 9.14.2.8 Removal and installation of A-pillar interior trim panel assembly

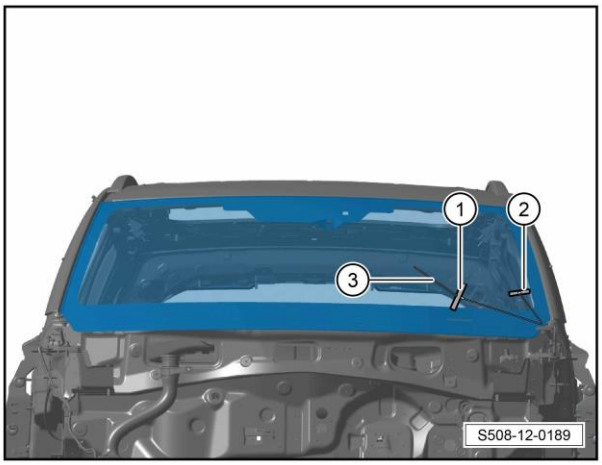
2 Remove the interior rearview mirror assembly. Refer to 8.6.4.3 Removal and installation of interior rearview mirror assembly (automatic anti-glare)

3 Remove the front hood trim component. Refer to 9.2.3.8 Removal and installation of front hood trim component

4 Remove the light/rain sensor. Refer to 8.7.6.11 Removal and installation of light/rain sensor

5 Remove the front wiper motor and bracket assembly. Refer to 8.7.6.7 Removal and installation of front wiper motor and bracket assembly

6 Remove the ETC assembly. Refer to 8.22.5.1 Removal and installation of ETC assembly



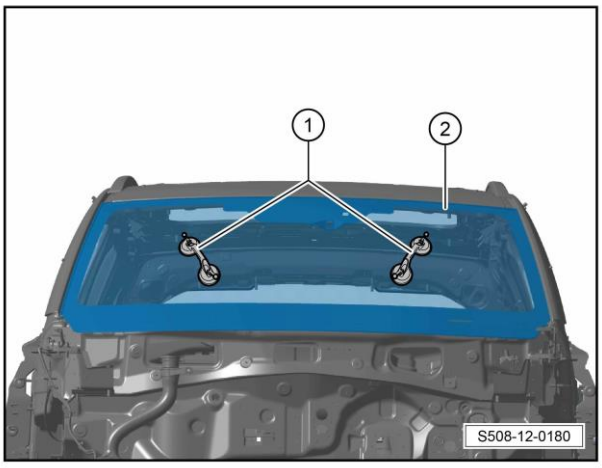
7 Remove front windshield

a. Penetrate the adhesive sealing material of front windshield with an awl.

b. Pierce the adhesive sealing material with a cutting wire and pull it into the car.

c. Fix the cutting wire ③ put inside the vehicle with handles ① and ② to prevent it from being pulled out.

d. Cut and attach glass with the cooperation of another technician.



e. Install the suction disc ① onto the front windshield ②.

f. Carefully remove the front windshield ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Remove the residual silicon sealant on the bonding surface of the body, and use detergent to wash the application position on the glass and the body.

– First apply primer on the position where the sealant is applied on the glass and the body. It is required that the glass and the body should be kept clean and free of dust.

– Apply silicon sealant to the upper edge of the glass. It is required to apply sealant evenly.

– Lift the glass with a suction cup. First, align the glass fixing clip with the positioning hole of the body, and then slowly put the glass down. Try not to move back and forth during the installation process, so as to avoid the silicon sealant being damaged, resulting in poor sealing.

– After installing the front windshield assembly, check whether the peripheral clearance and surface difference meet the requirements. It is required that the clearance between the periphery of the glass and the body is uniform, and the upper edge surface of the glass is even with the height of the roof panel step.

9.15.2.15 Removal and installation of lift gate glass

Disassembly procedures

Note:

Do not damage the paint when removing the lift gate glass.

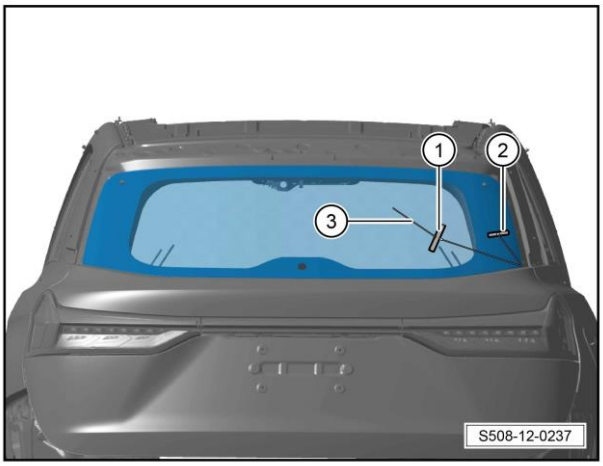
1 Remove the lift gate interior trim panel assembly. Refer to 9.3.3.14 Removal and installation of lift gate interior trim panel assembly

2 Remove the rear wiper motor and bracket assembly. Refer to 8.7.6.10 Removal and installation of the rear wiper motor and bracket assembly

3 Remove the spoiler assembly. Refer to 9.15.2.9 Removal and installation of spoiler assembly

4 Remove the lift gate glass.

a. Disconnect the heating connectors (see the arrows) of the left/right lift gate glass.

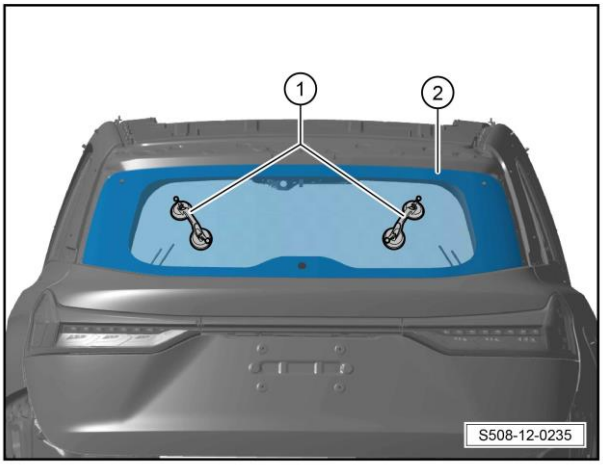


b. Penetrate the adhesive sealing material of rear windshield assembly with an awl.

c. Pierce the adhesive sealing material with a cutting wire and pull it into the car.

d. Fix the cutting wire ③ put inside the vehicle with handles ① and ② to prevent it from being pulled out.

e. Cut and attach glass with the cooperation of another technician.



f. Install the suction disc ① onto the rear windshield assembly ②.

g. Carefully remove the rear windshield assembly ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

– Remove the residual silicon sealant on the bonding surface of the body, and use detergent to wash the application position on the glass and the body.

– First apply primer on the position where the sealant is applied on the glass and the body. It is required that the glass and the body should be kept clean and free of dust.

– Apply silicon sealant to the upper edge of the glass. It is required to apply sealant evenly.

– Lift the glass with a suction cup. First, align the glass fixing clip with the positioning hole of the body, and then slowly put the glass down. Try not to move back and forth during the installation process, so as to avoid the silicon sealant being damaged, resulting in poor sealing.

– After installing the rear windshield assembly, check whether the peripheral clearance and surface difference meet the requirements. It is required that the clearance between the periphery of the glass and the body is uniform, and the upper edge surface of the glass is even with the height of the roof panel step.

9.15.2.16 Removal and installation of rear window glass

Disassembly procedures

Note:

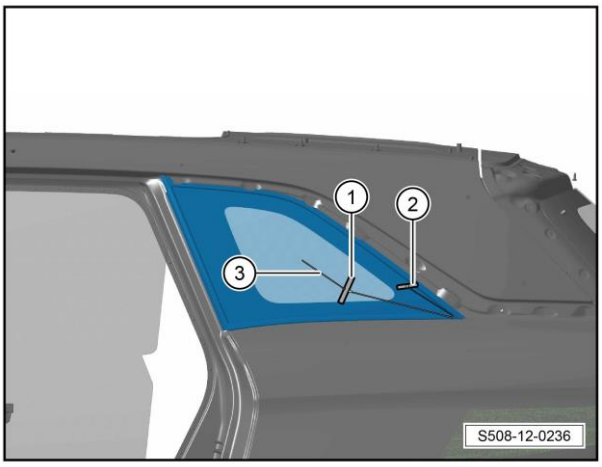
Do not damage the paint when removing the rear window glass.

The removal and installation procedures are only for the rear left window glass, which can be basically referred to for the rear right one.

1 Remove the rear side wall lower interior trim panel assembly. Refer to 9.14.2.13 Removal and installation of rear side wall lower interior trim panel assembly

2 Remove the rear side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly

3 Remove the rear side wall upper trim strip. Refer to 9.15.2.8 Removal and installation of rear side wall upper trim strip assembly



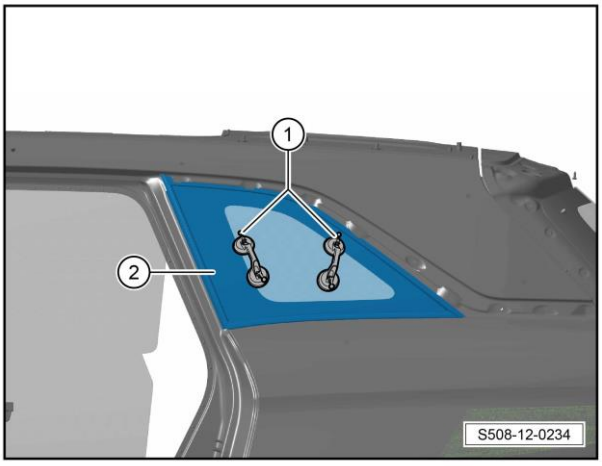
4 Remove the rear side window glass

a. Penetrate the adhesive sealing material of rear side window with an awl.

b. Pierce the adhesive sealing material with a cutting wire and pull it into the car.

c. Fix the cutting wire ③ put inside the vehicle with handles ① and ② to prevent it from being pulled out.

d. Cut and attach glass with the cooperation of another technician.



e. Install the suction disc ① onto the rear side window ②.

f. Carefully remove the rear side window glass ②.

Installation procedures

Perform the installation procedures in the reverse order of removal procedures and pay attention to the following items:

- Remove the residual silicon sealant on the bonding surface of the body, and use detergent to wash the application position on the glass and the body.
- First apply primer on the position where the sealant is applied on the glass and the body. It is required that the glass and the body should be kept clean and free of dust.
- Apply silicon sealant to the upper edge of the glass. It is required to apply sealant evenly.
- Lift the glass with a suction cup. First, align the glass fixing clip with the positioning hole of the body, and then slowly put the glass down. Try not to move back and forth during the installation process, so as to avoid the silicon sealant being damaged, resulting in poor sealing.
- After installing the rear windshield assembly, check whether the peripheral clearance and surface difference meet the requirements. It is required that the clearance between the periphery of the glass and the body is uniform, and the upper edge surface of the glass is even with the height of the roof panel step.

Sheet Metal and Painting

10.1 Plastic panel information and maintenance 2

10.1.1 Description and operation 2

10.1.1.1 Features of plastic materials 2

10.1.1.2 List of materials for exterior plastic parts 3

10.2 Body repair 6

10.2.1 Safety notes 6

10.2.1.1 General maintenance specification 6

10.2.1.2 Notes on operations against structural steel plate of vehicle body 7

10.2.1.3 Accident repair order 8

10.2.1.4 Notes on operations against various systems 15

10.2.2 Specification 17

10.2.2.1 Maintenance materials after collision 17

10.2.2.2 Mark 18

10.2.2.3 Specified torque of exterior parts 19

10.2.2.4 Assembly standard/adjustment method 23

10.2.2.5 Plate pasting position 56

10.2.2.6 Label/sticker pasting position 57

10.2.2.7 Body size 57

10.2.3 Sealing and anti-corrosion specifications 83

10.2.3.1 Note on sealing and anti-corrosion treatment 83

10.2.3.2 Body front sealing area 84

10.2.3.3 Body middle sealing area 92

10.2.3.4 Body rear sealing area 101

10.2.3.5 Four-door inner cavity antirust wax spraying 111

10.2.3.6 Styrofoam 113

10.2.3.7 Stone-strike resistant spraying area 114

10.2.3.8 Installation of body damping pad 121

10.2.4 Damage diagnosis 122

10.2.4.1 Damage diagnosis 122

10.2.5 Body repair 130

10.2.5.1 Body component replacement - tools 130

10.2.5.2 Replacement of front engine compartment side reinforcement plate front section assembly 133

10.2.5.3 Replacement of upper crossmember assembly on water tank 138

10.2.5.4 Replacement of A-pillar side wall outer plate 143

10.2.5.5 Replacement of B-pillar side wall outer plate 152

10.2.5.6 Replacement of rear fender 161

10.2.5.7 Replacement of rear wall assembly 169

10.3 Paint coating 178

10.3.1 Technical specifications 178

10.3.1.1 Specification 178

10.3.2 Safety notes 178

10.3.2.1 Description of paint coating 178

10.3.2.2 Daily maintenance of automobile top coat 178

10.3.2.3 Warnings and notes during paint mixing and spraying operation 178

10.3.2.4 Notes for service and maintenance of transparent paint 180

10.3.2.5 Notes for anti-corrosion treatment 180

10.3.3 Common defects in top coat and treatment methods 181

10.3.3.1 Examples and treatment methods for common defects of automobile coatings 181

10.3.4 Paint film repair 183

10.3.4.1 Examples of treatment process of common paint film defects 183

10.3.4.2 Examples of common process of grinding and polishing 183

10.3.4.3 Examples of treatment process of deep grinding and polishing treatment 185

10.3.4.4 Paint spraying process for rigid surfaces 186

10.3.4.5 Painting for rigid surfaces after sheet metal repair 192

10.3.4.6 Paint repair procedures for the surface of plastic parts 192

10.1 Plastic panel information and maintenance

10.1.1 Description and operation

10.1.1.1 Features of plastic materials

Some components may be subject to thermal deformation during repair. Therefore, it is necessary to confirm features (solvent resistance and heat resistance) of plastic components, and select the repair material according to the component material. Application of small amount of ethyl alcohol in a short time for grease removal is harmless. If necessary, remove the component in advance.

Code	Material	Heat-resistance temperature*℃（℉）	Note
AAS	Acrylonitrile-acrylic acid-styrene copolymer	80 (176)	Keep away from gasoline and organic solvents or aromatic solvents.
ABS	Acrylonitrile-butadiene-styrene copolymer	80 (176)	Keep away from gasoline and organic solvents or aromatic solvents.
AES	Acrylonitrile-ethylene-styrene copolymer	80 (176)	Keep away from gasoline and organic solvents or aromatic solvents.
ASA	Acrylonitrile-styrene-acrylate copolymer	80 (176)	Keep away from gasoline and organic solvents or aromatic solvents.
EPDM	EPDM	100（212）	Most solvents are harmless, but avoid dipping* in gasoline and solvents.
EVA	Ethylene-vinyl acetate copolymer	70（158）	Keep away from gasoline and organic solvents or aromatic solvents.
PA	Polyamide (nylon)	80 (176)	Keep away from battery acid.
PBT	Polybutylene terephthalate	160 (320)	Most solvents are harmless to the material.
PC	Polycarbonate	120（248）	Keep away from gasoline, brake fluid, wax, degreasers and organic solvents. Keep away from alkaline matters.
PE	Polyethylene	80 (176)	Most solvents are harmless to the material.
PET	Polyethylene terephthalate	75（167）	Most solvents are harmless to the material.
PMMA	Polymethyl methacrylate	80 (176)	Avoid dipping* or immersing in alcohol, gasoline, solvents, etc.
POM	Poly methanol	100（212）	Most solvents are harmless to the material.
PP	Polypropylene	80 (176)	Most solvents are harmless to the material.
PPE (PPO)	Polyphenyl ether	100（212）	Avoid dipping* or immersing in alcohol, gasoline, solvents, etc. If a small amount of alcohol is quickly applied to remove grease, it is harmless to the material.
PS	Poly-SMA	60（140）	Avoid dipping* or immersing in alcohol, gasoline, solvents, etc.
PUR	Polyurethane	80 (176)	Avoid dipping* or immersing in alcohol, gasoline, solvents, etc.
PVC	Polyvinyl chloride	80 (176)	Avoid dipping* or immersing in alcohol, gasoline, solvents, etc.
TPE	Thermoplastic elastomer	80 (176)	Most solvents are harmless to the material. But avoid dipping* in gasoline, solvents,

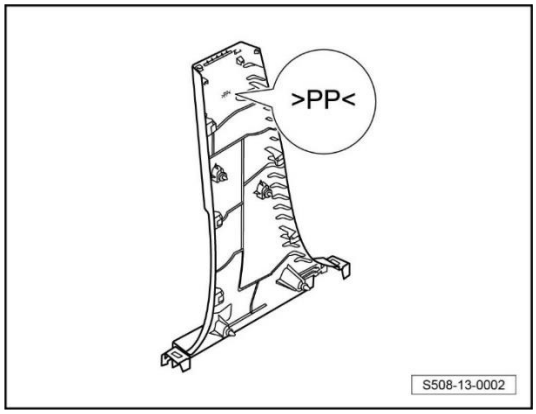
			etc.
TPO	Thermoplastic polyolefin	80 (176)	Most solvents are harmless to the material. But avoid dipping* in gasoline, solvents, etc.
TPU	Thermoplastic polyurethane-elastomer	80 (176)	Avoid dipping* or immersing in alcohol, gasoline, solvents, etc.
UP	Unsaturated polyester	110 (233)	Keep away from alkaline matters.

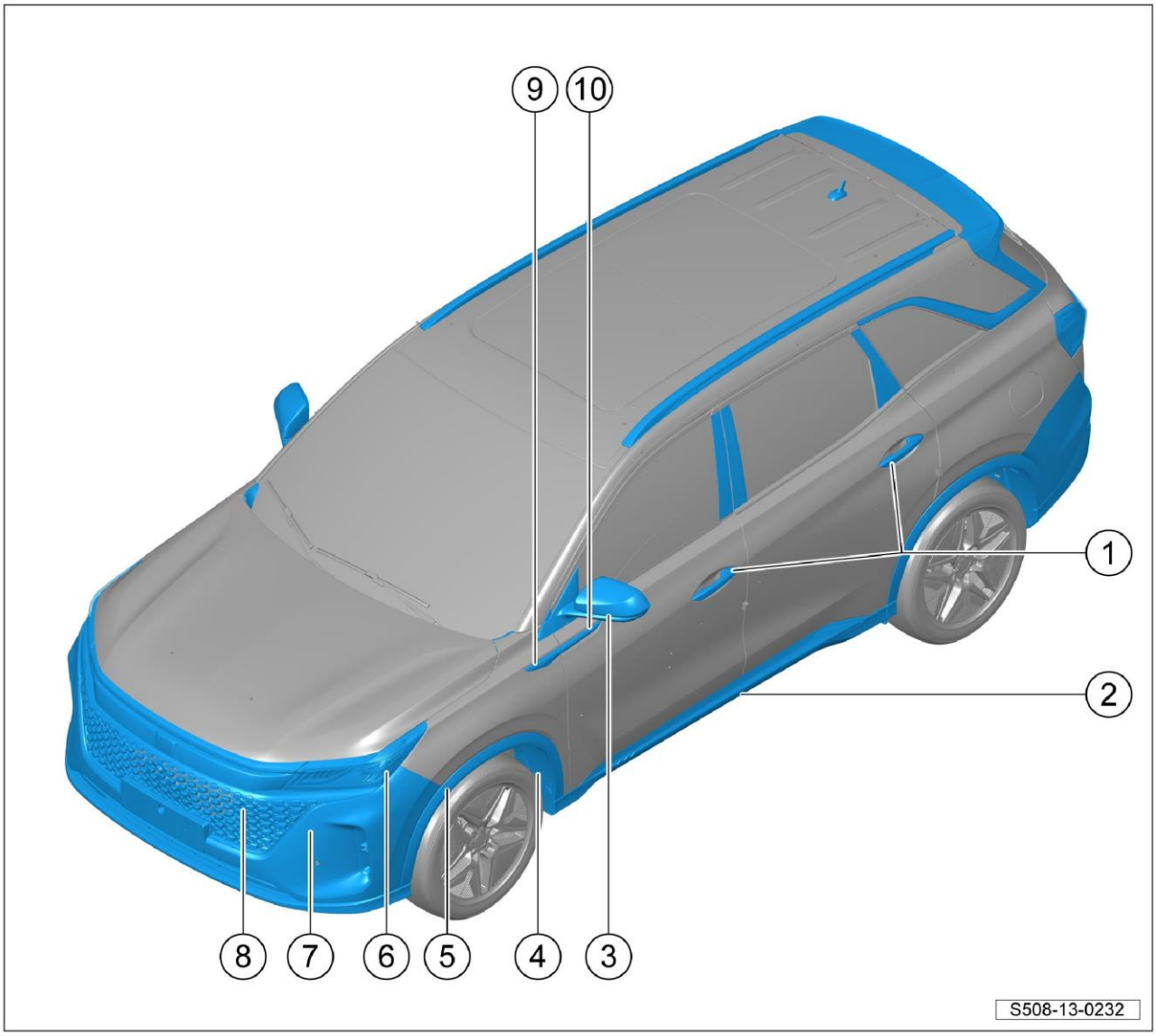
Description

- The heat-resistance temperature refers to which may result in thermal deformation during operation.
- Immersion refers to soaking in liquid.

10.1.1.2 List of materials for exterior plastic parts

The standard symbol shall be stamped on each plastic part to indicate the type of the material used.

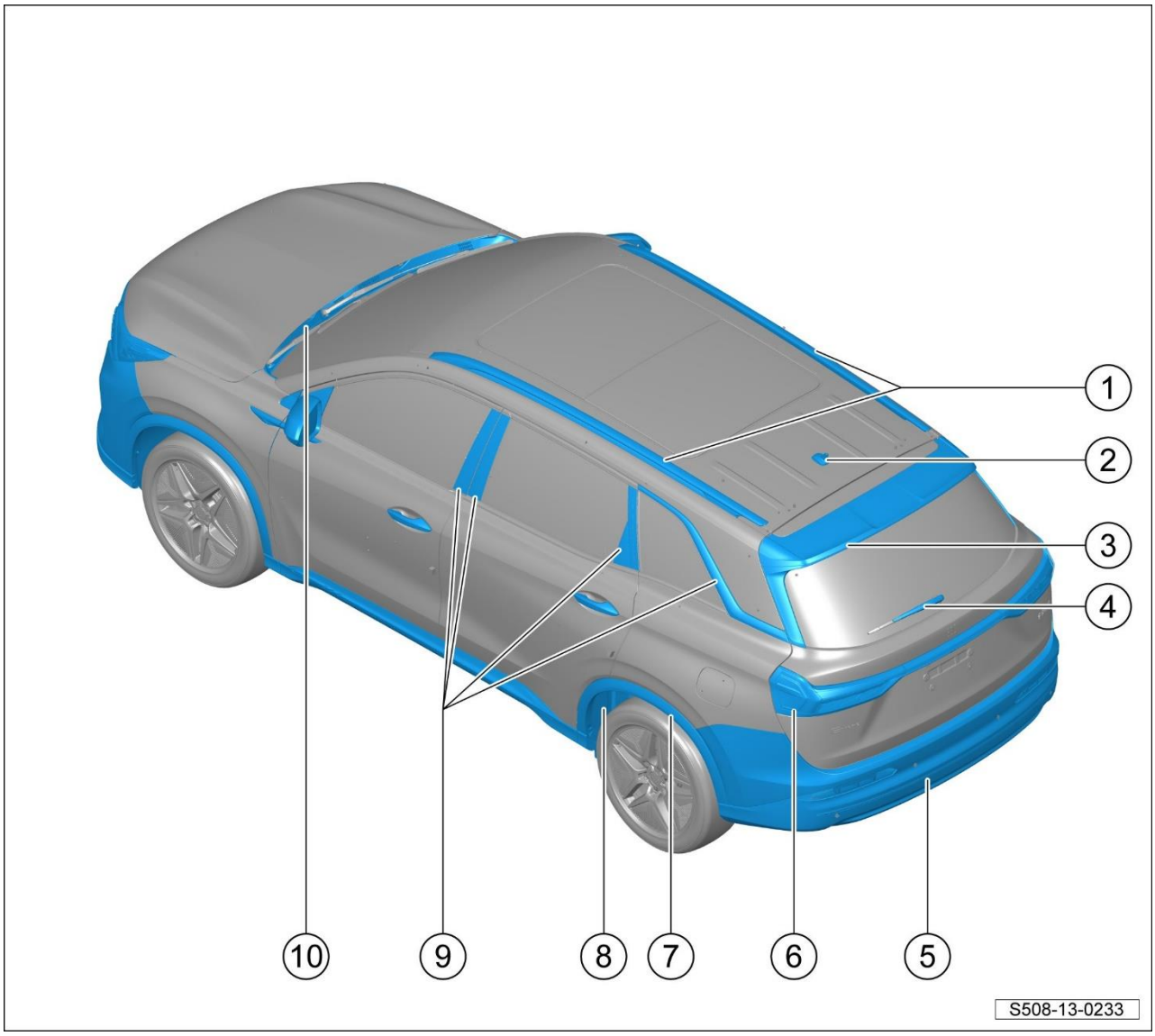




1. Front exterior door handle assembly/rear exterior door handle assembly
2. Front door lower trim (PP-TD20); rear door lower trim (PP-TD20)
3. Exterior rearview mirror assembly (ABS/ASA+PMMA/ASA/PA6+50% GF)
4. Front hub trim (PP-TD20)
5. Front wheel arch trim (PP-TD20)
6. Combination headlight assembly (PC/PBT, PP-TD30)
7. Front bumper upper moulding (PP-EPDM20); front bumper lower moulding (PP-EPDM20)
8. Grille moulding (ASA)
9. Fender exterior trim (ABS)
10. Front door exterior trim (ABS)

Description

"/" Refers to combination of two or more materials.



1. Luggage rack front cover (PC/ABS); luggage rack rear cover (PC/ABS)
2. Antenna assembly
3. Spoiler upper moulding (ABS); lift gate glass trim (PC+ABS)
4. Rear wiper arm; rear wiper arm end cover;
5. Rear bumper upper moulding (PP+EPDM-TD20); rear bumper lower moulding (PP+EPDM-TD20)
6. Lift gate rear combination light assembly (PP/EPDM-TD10); lift gate light strip assembly (PP/EPDM-TD10)
7. Rear wheel arch trim (PP-TD20)
8. Rear hub trim (PP-TD20)
9. Rear side wall upper trim strip (ABS); rear door film II (PVC); rear window trim (ASA); rear door film I (PVC); front door film II (PVC)
10. Front hood trim moulding (PP-TD20); front hood side trim panel (TPO)

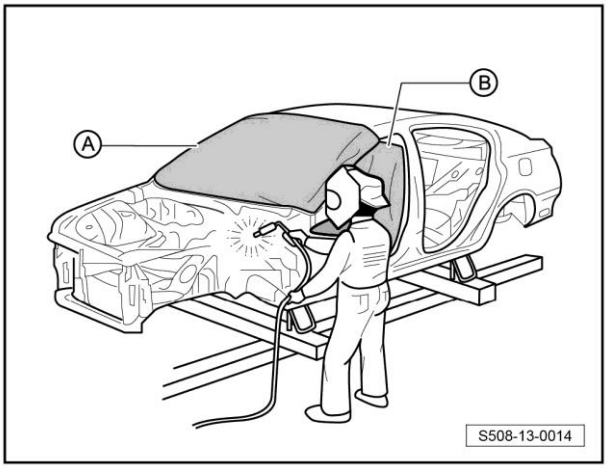
Description

"/" Refers to combination of two or more materials.

10.2 Body repair

10.2.1 Safety notes

10.2.1.1 General maintenance specification

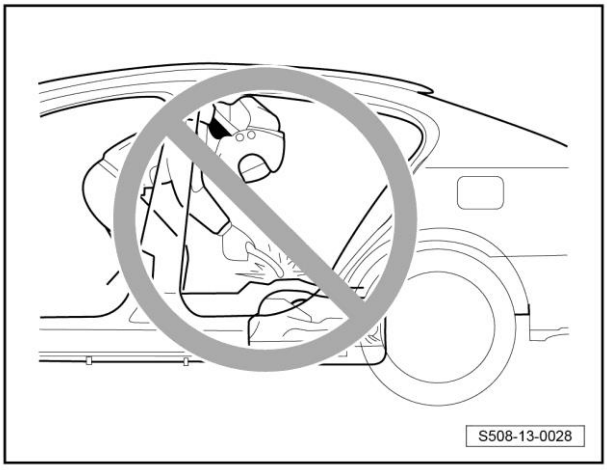


Vehicle protection

During welding operation, protective covers with good heat resistance and fireproof performance must be used to cover the painted surface, windows, seats and carpets, such as glass protective cover (A) and seat protective cover (B).

Warning!

- Always follow related national safety regulations upon repair operation. For any questions, please consult the relevant department.
- It is forbidden to park an unprotected vehicle in the body repair workshop (splashing sparks may cause fire, damage paint and windows).



Safety Tips

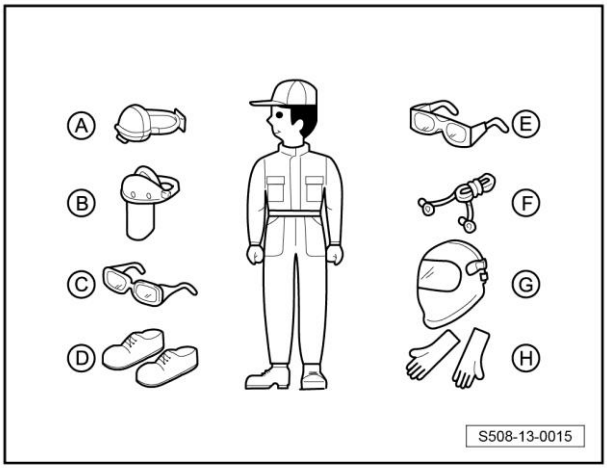
Before operation, check for fuel leakage; if fuel leakage is detected, eliminate it first.

To conduct welding operation near the fuel tank, remove the fuel tank first, then discharge it and block the fuel pipelines.

Make sure the repair workshop is well ventilated.

Description

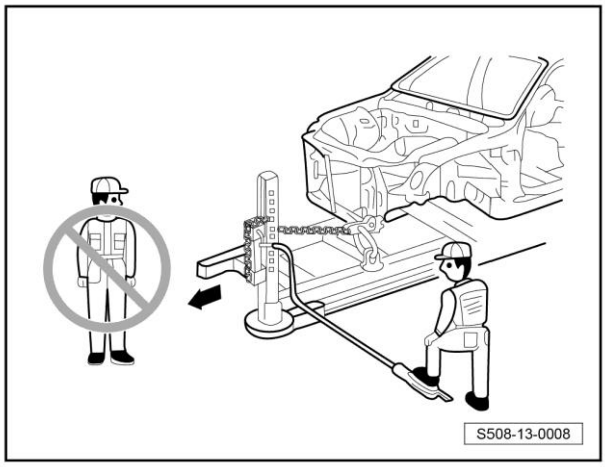
All repair work must be conducted by technicians with relevant national qualification certification under safety protection.



Security protection

Wear protective safety goggles, gloves, safety shoes, earplugs, etc. as appropriate.

Symbol	Description
A	Dust mask
B	Dust mask
C	Safety goggles
D	Safety shoes
E	Welding goggles
F	Earplugs
G	Welding helmet
H	Welding gloves



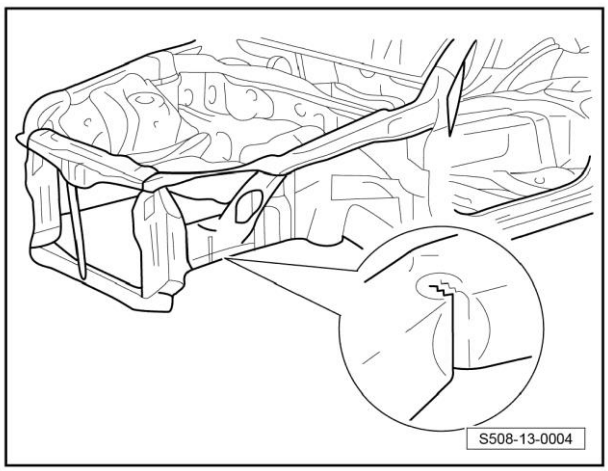
Safe use of straightening jig

Do not stand in line with the puller chain when drawing the body or the car frame with the puller. Please always use the safety pull chain.

Warning!

- When the hydraulic unit or traction unit of a straightening jig is used to straighten the vehicle damaged by an accident, a considerable force may be applied to the vehicle, which may cause personal injuries.
- Please always ensure the safety of personnel within the working area.

10.2.1.2 Notes on operations against structural steel plate of vehicle body

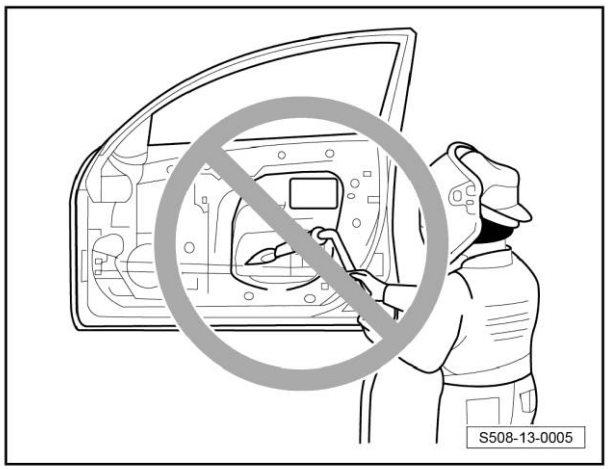


Warping of structural steel plate

The steel plate must be replaced if it is warped.

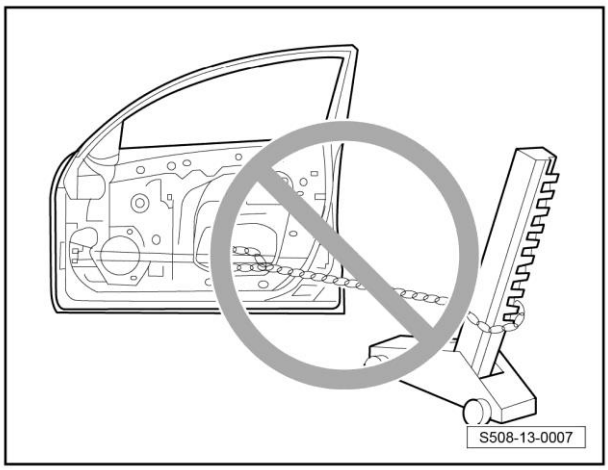
Warning!

- According to the design requirements, the appearance of the structural steel plate must be consistent with the original design. If the steel plate is warped in an accident or is repaired due to warping, it may not meet the safety performance requirements of the original design. The steel plate must be replaced if it is warped.



Repair of impact beam

Do not conduct welding operation on the impact beam.

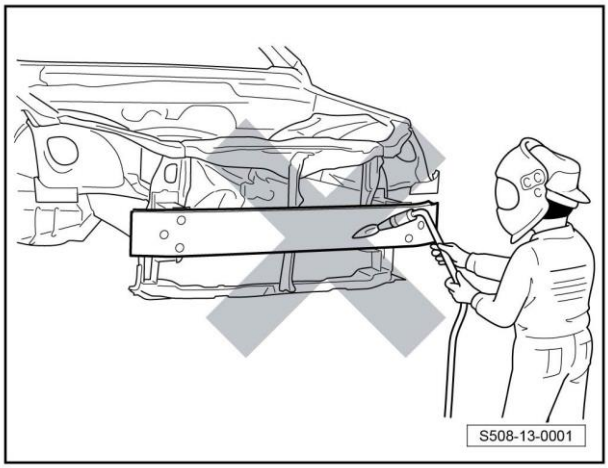


Do not conduct drawing operation on the impact beam.

Warning!

-The impact beam and bracket are very important components, which can reduce the possibility of injury in case of side impact.

If the impact beam or bracket is damaged, the door assembly must be replaced.



Do not conduct welding operation on the front anti-collision beam.

The front anti-collision beam is so designed that it can ensure its full performance only in the original shape. However, if the front anti-collision beam is repaired, its performance will be degraded.

10.2.1.3 Accident repair order

1 Important Components that must be Inspected

– If it is suspected that the body suspension has been damaged or deformed, the vehicle suspension shall be checked on the body correction frame for necessary corrections.

– The steering device and the steering tie rod

shall be checked to see whether they are normal and be checked for deformation and cracks through visual inspection.

– All chassis components shall be checked.

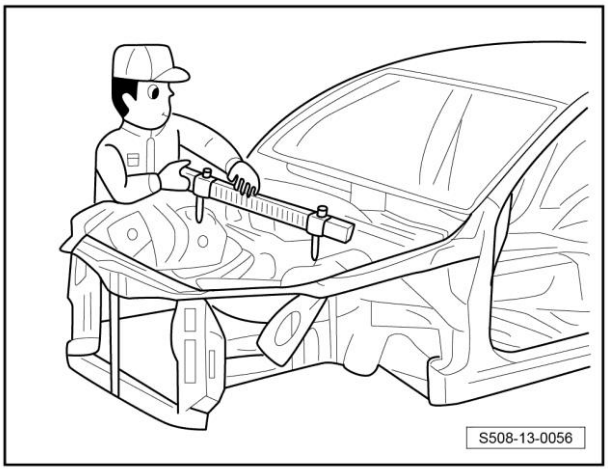
– Wheels and tires shall be checked for damage, concentricity and balance; the tire tread and tire wall shall be checked for cracks and the tire pressure shall also be checked.

– The engine, transmission, axles, and exhaust unit suspension shall be checked for damage.

– After repair, a road vehicle test shall be carried out to determine whether the vehicle can drive safely and whether the safety performance meets relevant standards.

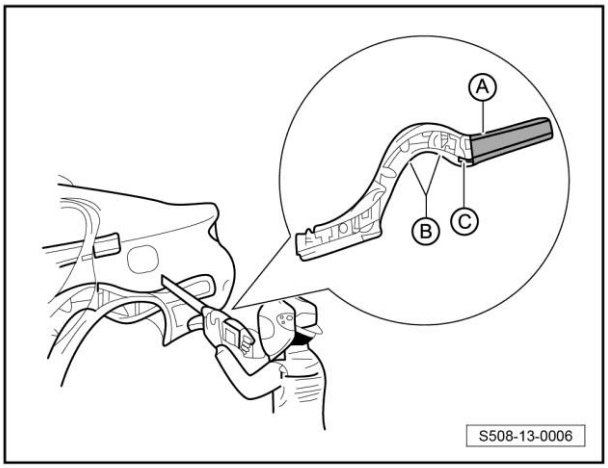
Description

If the vehicle has suffered from an enormous pressure, check the above components and conduct vehicle orientation and inspection.



2 Measurement

Before removal and cutting operations, measurement shall be made according to the body size drawings, and the damaged body or frame shall be corrected with a puller.



3 Removal

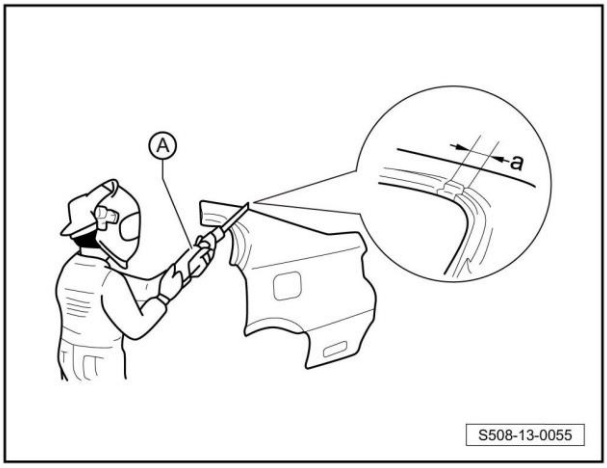
Cutting positions

A	Allowable cutting positions
B	Bending position
C	Reinforcement

Description

Cutting must be made along a straight line to avoid cutting of the reinforcement part.

Cutting will affect the strength of the body. Therefore, it must be handled to improve reliability and safety in accordance with relevant provisions of the maintenance manual.



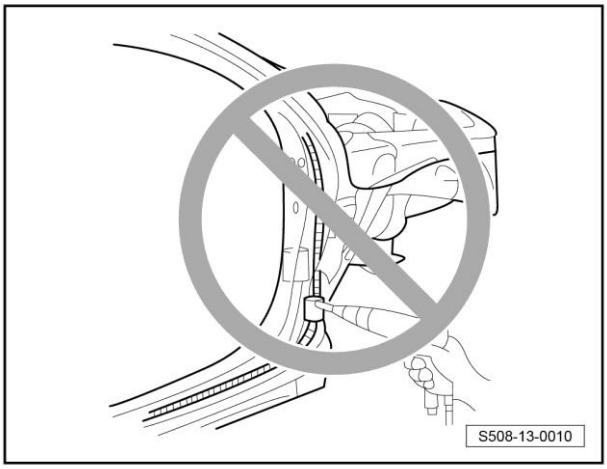
Repair tool A	Pneumatic saw
-A-Dimension of position	20～30mm

Description

When roughly cut the new parts in the joint area, an overlap of 20 ~ 30 mm must be reserved for the part (a).

Notes

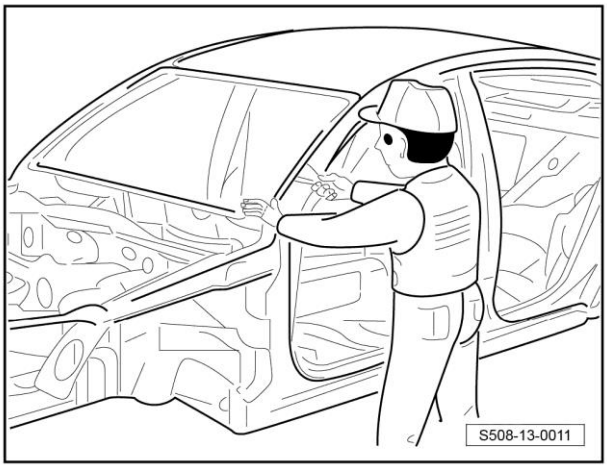
While panels are cut, the surrounding panels or any panels below shall not be damaged. Any panel damaged must be repaired.



Drilling or cutting in the area where the harness is installed is prohibited.

Description

The drilled or cut parts shall be checked to make sure that there is no hose or wire damaged.

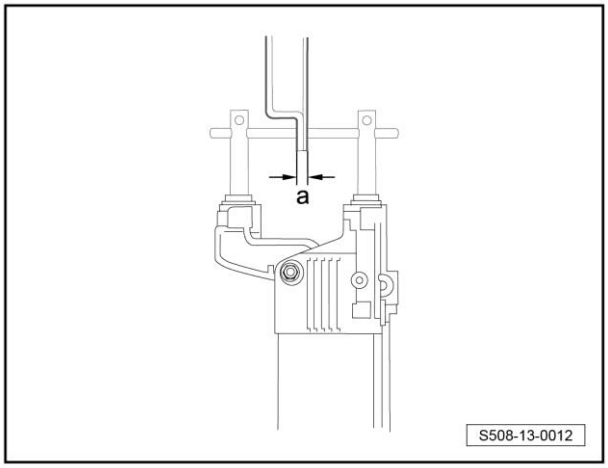


Removal of adjacent components.

During the removal of adjacent components, protective tapes must be attached around the body and on the removal tools to avoid damage to components.

Notes

In case of damage to the paint film, paint again.

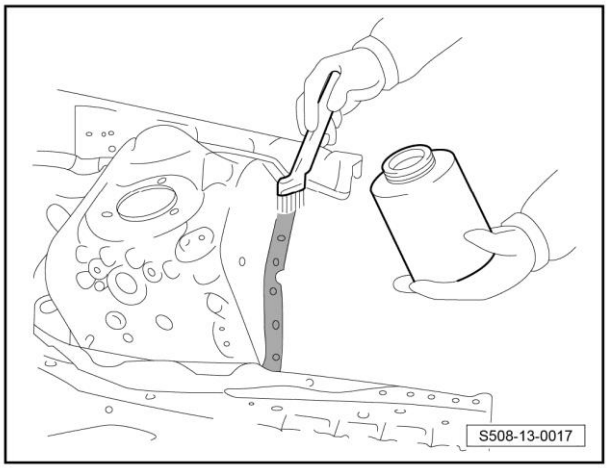


Notes on spot welding:

–In general, when the total thickness (a) of plates to be welded exceeds 3.2 mm, plug welding shall be carried out with a MAG welder.

Description

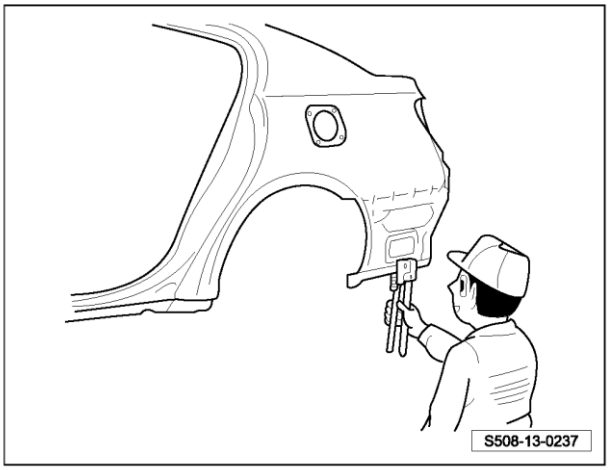
If the total thickness of the steel plate is more than 3.2 mm, sufficient durability cannot be guaranteed through spot welding.



The paint films on new components and the body to be welded shall be removed, and then the welding spot sealant (or weld-through primer) shall be used.

Notes

The welding spot sealant (or weld-through primer) shall not be applied to the outside of the contact surface.

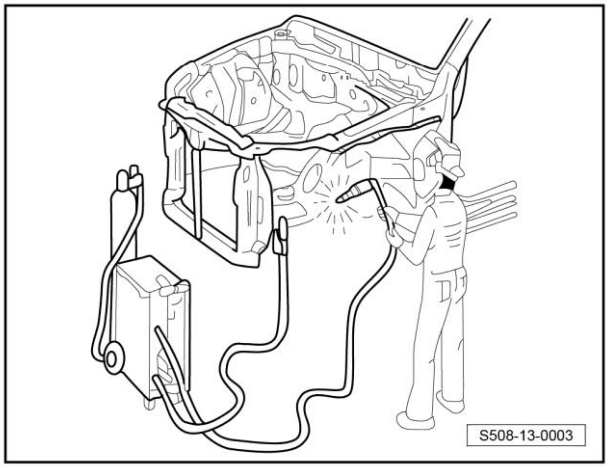


A punching machine shall be used for plug welding.

Reference value (unit: mm)	
Thickness of welding position	Perforation size
<1.0	> Φ5
1.0～1.6	> Φ6.5
1.7～2.3	> Φ8
>2.4	> Φ10

Description

For the parts where spot welding is impossible, a puncher or a drill bit can be used for plug welding.

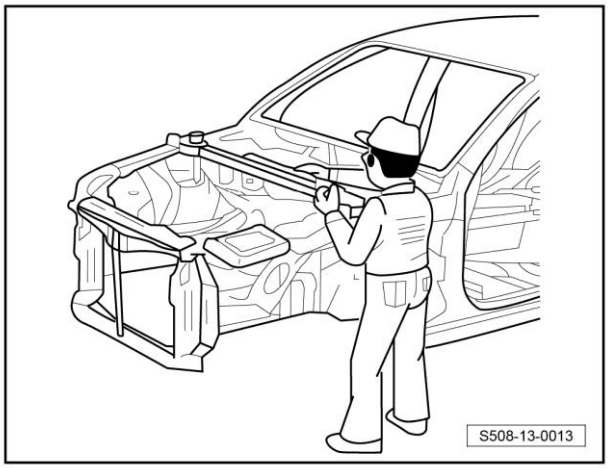


Notes on operation of electronic components.

Description

During welding, electronic components may be damaged by the current flowing through the body from the welding machine.

Before welding, the battery negative terminal shall be disconnected and the grounding shall be set near the welding part of the body.



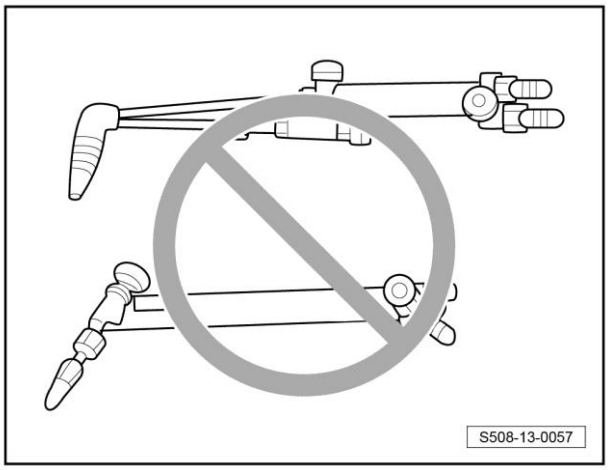
4 Installation

Pre-welding measurement.

Description

Before new components are installed, the size must be measured in accordance with the drawings of vehicle body size to ensure correct assembly.

After installation, the assembly shall be checked to see whether it is appropriate.



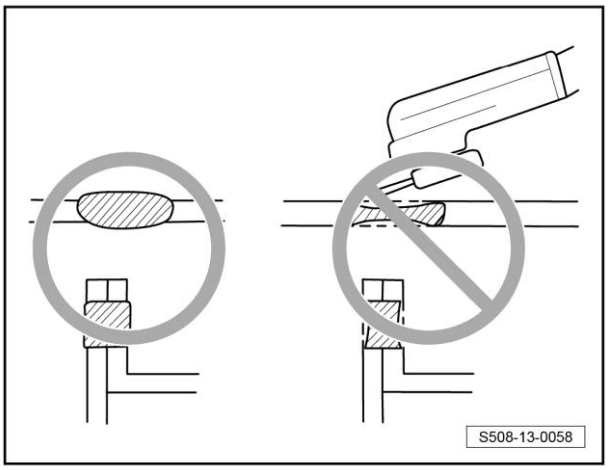
Notes for welding

– Spot welding: generally 1.3 times the original number of weld spots specified by the manufacturer.

– Plug welding: generally with weld spots more than the number specified by manufacturer.

Notes

- MAG welding machine should be used for plug welding operation.
- Gas welding or plug welding shall not be used in areas outside the specified parts of the steel plate.

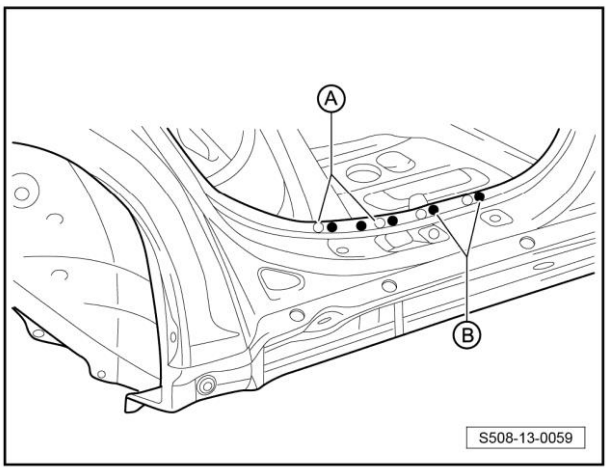


Post-welding grinding procedures

Description

After welding, the welding positions must be checked to ensure firm welding.

If the welding area is polished with a disc grinder, excessive grinding shall be avoided; otherwise, the strength of the welding position will be reduced.

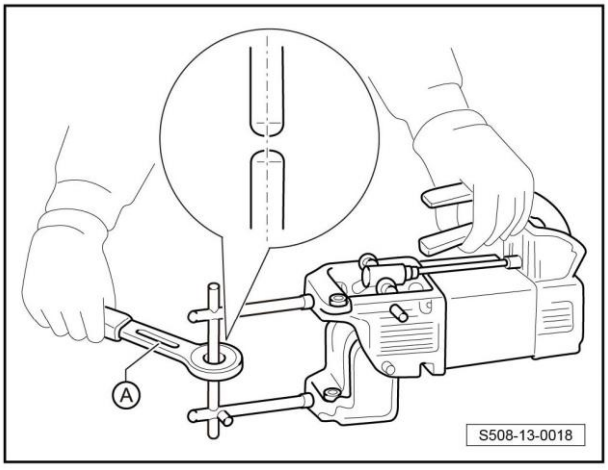


Positions of spot welding

– A - Old weld spot
– B - New weld spot

Description

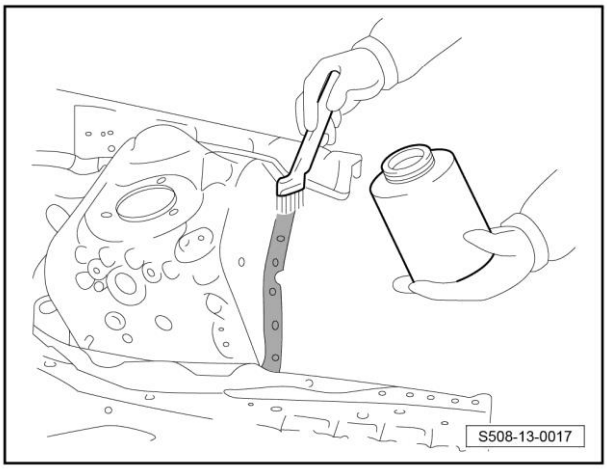
Lap welding with the old welding area shall be avoided.



Notes for welding:

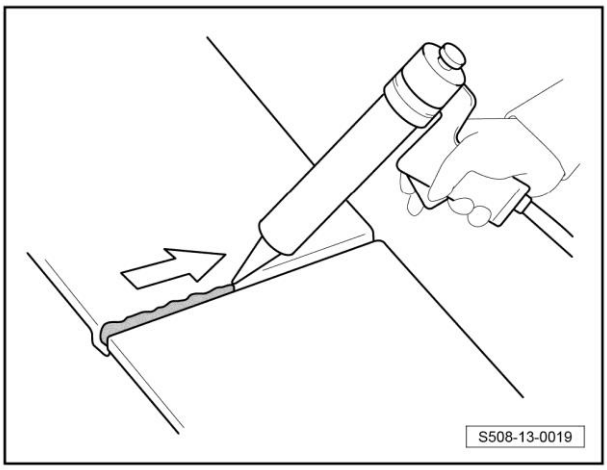
– The pointed end of the spot welding machine may affect the weld strength; therefore, the pointed end shall be maintained in an appropriate shape and be cooled after spot welding for five or six times.
– Completely remove the paint film at the welding spot, including joint and surface in contact with the welding head.
– Remove the burrs generated during spot welding with a grinder.

A - Spot welding head scraper



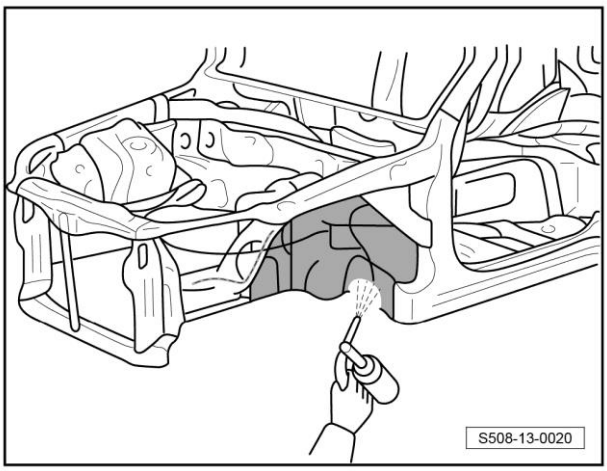
5 Spray antirust agent

- In order to prevent the body panel from rusting, an antirust agent shall be sprayed on the body panel for replacement.

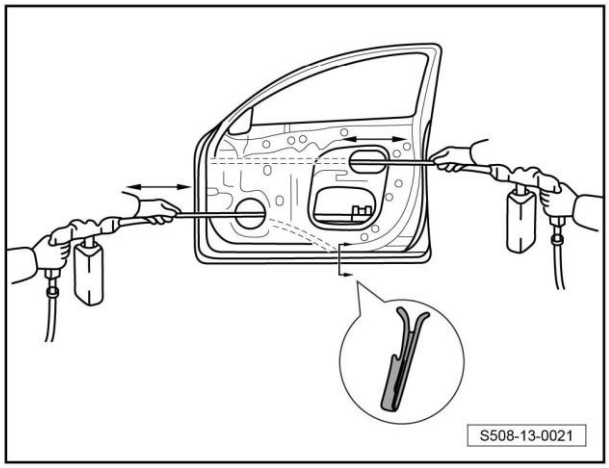


Rust prevention treatment (pre-painting)

To protect the body panel from water entry or rust, apply body sealant to the joints of body panels and edges of the doors, engine hood, etc.



In order to prevent corrosion and protect the body from damage by crushed stones, sufficient anti-chip coatings shall be applied to the underbody and the inner side of the wheel guard.



6 Rust Prevention Treatment (Post-painting)

For positions hard to paint (e.g. inner side of the flanges of doors and engine hood, hinges, pillars and other positions with closed section), apply sufficient antirust agent (was) through the access holes or mounting holes.

10.2.1.4 Notes on operations against various systems

Braking system

Brake system is one of the most important safety components.

When handling with brake system parts, please follow the instructions and notes of the brake system section in the Service Manual.

Power train and chassis system

Power train and chassis system are the components affecting vehicle performance.

After installing the parts of the power train and chassis system, locate them first to ensure the correct installation angle and dimension. Body repair must ensure accurate four-wheel alignment.

Description

- When positioning, always use special tools and follow the correct procedures.
- During positioning, please follow the instructions in the chassis maintenance manual.

Electronic control unit

To prevent damage to electronic control unit, the following notes must be followed during body repair:

- Disconnect the battery negative terminal before welding.
- Do not expose the ECU to an ambient temperature over 80°C.
- Do not make the electronic control unit fall or subject to violent vibration.
- Do not make the electronic control unit contact with welding electrodes.

Description

- Remove the ECU if the repair ambient temperature may reach 80°C.

Handling of electronic control unit when Repairing Accident Vehicles

The electronic control unit must be replaced in the following circumstances.

- The control unit housing is obviously deformed.
- The wiring terminal or circuit is severely damaged.

Description

Socket connector is damaged or corroded due to humidity.

Battery

- Disconnect the battery negative terminal before welding.
- Remove the battery before carrying out any open fire operation near the battery.

Notes on fuel tank and fuel hose

- When grinding and welding, please especially be careful with the fuel tank and fuel hose.
- The removed fuel tank and fuel hose must be placed in a safety position.

A/C system

Never weld on A/C components filled with refrigerant because strongly toxic and irritant vapors will be generated after thermal decomposition of the refrigerant. If overheating occurs, the A/C components will explode.

Description

- To conduct welding operation near the refrigerant hose, the refrigerant in the A/C must be drained.
- Relevant instructions must be followed for recycling of the refrigerant from the A/C system.
- Gloves, goggles and safety shoes must be worn to avoid cold injury due to exposure of eyes, hands and skin to the refrigerant.

Warning!

- The splashing liquid refrigerant may lead to frostbite, eye lens opacification, corneal perforation and even blindness if eyes are exposed to it. In case of eye exposure, immediately rinse the eyes with eye lotion or clean water, keep the eyes open for at least 15 min and seek immediate medical care.
- Skin exposure to splashing liquid refrigerant may lead to cold injury. Put the injured part in warm water for rewarming. Do not apply anything to the injured part, and seek immediate medical care. In case of cold injury, the clothes and the skin be stick together!

Safety restraint system (SRS)

Remove all airbags and seat belt tensioners before welding.

The impact sensors shall be removed if the “front airbag impact sensor” and the “side airbag impact sensor” may be subject to impact.

Description

- Always check the seat belt system after every accident.
- For any damage, please perform replacement timely.

10.2.2 Specification

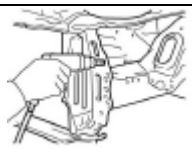
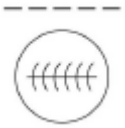
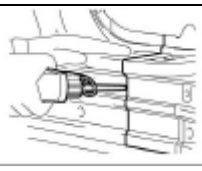
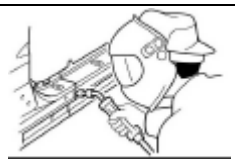
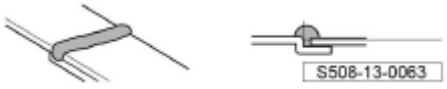
10.2.2.1 Maintenance materials after collision

In the collision accident of vehicle body, it will generally cause structural deformation, steel plate cracking, loose weld of welding spot and other phenomena, and sometimes causes partial damage to chassis and other assembled parts.

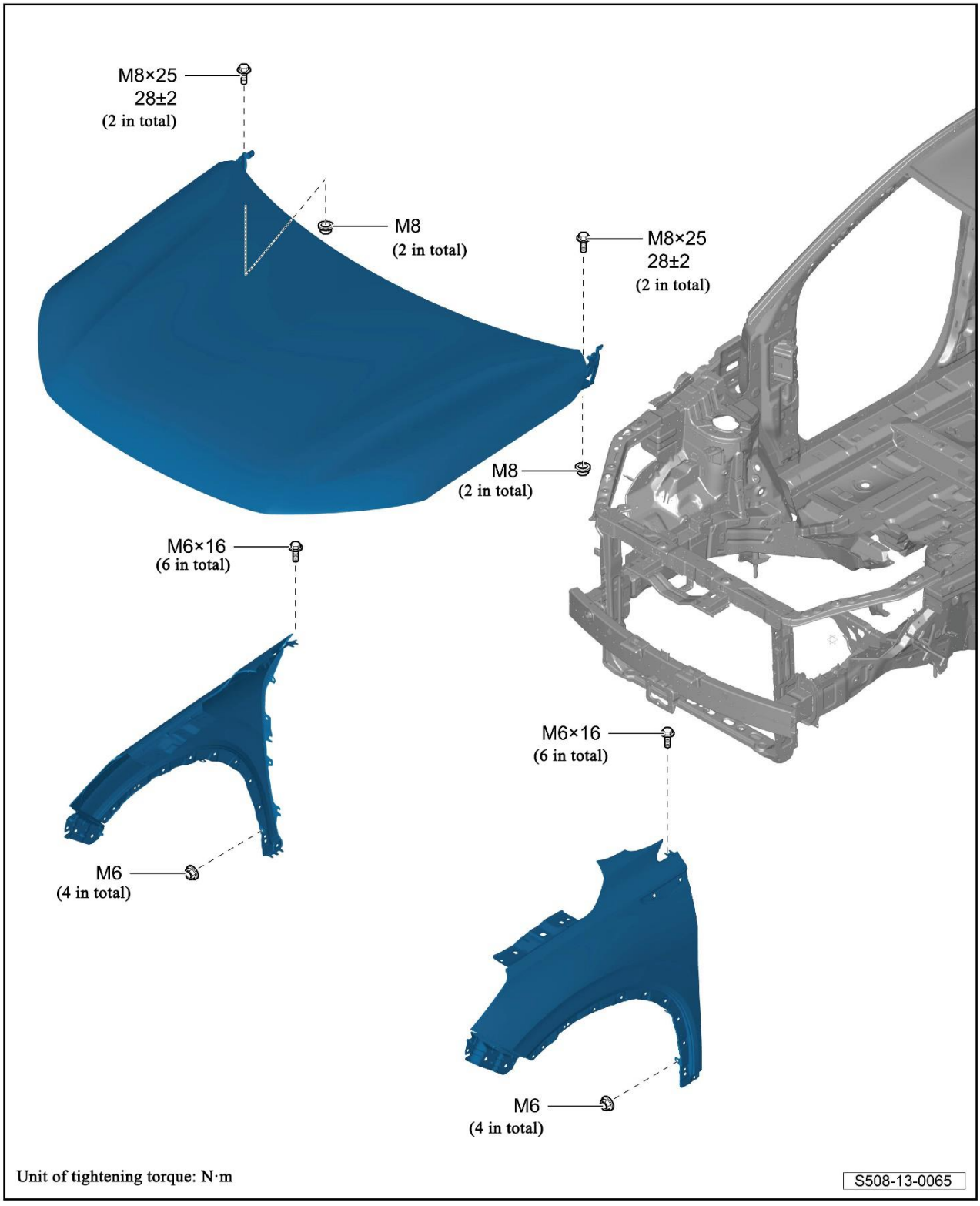
Adhesives, sealants, locking agents, surface protective materials and rust-proof materials may be used during maintenance of the vehicle body after collision. Please operate in strict accordance with the purpose, scope and specifications in the product manual. Maintenance materials with the same functions should be selected according to the functional requirements of parts and materials in the process of vehicle body maintenance. The following table lists the maintenance materials that may be used in the process of vehicle body maintenance for reference only.

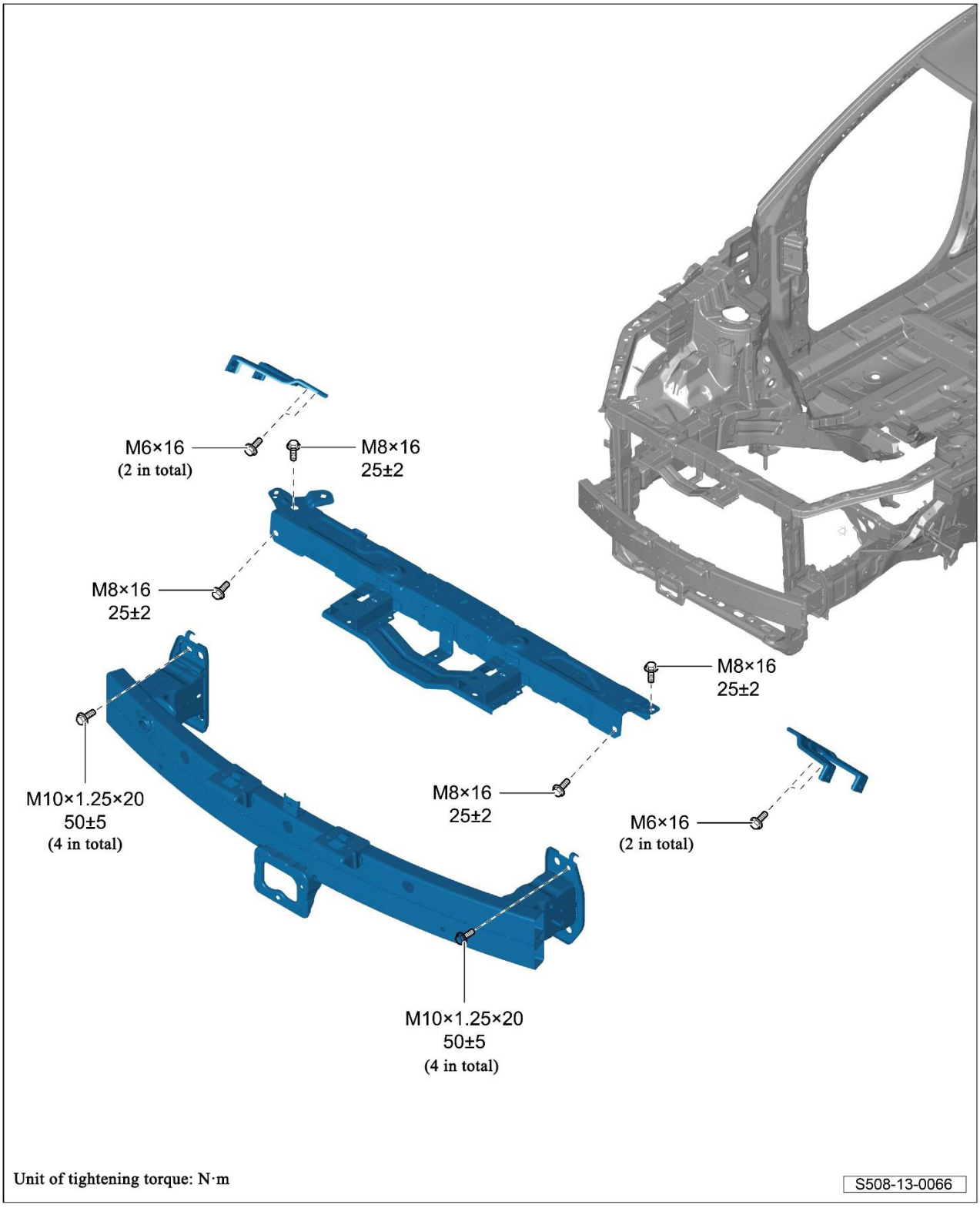
Model	Substrate	Purpose
Automobile sealant	One-component polyurethane	Bind body panels, interior and exterior trims, body structure and other components. This sealant should have strong adhesion and cohesion, and good adhesion with metals and various top coats.
Weld sealant	One-component polyurethane	The room-temperature curing adhesive is used for sealing the vehicle body welds. Room temperature curing adhesive, which is used for the fine sealing of flanges of doors, engine hood and lift gate.
Anti-stone chip primer	Rubber and resin	The room-temperature curing anti-collision adhesive for chassis protection forms a permanent anti-aging elastic and corrosion-resistant protective coating at the bottom of the vehicle and the wheel cover, without cracks at low temperatures. Functions of this kind of product include excellent rust protection, sound insulation, stone chip impact resistance, oxidation resistance, and protective coating.
Windshield silicon sealant	One-component polyurethane	Room-temperature curing polyurethane adhesive, which is used for direct bonding and sealing of automobile window glass. The glue has good adhesive property, reacts with moisture in the air and is cured to form excellent properties such as high strength, aging resistance, vibration resistance, low temperature resistance and no corrosion.
Pressure sensitive tape	Acrylic tape	It is used for adhesion of anti-scratch strips, nameplates, guard plates, mudguards, door edge protection, various trimming strips of vehicle body, etc. The adhesive tape should have excellent weather resistance and durability.
Primer	-	Before coating the windshield silicon sealant, a kind of primer should be coated on the vehicle body and glass to make the windshield and the vehicle body more firmly bonded.
Cleaning agent	-	It is used to clean all surfaces in contact with the primer and adhesive.
Heat sensitive tape	Acrylic tape	It is mainly used for rubber sealing strip system on the vehicle. Such adhesive tape should have strong adhesion and sealing performance, so as to avoid the problems of gap and corrosion caused by poor bonding.
Primer for adhesive tape	-	Choose different primer according to the material of bonding surface. The surface to be bonded must be cleaned. Evenly apply the primer on the surface with brush after the surface is totally dried, and then attach the adhesive tape. By doing so, the bond performance of the adhesive type is high.

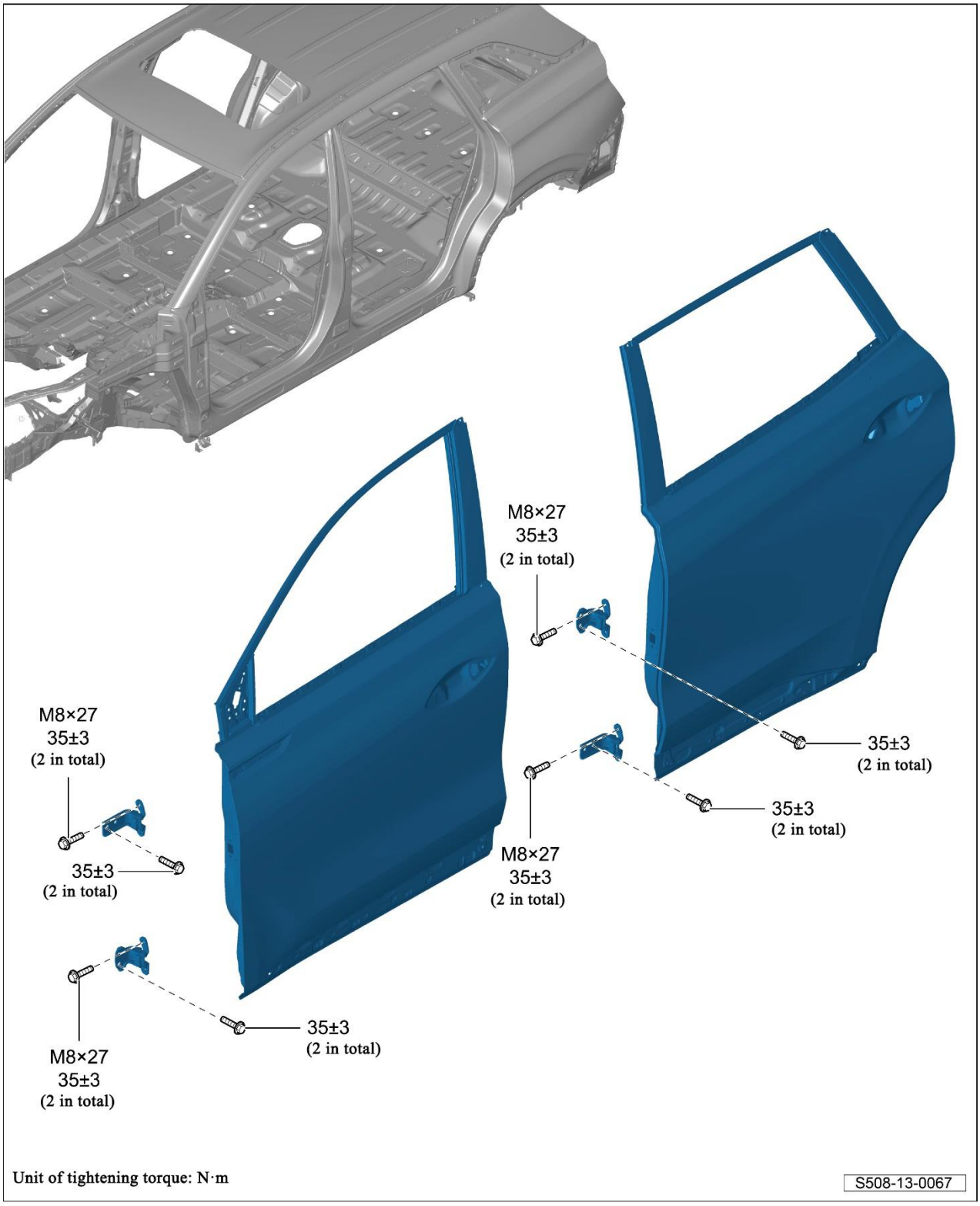
10.2.2.2 Mark

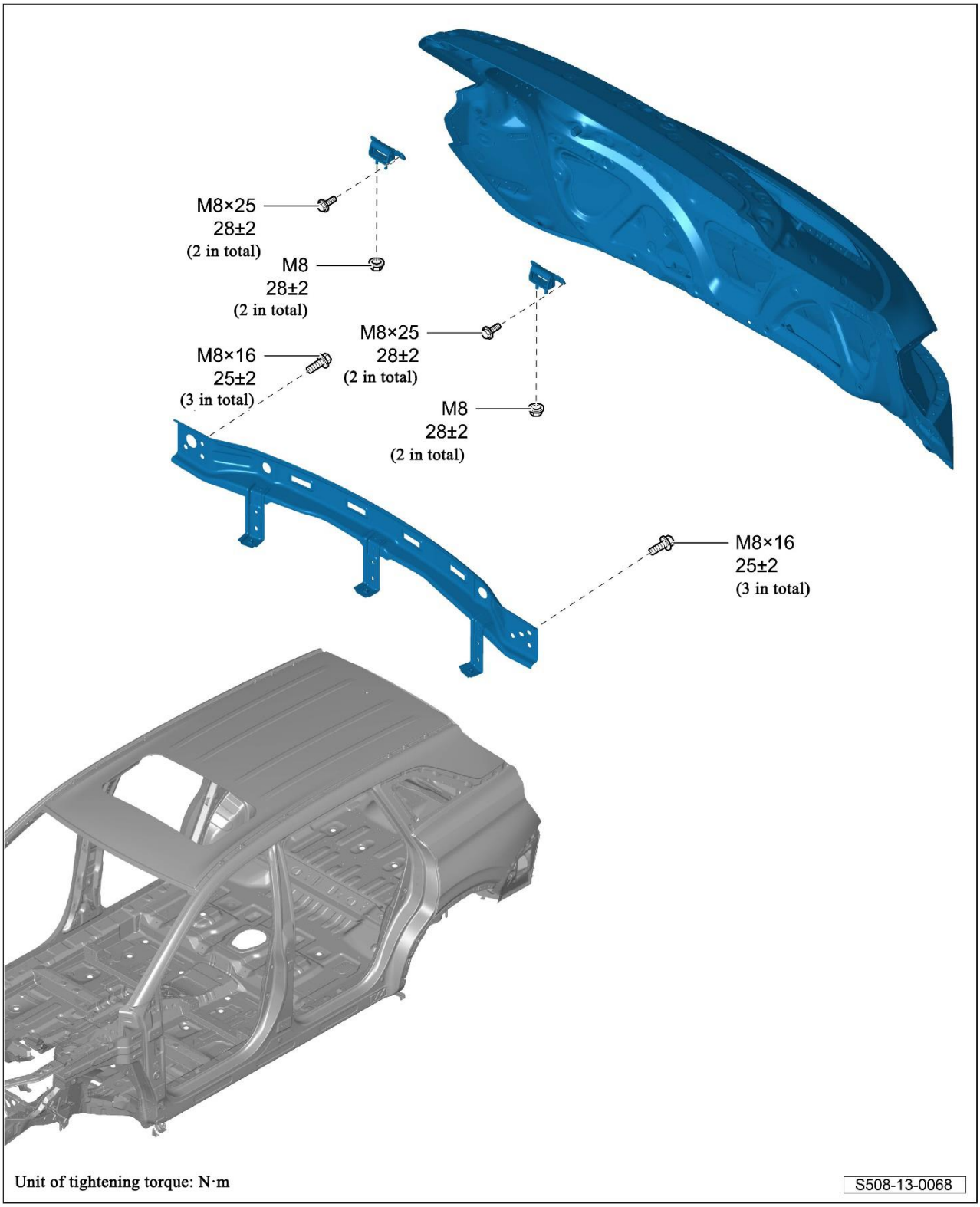
Operating symbols		Symbol
	Polishing	
	Drilling	
	Cutting	
	Spot welding	
	Plug welding	
	Butt welding	
	Body sealant	
	Body sealant(Trimmed)	
	Body sealant(Untrimmed)	

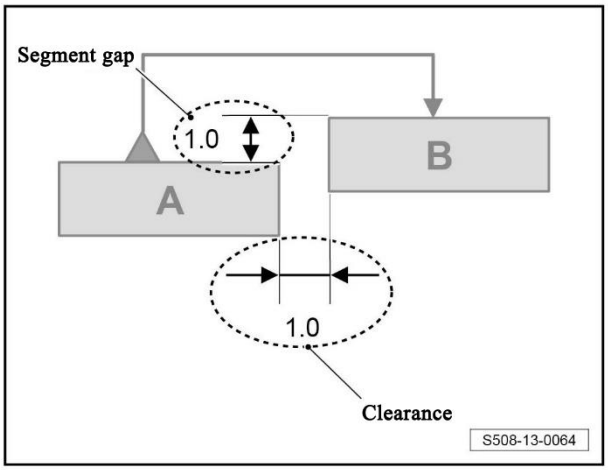
10.2.2.3 Specified torque of exterior parts




M6×16
(2 in total)
M8×16
25±2
M8×16
25±2
M8×16
25±2
M10×1.25×20
50±5
(4 in total)
M8×16
25±2
M6×16
(2 in total)
M10×1.25×20
50±5
(4 in total)
Unit of tightening torque: N·m
S508-13-0066


M8×27
35±3
(2 in total)
35±3
(2 in total)
M8×27
35±3
(2 in total)
35±3
(2 in total)
M8×27
35±3
(2 in total)
35±3
(2 in total)
M8×27
35±3
(2 in total)
Unit of tightening torque: N·m
S508-13-0067


M8×25
28±2
(2 in total)
M8
28±2
(2 in total)
M8×25
28±2
(2 in total)
M8×16
25±2
(3 in total)
M8
28±2
(2 in total)
M8×16
25±2
(3 in total)
Unit of tightening torque: N·m
S508-13-0068



Description

To adjust or inspect the size of gap, the plastic gap adjustment gauge shall be used.

10.2.2.4 Assembly standard/adjustment method

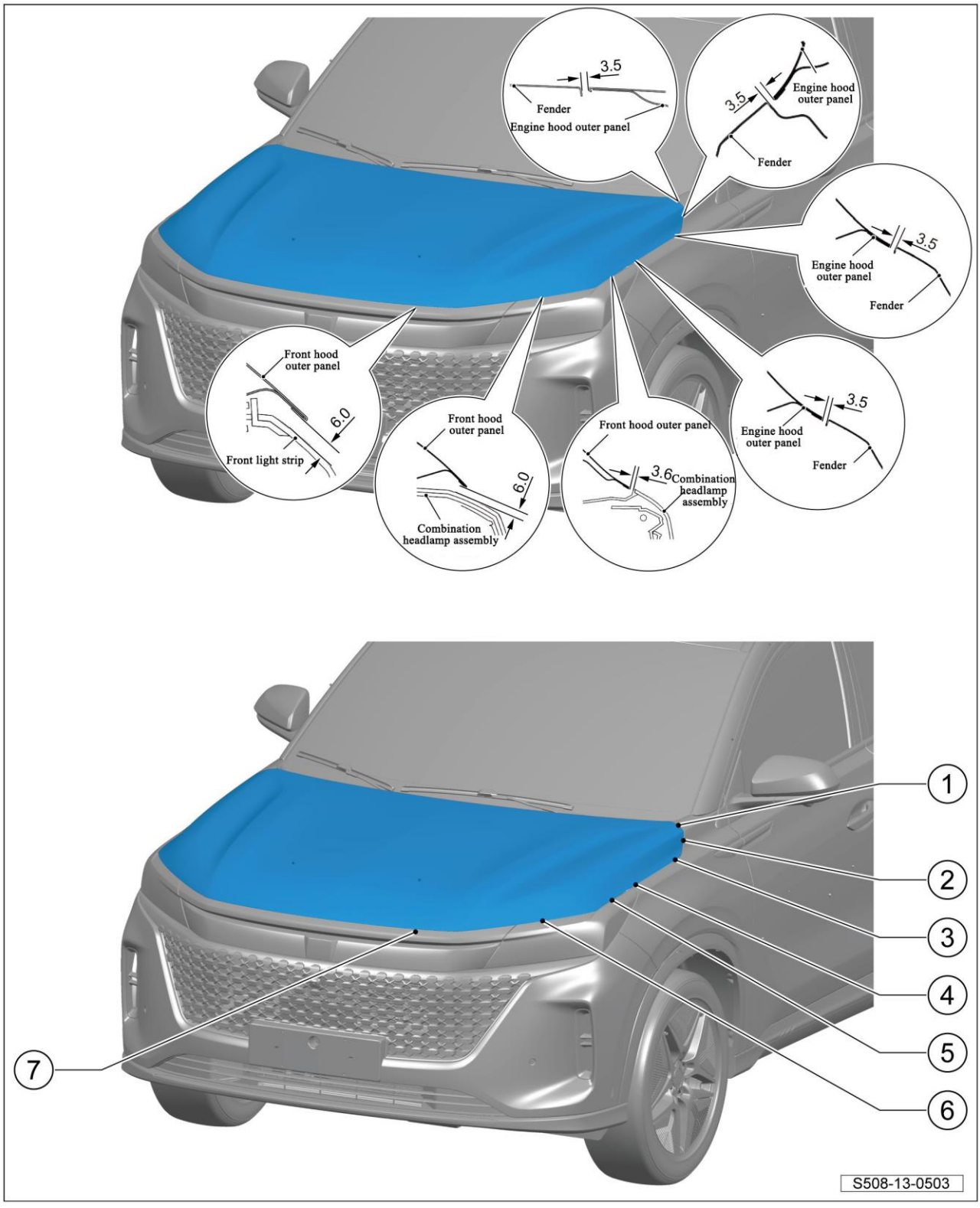
Description of body gap and flush

The gap and flush between two components are defined as shown in the figure.

- In the figure, component A is the reference measurement surface and component B is the measured surface. If the measured value is

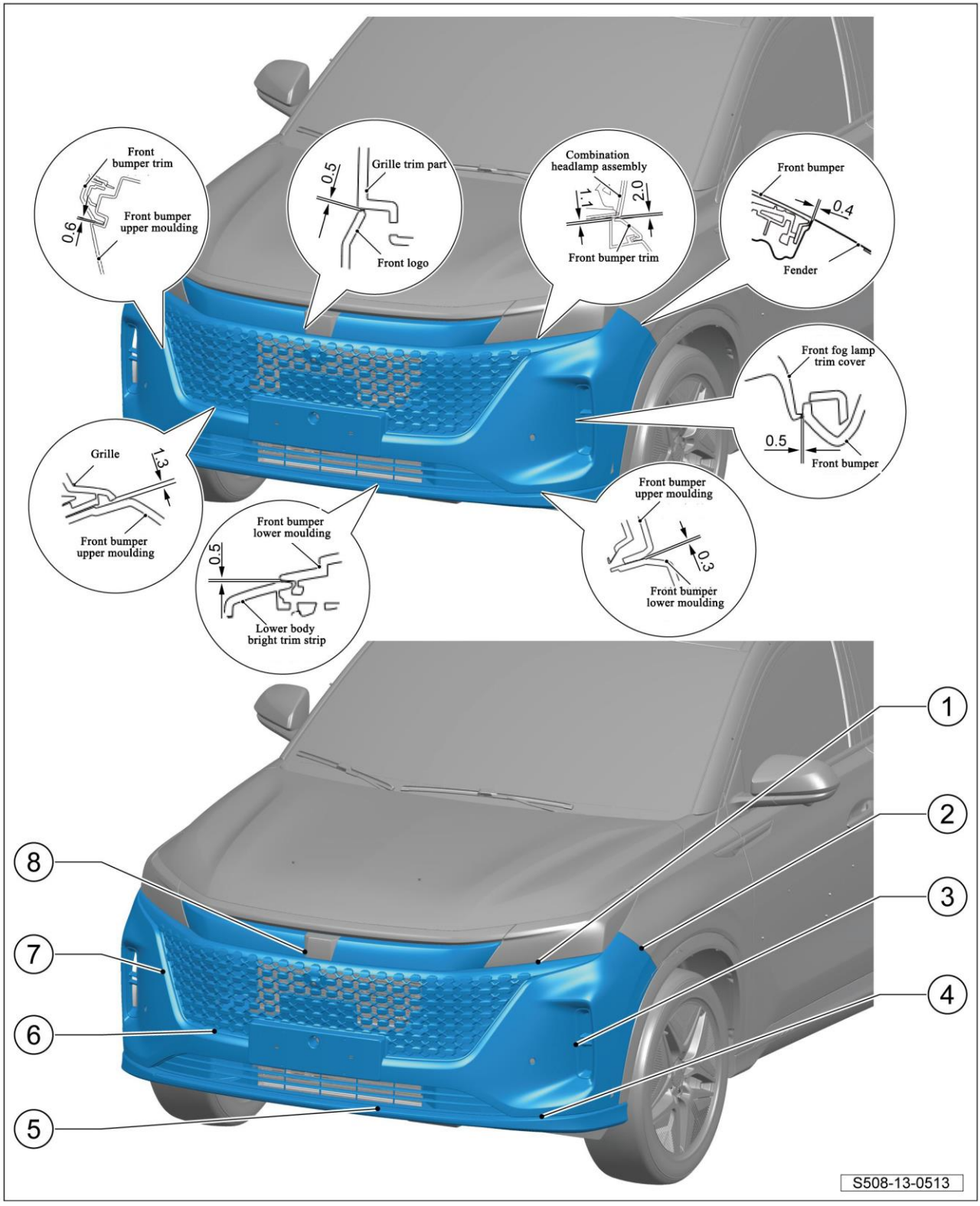
"+", component B is higher than component A; if the measured value is "-", component B is lower than component A.

- The clearance between components A and B in the figure is 1.0 (mm).



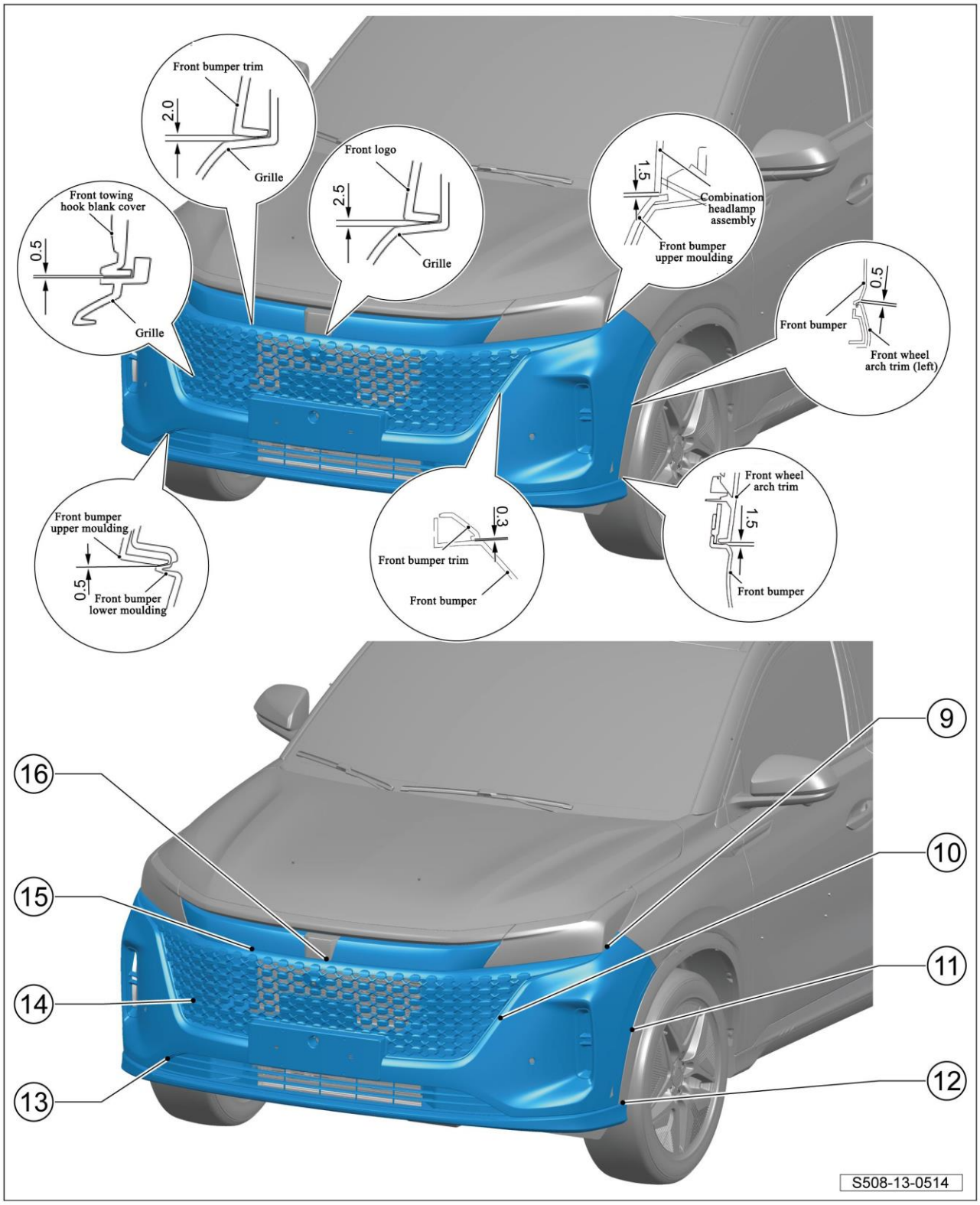
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Engine hood outer panel relative to fender (rear)	3.5	0 (Based on the fender)
2	Engine hood outer panel relative to fender (middle)	3.5	0~-1 (based on fender

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Engine hood outer panel relative to fender (front)	3.5	–1.0 (based on fender)
4	Engine hood outer panel relative to fender (front)	3.5	–1.0 (based on fender)
5	Engine hood outer panel relative to combination headlight assembly (left)	3.6	-1.0 (with combination headlight as the benchmark)
6	Engine hood outer panel relative to combination headlight assembly (left)	6.0	—
7	Engine hood outer panel relative to front light strip	6.0	—



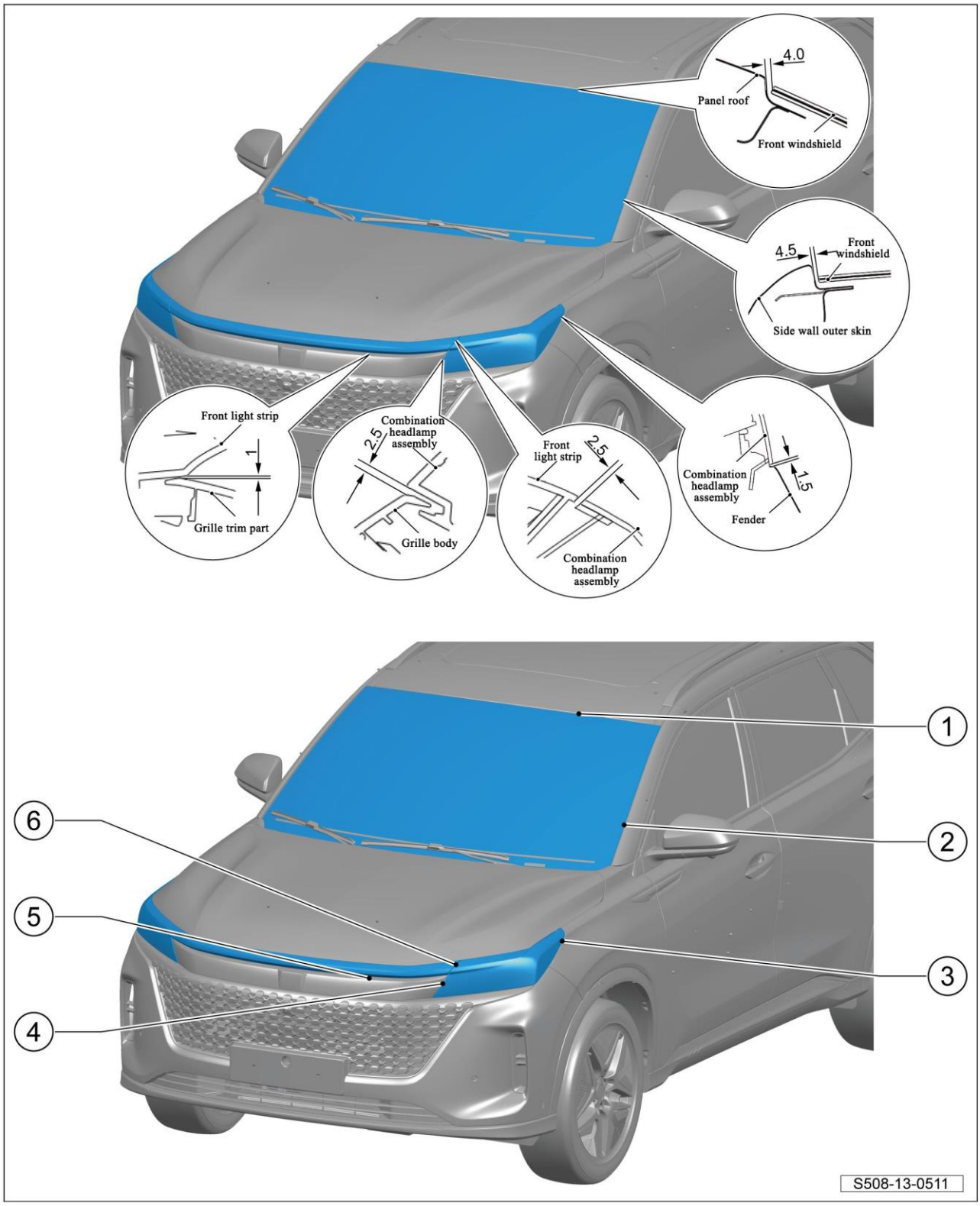
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Front bumper trim relative to combination headlight assembly	2.0	1.1
2	Front bumper relative to fender	0.4	-0.5 (based on fender)
3	Front fog light trim cover relative to	0.5	—

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
	front bumper		
4	Front bumper upper moulding relative to front bumper lower moulding	0.3	—
5	Front bumper lower moulding relative to lower moulding bright trim strip	0.5	—
6	Grille relative to front bumper upper moulding	1.3	—
7	Front bumper trim relative to front bumper upper moulding	0.6	—
8	Grille trim relative to logo front	0.5	—



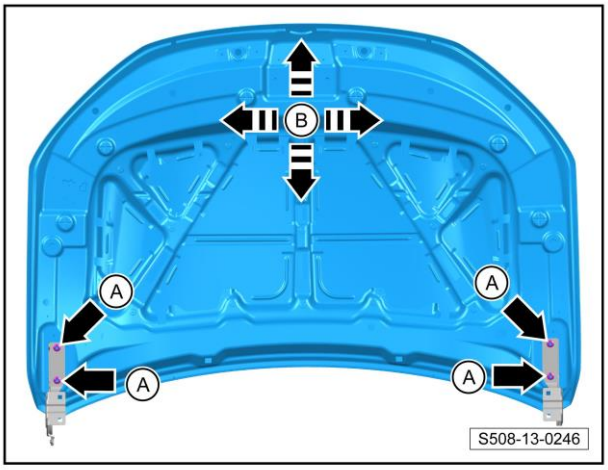
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
9	Front bumper upper moulding relative to combination headlight assembly	1.5	—
10	Front bumper relative to front bumper trim	0.3	—

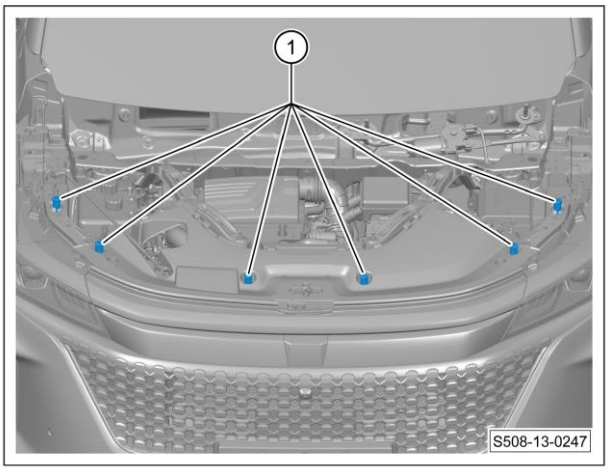
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
11	Front bumper relative to front wheel arch trim	0.5	—
12	Front bumper relative to front wheel arch trim	1.5	—
13	Front bumper upper moulding relative to front bumper lower moulding	0.5	—
14	Front towing hook blank cover relative to grille	0.5	-0.3 (with grille as the benchmark)
15	Grille relative to front bumper trim	2.0	—
16	Logo front relative grille	2.5	—



S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Front windshield relative to roof panel	4.0	-3.0 (with panel roof as the benchmark)
2	Front windshield relative to side wall outer skin	4.5	—

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Combination headlight assembly relative to fender	1.5	—
4	Combination headlight assembly relative to grille trim	2.5	—
5	Headlight strip relative to grille	1.0	—
6	Grille light strip relative to combination headlight assembly	2.5	0 (with combination headlight assembly as the benchmark)





1 Adjustment of engine compartment cover

a. Loosen 4 hinge nuts A on the engine compartment cover.

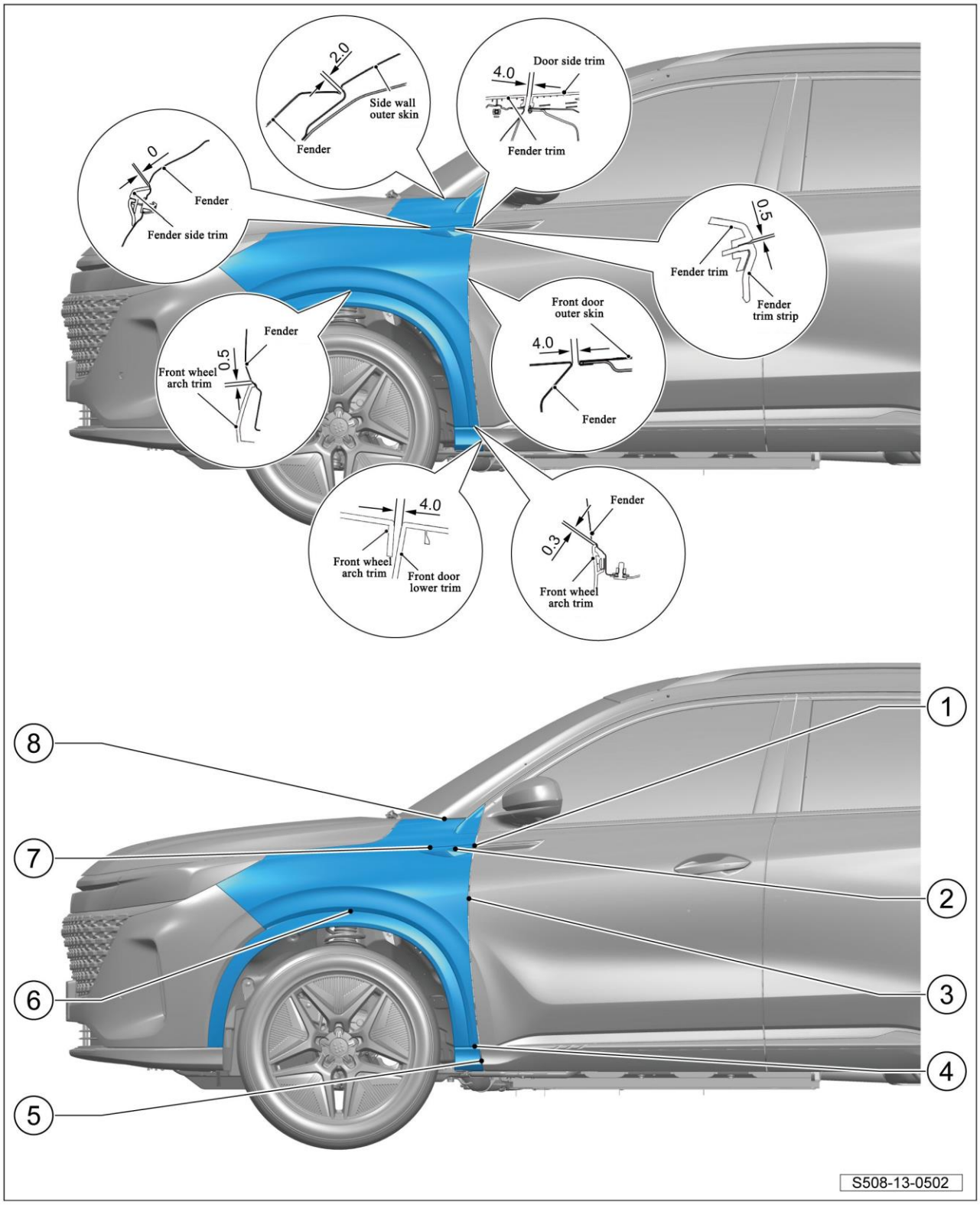
b. Move the engine compartment cover B and adjust the clearance between the engine compartment cover and the fender.

c. After adjustment, tighten the 4 hinge nuts.

Notes

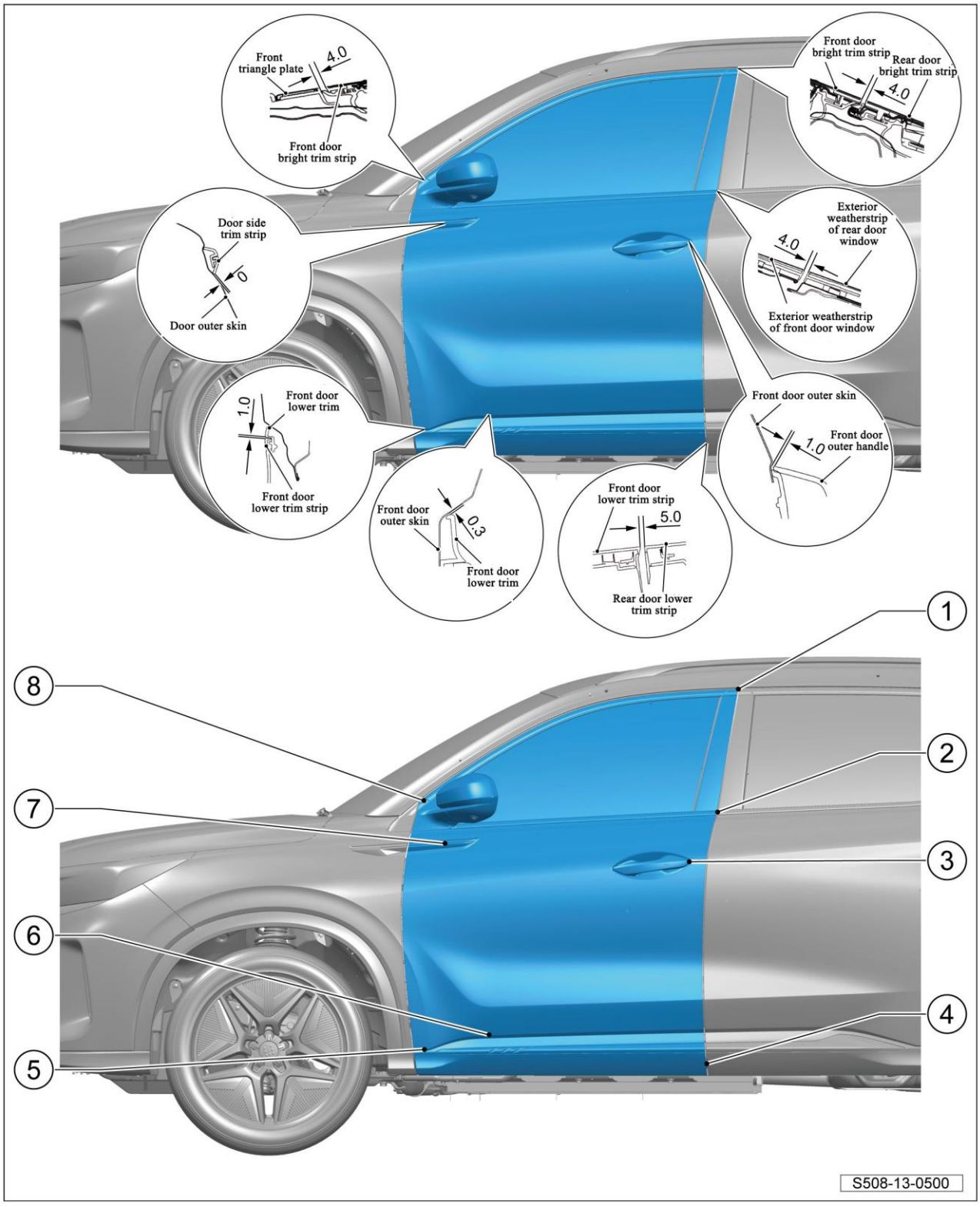
Mark the position of the hinge relative to the engine compartment cover sheet metal assembly for easy positioning during removal and installation.

d. Rotate the rubber pad to adjust the height of the front end of the engine compartment cover.



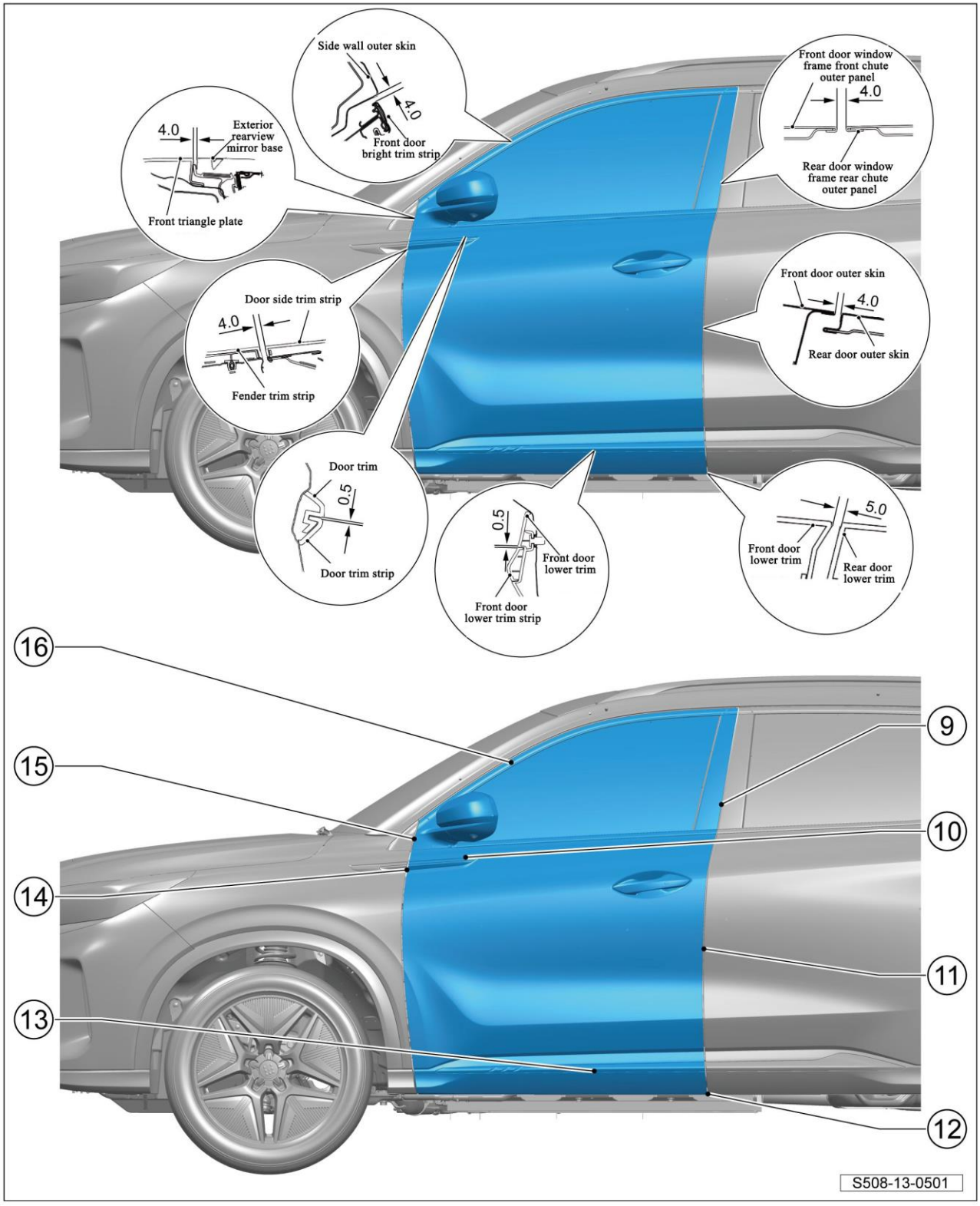
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Fender trim relative to door side trim	4.0	0 (with door side trim as the benchmark)
2	Fender trim strip relative to fender trim	0.5	-0.5 (with fender trim as the benchmark)

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Fender relative to front door outer skin	4.0	0 (with front door outer skin as the benchmark)
4	Front wheel arch trim relative to fender	0.3	—
5	Front wheel arch trim relative to front door lower trim	4.0	0 (with front door lower trim as the benchmark)
6	Front wheel arch trim relative to fender	0.5	—
7	Fender side trim relative to fender	0	—
8	Fender relative to side wall outer skin	2.0	—



S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Front door bright trim strip relative to rear door bright trim strip	4.0	0 (with rear door bright trim strip as the benchmark)
2	Front door glass outer weatherstrip relative to rear door glass outer weatherstrip	4.0	0 (with rear door glass outer weatherstrip as the benchmark)

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Front door outer handle relative to front door outer skin	1.0	—
4	Front door lower trim strip relative to rear door lower trim strip	5.0	0 (with rear door lower trim strip as the benchmark)
5	Front door lower trim strip relative to front door lower trim	1.0	—
6	Front door lower trim relative to front door outer skin	0.3	—
7	Door side trim strip relative to front door outer skin	0	—
8	Front door bright trim strip relative to front triangle plate	4.0	0 (with front triangle plate as the benchmark)

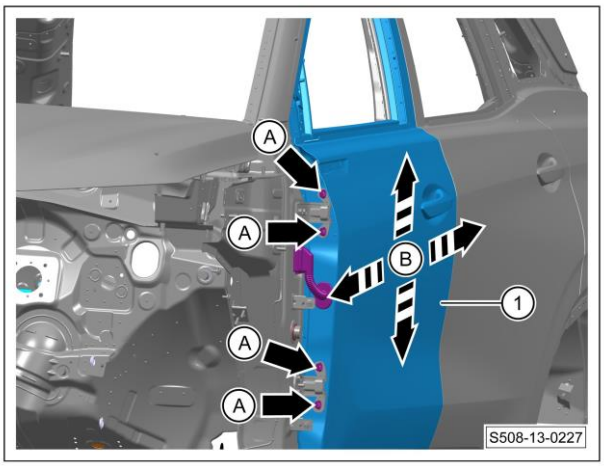


S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
9	Outer plate of the rear chute of the front door window frame relative to outer plate of the front chute of the rear door window frame	4.0	0 (with outer plate of the front chute of the rear door window frame as the benchmark)
10	Door trim strip relative to door trim	0.5	-0.5 (with door trim as the

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
			benchmark)
11	Front door outer skin relative to rear door outer skin	4.0	0 (with rear door outer skin as the benchmark)
12	Front door lower trim relative to rear door lower trim	5.0	0 (with rear door lower trim as the benchmark)
13	Front door lower trim strip relative to front door lower trim	0.5	—
14	Door side trim strip relative to fender trim strip	4.0	0 (with door side trim strip as the benchmark)
15	Exterior rearview mirror base relative to front triangle plate	4.0	0 (with front triangle plate as the benchmark)
16	Front door bright trim strip relative to side wall outer skin	4.0	-4.0 (with side wall outer skin as the benchmark)

Tip:

The vehicle must be parked on flat ground for adjustment of front door. Adjust with the assistance of an assembler.



1 Adjustment of front door

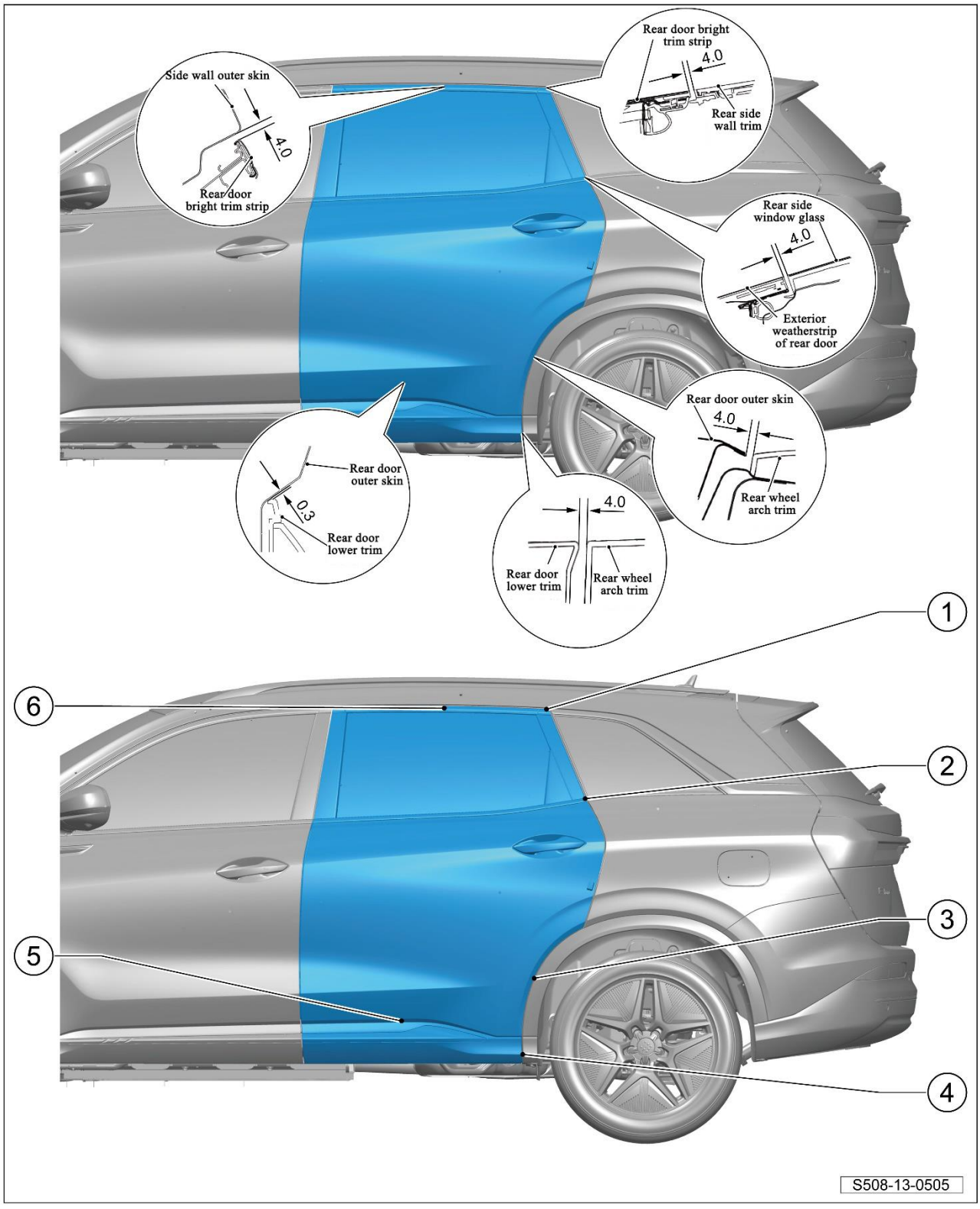
a. Remove the fender component. Refer to 9.2.3.19 Removal and installation of fender component.

b. Loosen (do not unscrew) the fixing bolts (see arrow A) of the front door hinge.

c. Move the door back and forth, up and down in the direction of arrow B so that when the door is closed, the gap is uniform everywhere, not concave inward or convex outward, and the contour is aligned, which means that the front door has been correctly adjusted.

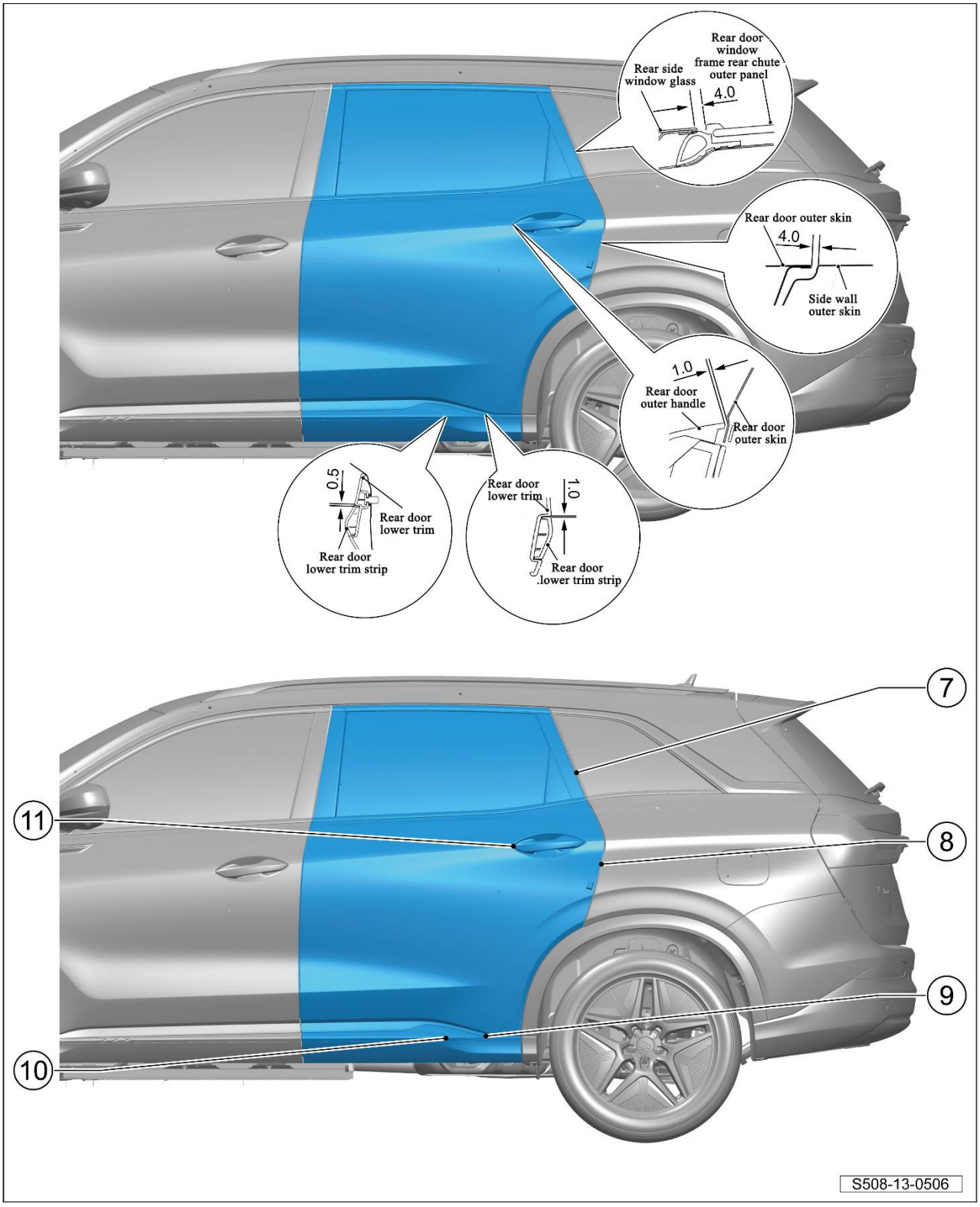
d. Tighten the hinge bolt (see arrow A).

- Tightening torque of bolt (see arrow **A**): **35±3 N·m**



S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Rear door bright trim strip relative to rear side wall trim	4.0	0 (with rear side wall trim as the benchmark)
2	Rear door outer weatherstrip relative to rear side window glass	4.0	-0.3 (with rear side window glass as the benchmark)

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Rear door outer skin relative to rear wheel arch trim	4.0	—
4	Rear door lower trim relative to rear wheel arch trim	4.0	-0.3 (with rear wheel arch trim as the benchmark)
5	Rear door lower trim relative to rear door outer skin	0.3	—
6	Rear door bright trim strip relative to side wall outer skin	4.0	-4.0 (with side wall outer skin as the benchmark)

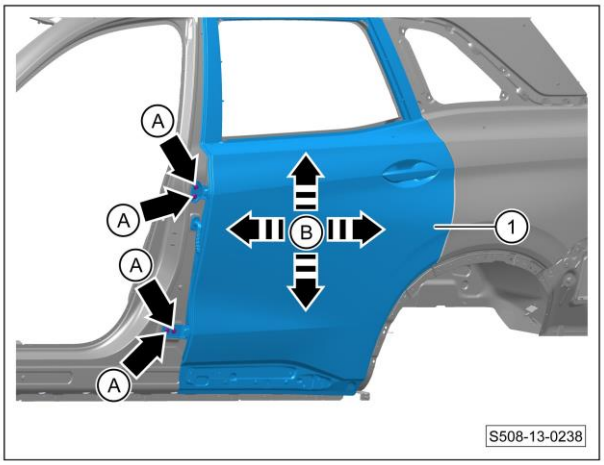


S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
7	Outer plate of rear chute of rear door window frame relative to rear side window glass	4.0	-1.0 (with rear side window glass as the benchmark)
8	Rear door outer skin relative to side wall outer skin	4.0	0 (with side wall outer skin as the benchmark)

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
9	Rear door lower trim strip relative to rear door lower trim	1.0	—
10	Rear door lower trim strip relative to rear door lower trim	0.5	—
11	Rear door handle relative to rear door outer skin	1.0	—

Tip:

The vehicle must be parked on flat ground for adjustment of rear door. Adjust with the assistance of an assembler.



1 Adjustment of rear door

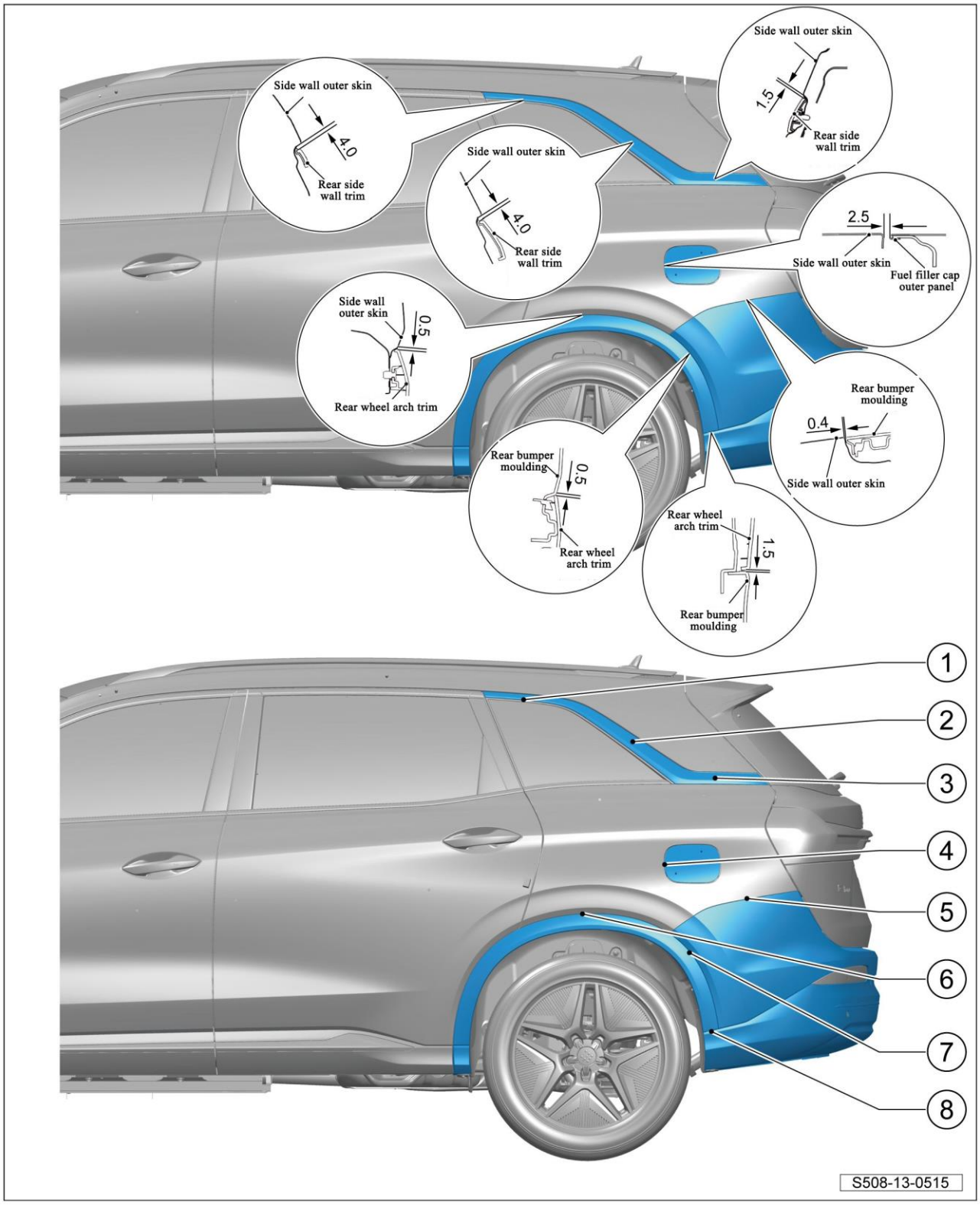
a. Open the front door.

b. Loosen (do not unscrew) the fixing bolts (see arrow A) of the rear door hinge.

c. Move the door back and forth, up and down in the direction of arrow B so that when the door is closed, the gap is uniform everywhere, not concave inward or convex outward, and the contour is aligned, which means that the front door has been correctly adjusted.

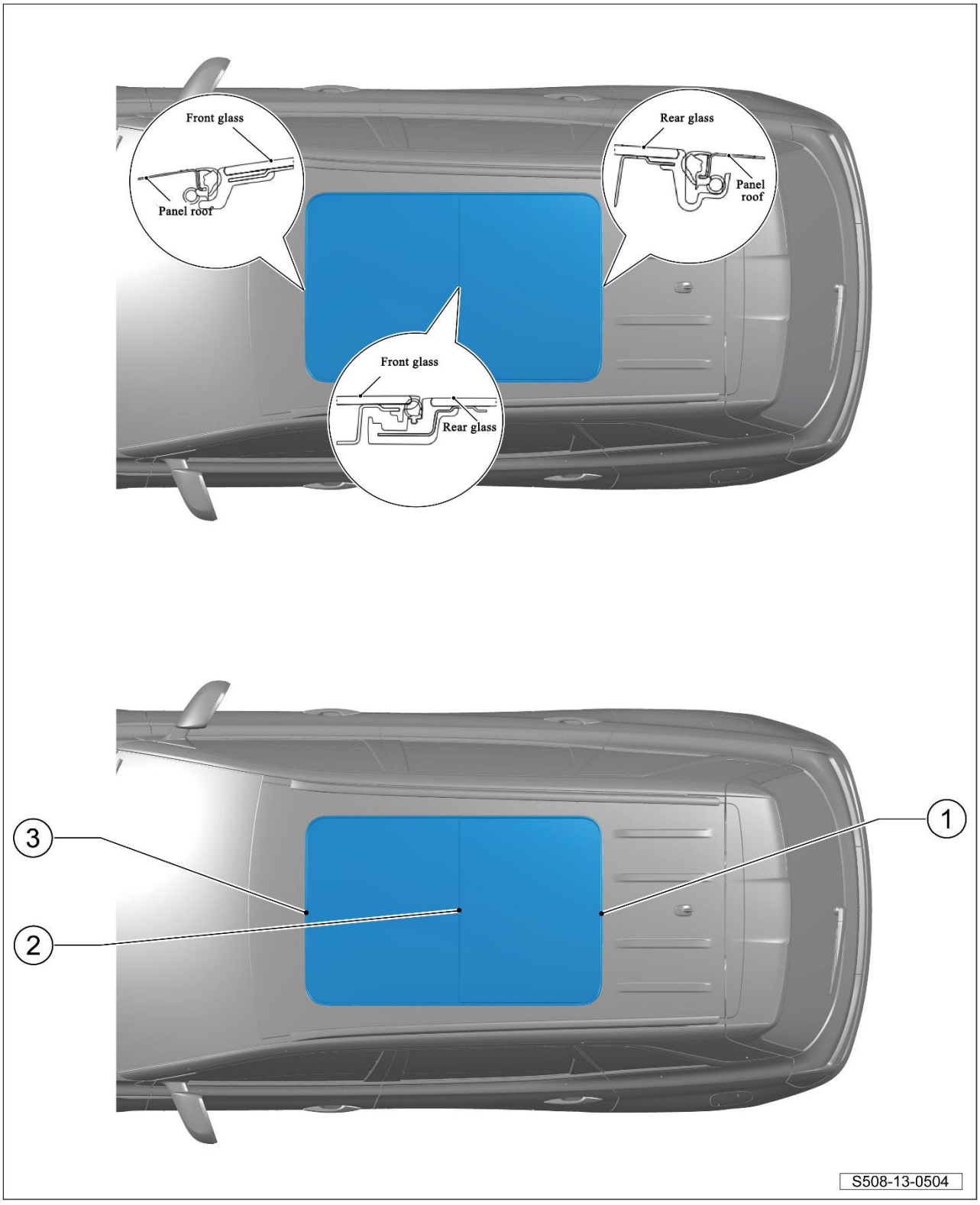
d. Tighten the hinge bolt (see arrow A).

- Tightening torque of bolt (see arrow **A**): **35±3 N·m**



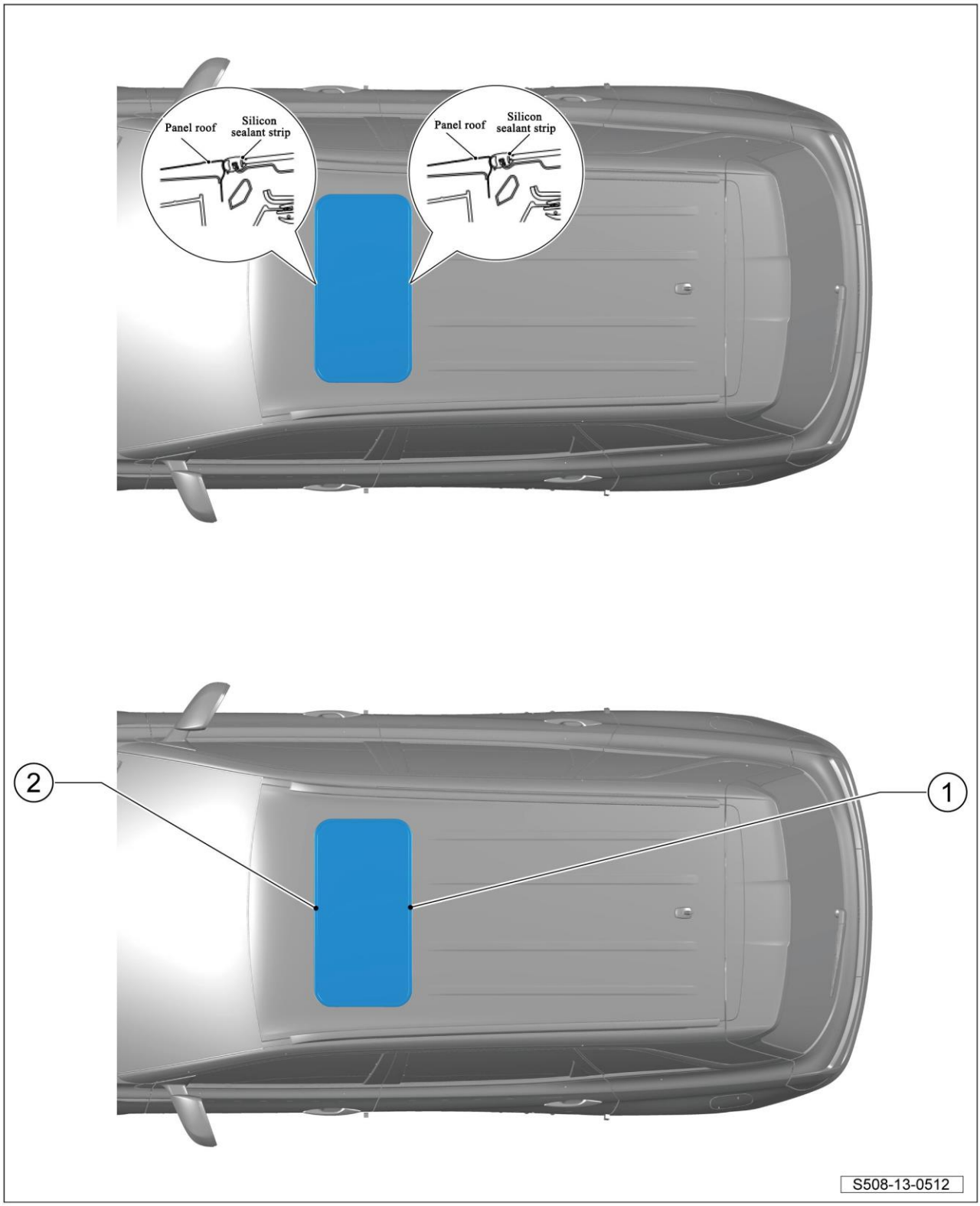
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Rear side wall trim relative to side wall outer skin	4.0	—
2	Rear side wall trim relative to side wall outer skin	4.0	—

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Rear side wall trim relative to side wall outer skin	1.5	—
4	Outer panel of fuel filler cap relative to outer skin of side wall (rear)	2.5	-0.5 (with side wall outer skin as the benchmark)
5	Rear bumper moulding relative to outer skin of side wall	0.4	-0.5 (with side wall outer skin as the benchmark)
6	Rear wheel arch trim relative to side wall outer skin	0.5	—
7	Rear bumper moulding relative to rear wheel arch trim	0.5	—
8	Rear wheel arch trim relative to rear bumper moulding	1.5	—



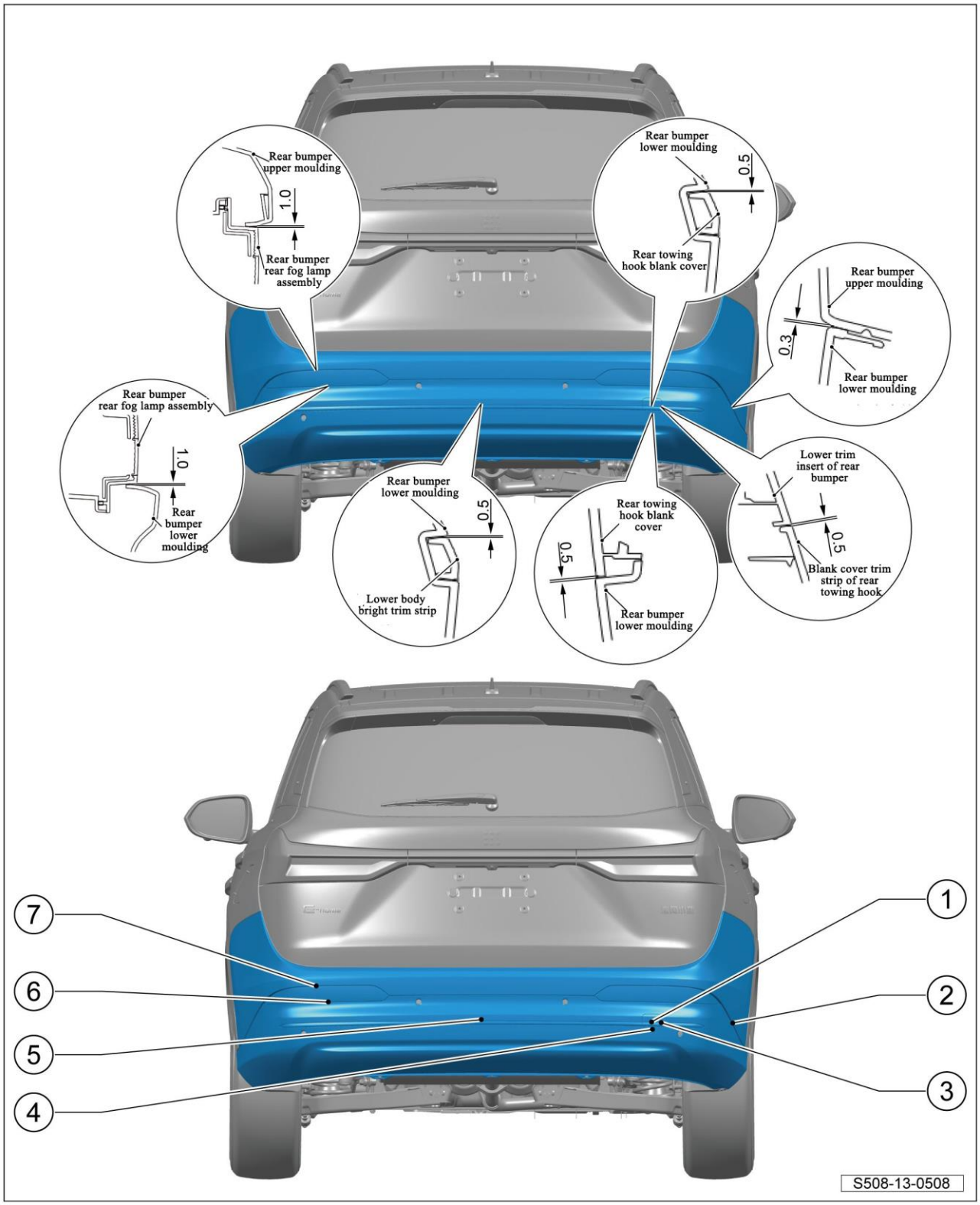
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Rear glass relative to panel roof	Fit	1.7 (with panel roof as the benchmark)
2	Front glass relative to rear glass	Fit	1.5 (with rear glass as the benchmark)

3	Front glass relative to panel roof	Fit	-1.7 (with panel roof as the benchmark)

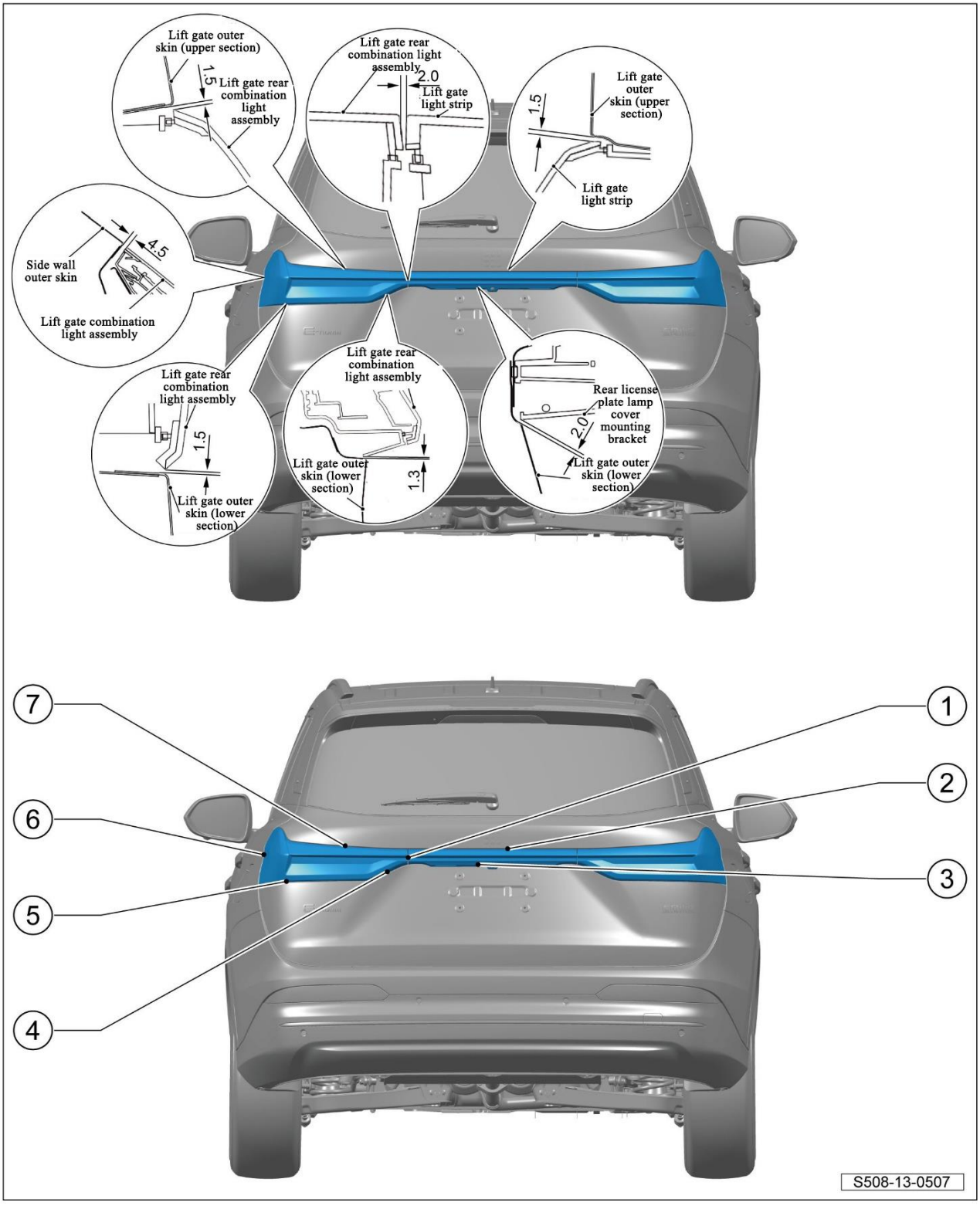


S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Glass rubber strip relative to panel roof	Fit	0 (with panel roof as the

			benchmark)
2	Glass rubber strip relative to panel roof	Fit	0 (with panel roof as the benchmark)

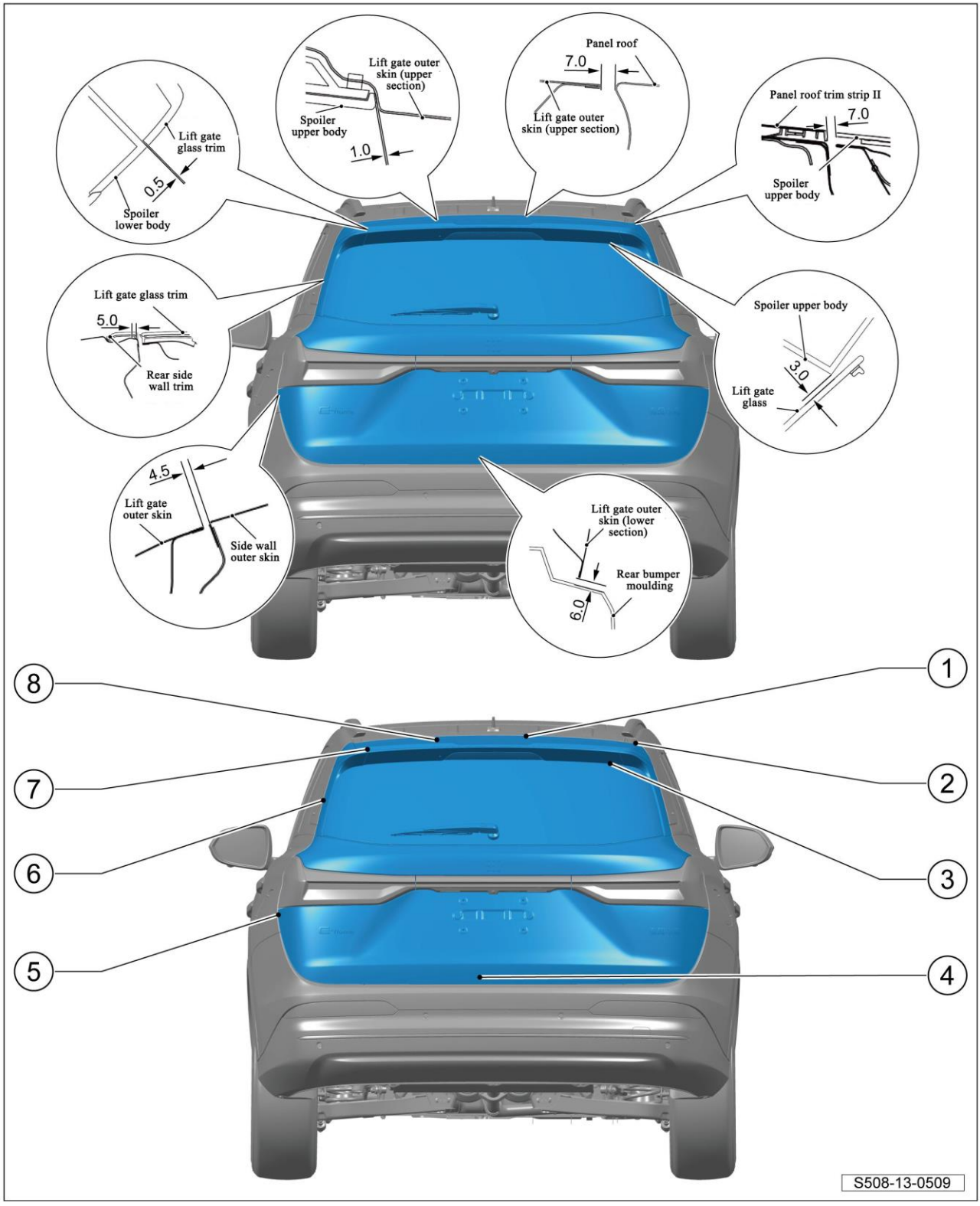


S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Rear towing hook hole blank cover relative to rear towing hook hole blank cover trim strip	0.5	—
2	Rear bumper upper moulding relative to rear bumper lower moulding	0.3	—
3	Rear bumper lower trim insert relative to rear towing hook hole blank cover trim strip	0.5	0.3 (with rear bumper lower trim insert as the benchmark)
4	Rear towing hook hole blank cover relative to rear bumper moulding	0.5	-0.3 (with rear bumper moulding as the benchmark)
5	Rear bumper lower moulding relative to lower moulding bright trim strip	0.5	—
6	Rear bumper rear fog light assembly relative to rear bumper lower moulding	1.0	—
7	Rear bumper rear fog light assembly relative to rear bumper upper moulding	1.0	—



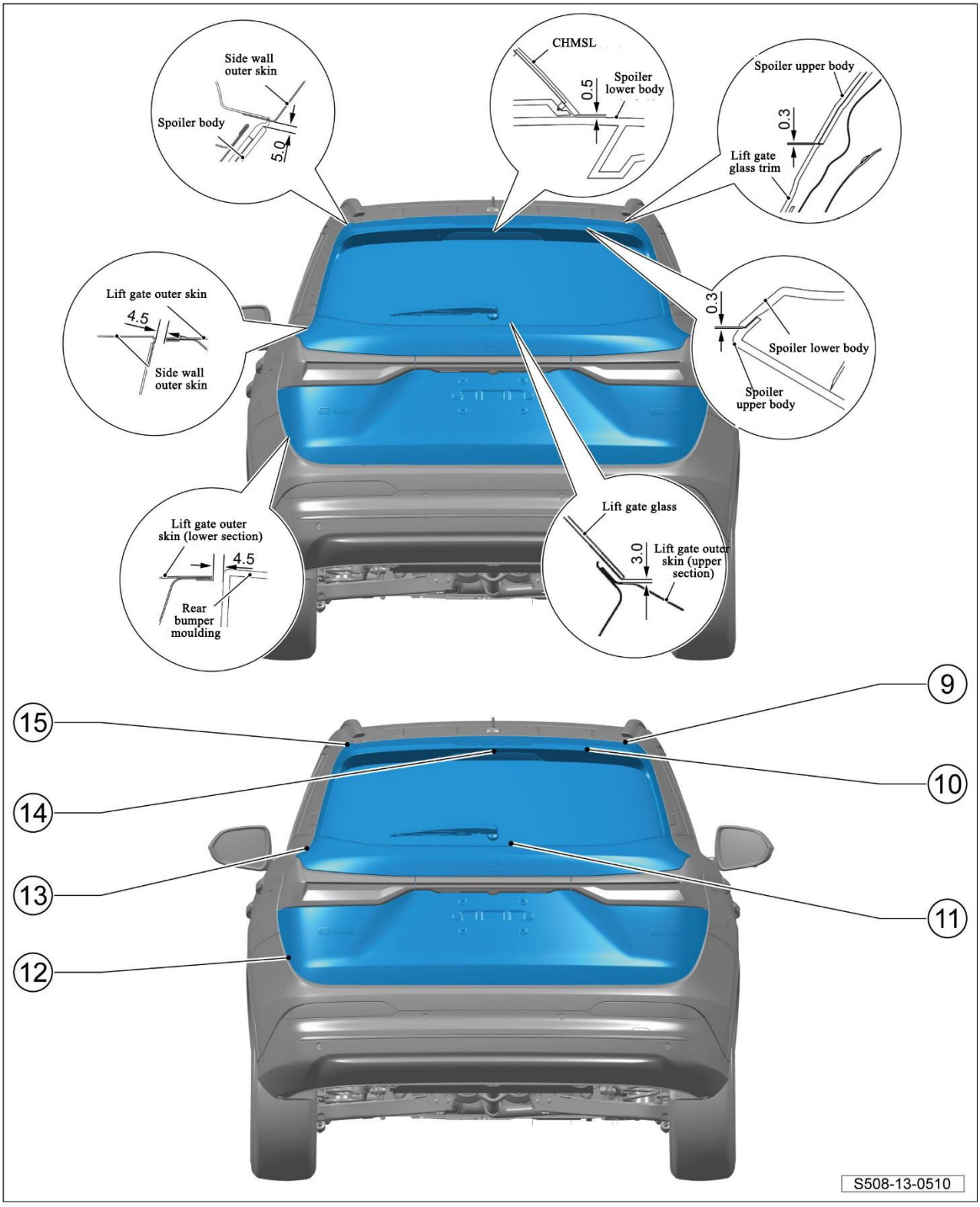
S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Lift gate light strip relative to lift gate rear combination light assembly	2.0	0 (with lift gate rear combination light assembly as the benchmark)
2	Lift gate light strip relative to lift gate outer skin upper section	1.5	—

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Rear license plate light cover mounting bracket relative to lift gate outer skin lower section	2.0	—
4	Lift gate rear combination light assembly relative to lift gate outer skin lower section	1.3	—
5	Lift gate rear combination light assembly relative to lift gate outer skin lower section	1.5	—
6	Lift gate rear combination light assembly relative to side wall outer skin	4.5	-1.5 (with side wall outer skin as the benchmark)
7	Lift gate rear combination light assembly relative to lift gate outer skin upper section	1.5	—



S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
1	Lift gate outer skin upper section relative to roof panel	7.0	-2.0 (with roof panel as the benchmark)
2	Spoiler upper moulding relative to roof panel trim strip II	7.0	-0.7 (with roof panel trim strip II as the benchmark)

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
3	Spoiler upper moulding relative to lift gate glass	3.0	—
4	Lift gate outer skin lower section relative to rear bump moulding	6.0	—
5	Lift gate outer skin relative to side wall outer skin	4.5	-2.1 (with side wall outer skin as the benchmark)
6	Lift gate glass trim relative to rear side wall trim	5.0	-1.0 (with rear side wall trim as the benchmark)
7	Lift gate glass trim relative to spoiler lower moulding	0.5	0 (with spoiler lower moulding as the benchmark)
8	Spoiler moulding relative to lift gate outer skin upper section	1.0	-0.5 (with lift gate outer skin upper section as the benchmark)

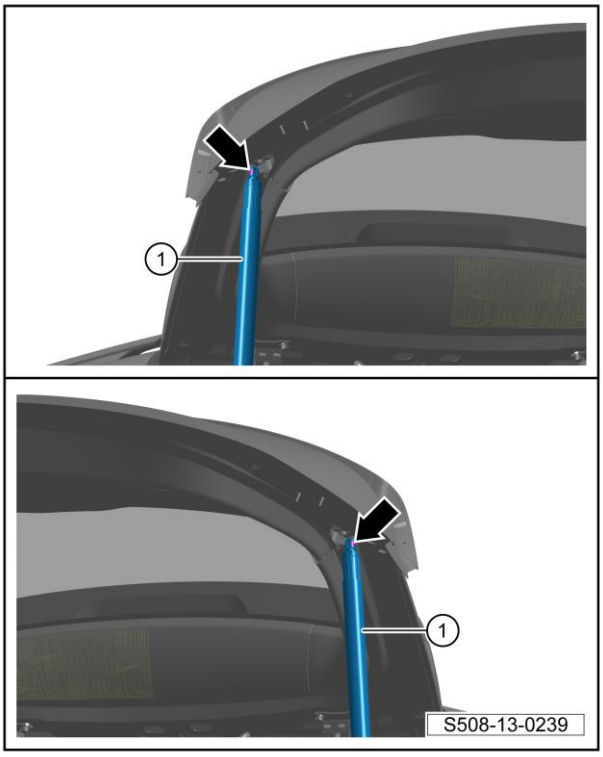


S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
9	Lift gate glass trim relative to spoiler upper moulding	0.3	-1.0 (with spoiler upper moulding as the benchmark)
10	Spoiler lower moulding relative to spoiler upper moulding	0.3	—

S/N	Position	Permissible clearance (mm)	Permissible mismatch (mm)
11	Lift gate glass relative to lift gate outer skin upper section	3.0	—
12	Lift gate outer skin lower section relative to rear bump moulding	4.5	—
13	Lift gate outer skin relative to side wall outer skin	4.5	-2.1 (with side wall outer skin as the benchmark)
14	CHMSL relative to spoiler lower moulding	0.5	—
15	Spoiler moulding relative to side wall outer skin	5.0	-1.0 (with side wall outer skin as the benchmark)

Tip:

The vehicle must be parked on flat ground for adjustment of lift gate. Adjust the front door assembly with another assistance of a technician.

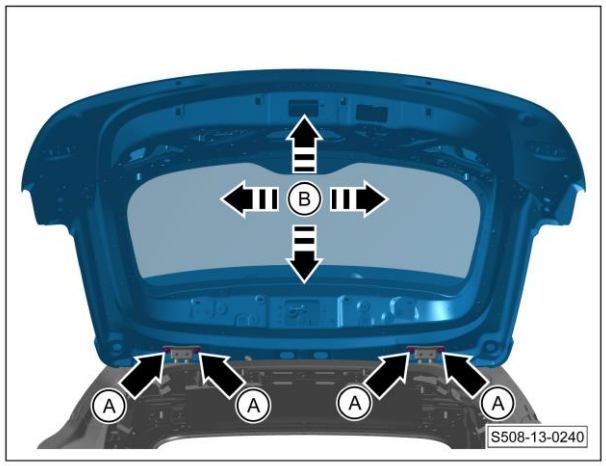


1 Adjust the lift gate

a. Use a mini straight screwdriver to pry up the fixing clips (see the arrows) of the lift gate stay rod ①.

Notes

It is not allowed to pry the fixing clip of the lift gate stay rod completely out of the ball seat; otherwise, it will be damaged, so that the lift gate stay rod cannot be fixed. The lift gate stay rod may pop up from the ball pin, damaging parts or injuring people.



b. Loosen (do not unscrew) the left and right hinge fixing bolts at the lift gate (see arrow A) and move the lift gate back and forth, left and right in the direction of arrow B so that the gap size is uniform everywhere when the lift gate is closed, without concave or convex, and the contour is aligned, which means that the lift gate has been adjusted correctly.

c. Tighten the hinge bolt (see arrow A).

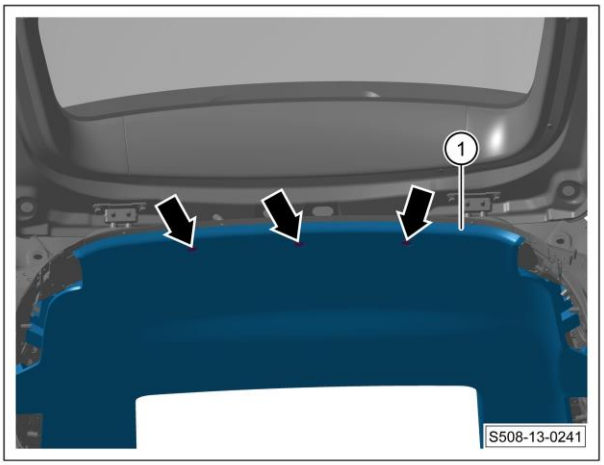
d. Install the lift gate stay rod.

- Tightening torque of bolt (see arrow **A**): **28±2 N·m**

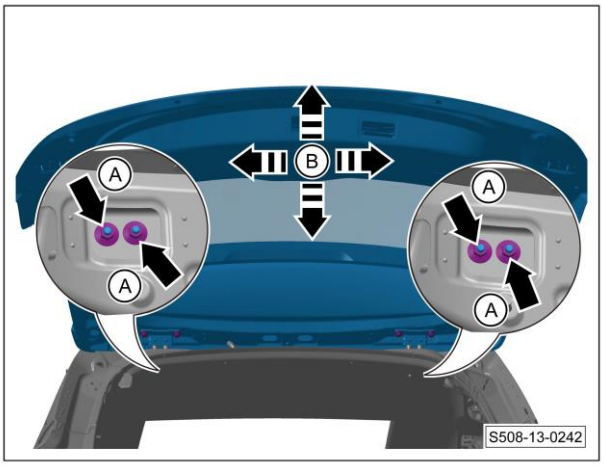
Tip:

If not, perform further adjustment according to the following steps.

2 Remove the rear left/right side wall upper interior trim panel assembly. Refer to 9.14.2.12 Removal and installation of rear side wall upper interior trim panel assembly

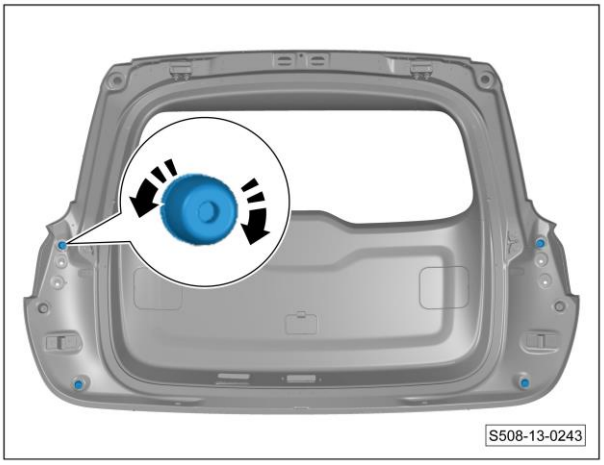


3 a. Disengage the lift gate sealing strip, and disengage the rear fixing clips (see the arrow) of the panel roof lining assembly ①.



b. Loosen (do not unscrew) the fixing nut of the lift gate hinge and the body (see arrow A), and move the lift gate forward, backward, left and right (see arrow B) so that the gap is uniform everywhere when the lift gate is closed. At this time, tighten the lift gate hinge nuts (see arrow A).

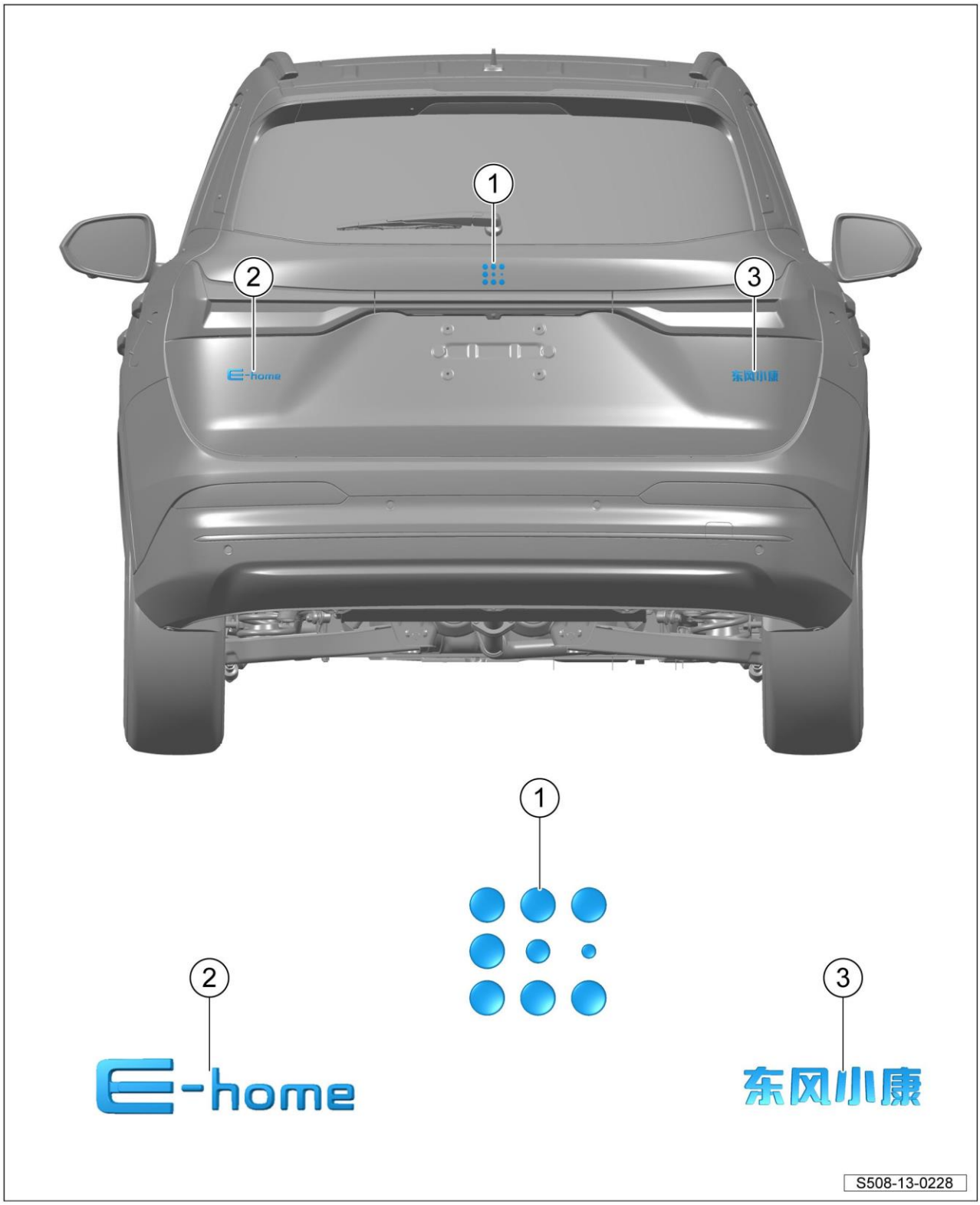
- Tightening torque of nut (see arrow **A**): **28±2 N·m**



c. Rotate and adjust the cushion pad under the lift gate in the arrow direction. When the lift gate is closed, it is not concave or convex and the outline is aligned, which means that the lift gate has been adjusted correctly.

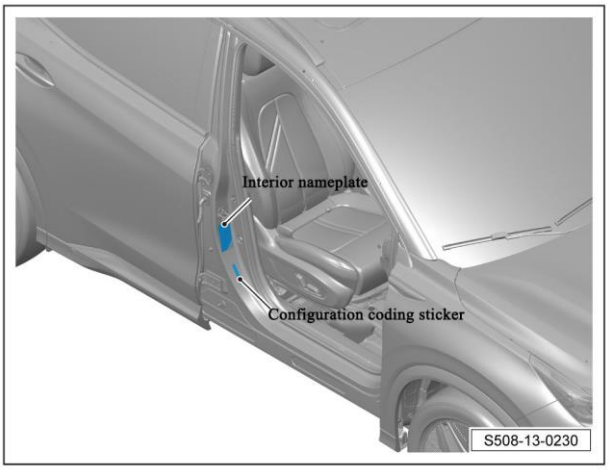
d. Install the lift gate stay rod.

10.2.2.5 Plate pasting position



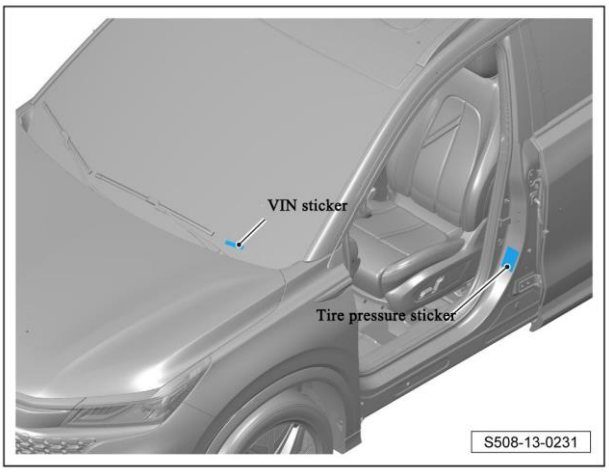
1. Logo rear
2. Model No.
3. Rear logo

10.2.2.6 Label/sticker pasting position



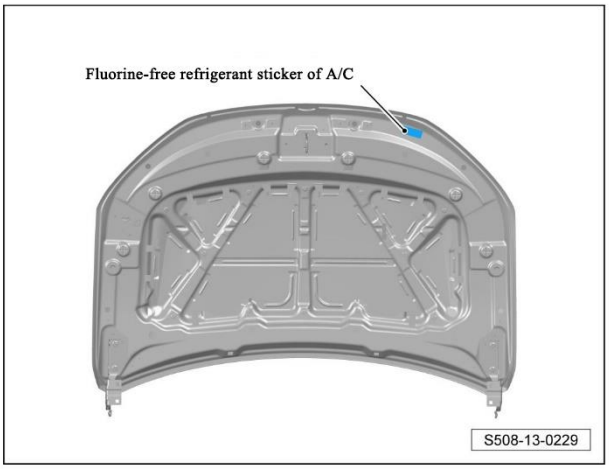
1 Interior nameplate

2 Configuration coding sticker



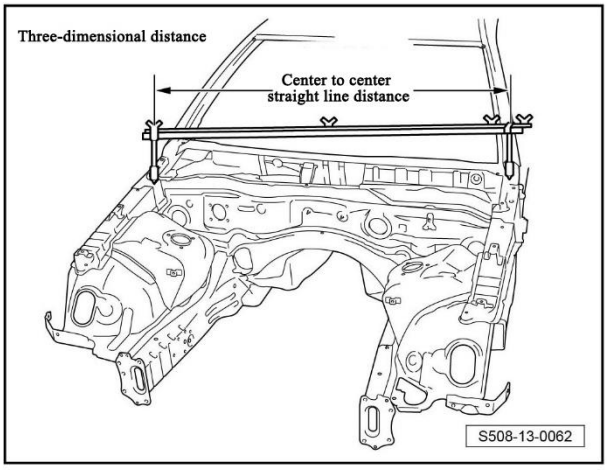
3 Tire pressure sticker

4 VIN sticker



5 Fluorine-free refrigerant sticker of A/C

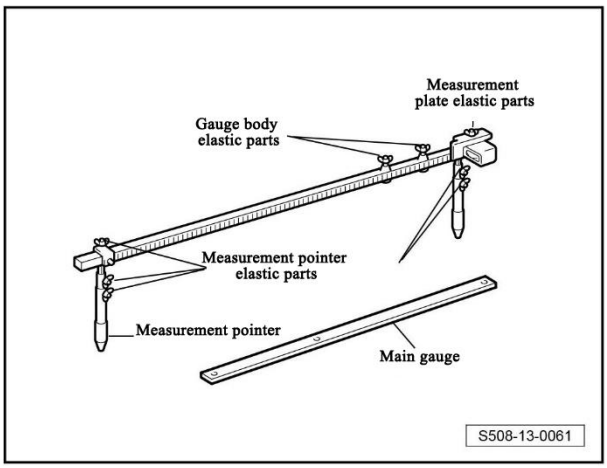
10.2.2.7 Body size



Basic dimensions

Three-dimensional distance

–Linear distance between the centers of two measuring points.

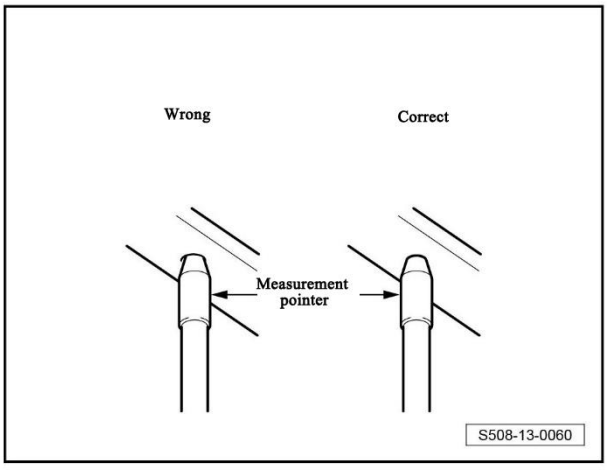


Measurement

Gauge meter must be used for measurement during repair. For measurement that cannot be conducted with gauge meter, flexible rule shall be used.

Description

– When flexible rule is used, avoid warping and bending of the flexible rule.



When gauge meter is used, the gauge body, measurement plate or measurement pointer shall not be loose.

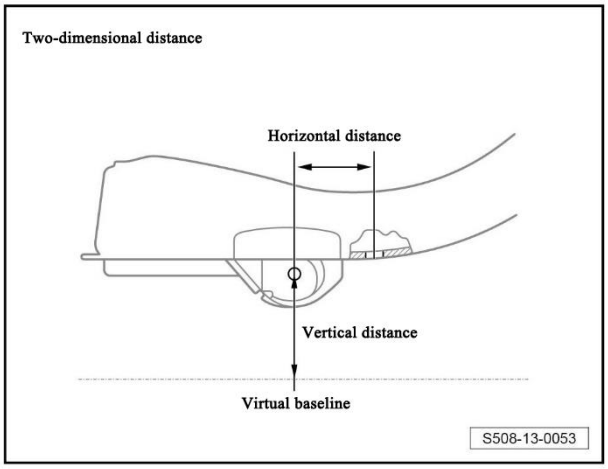
Description

– The height of the left and right measurement pointers must be consistent.

– Always calibrate the gauge meter before measuring or after adjusting the height of the measurement pointer.

– When gauge meter is used, prevent it from falling or protect it against vibration.

– Confirm that the measurement pointer is fixed in the measurement hole.



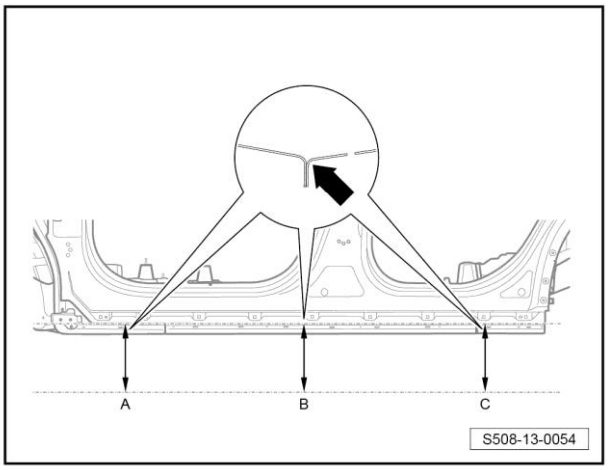
Two-dimensional distance

– Forward/backward horizontal distance between centers of two measurement points.

– Vertical distance between measurement point and virtual datum line.

Description

– If only one dimension is provided, it indicates that the left and the right are symmetrical.



Virtual baseline

– The virtual datum line refers to the line through the datum point mentioned in the table below.

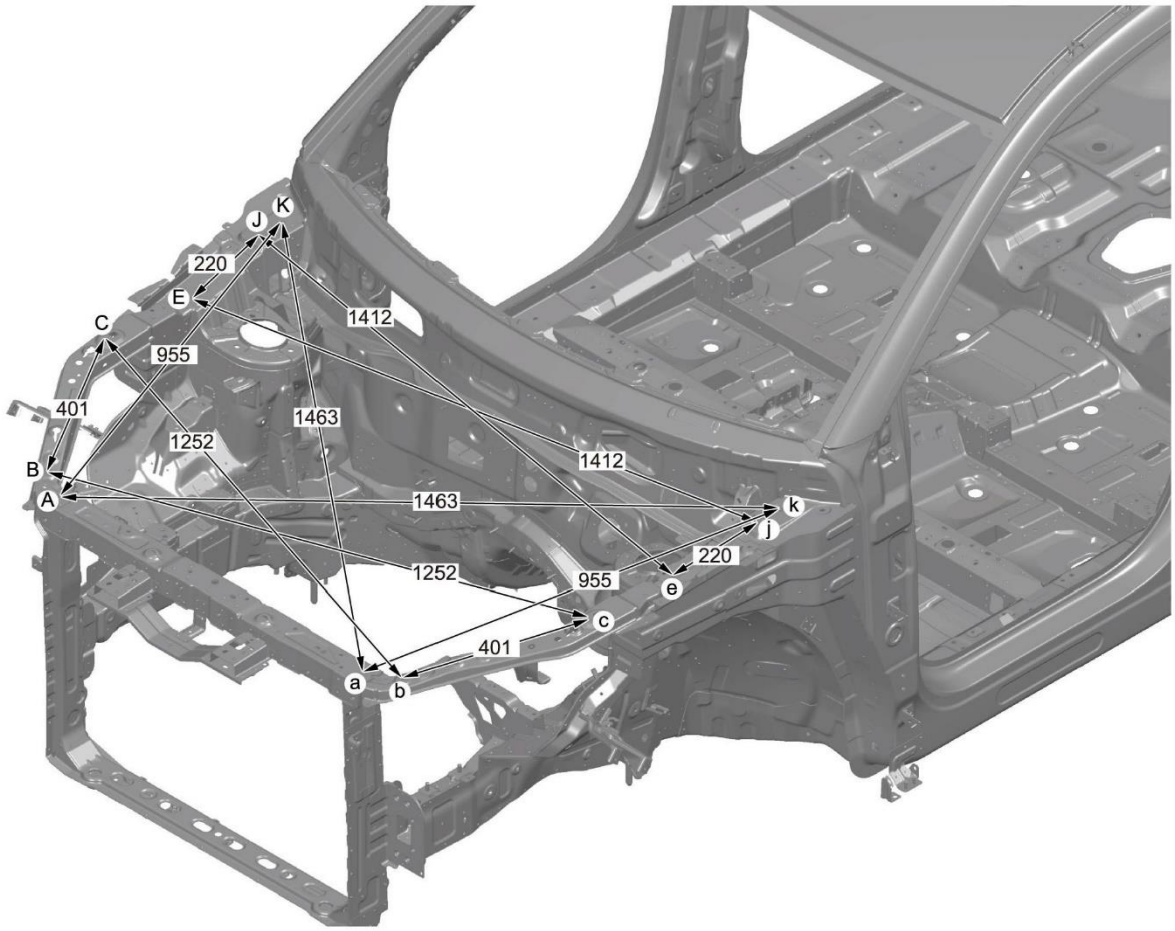
Point symbol	Datum point
A	This point is in the lower surface of the sill beam at the center of the front lifting point of the vehicle
B	This point is in the lower surface of the sill beam at the center between the front lifting point and rear lifting point of the vehicle
C	This point is in the lower surface of the sill beam at the center of the rear lifting point of the vehicle

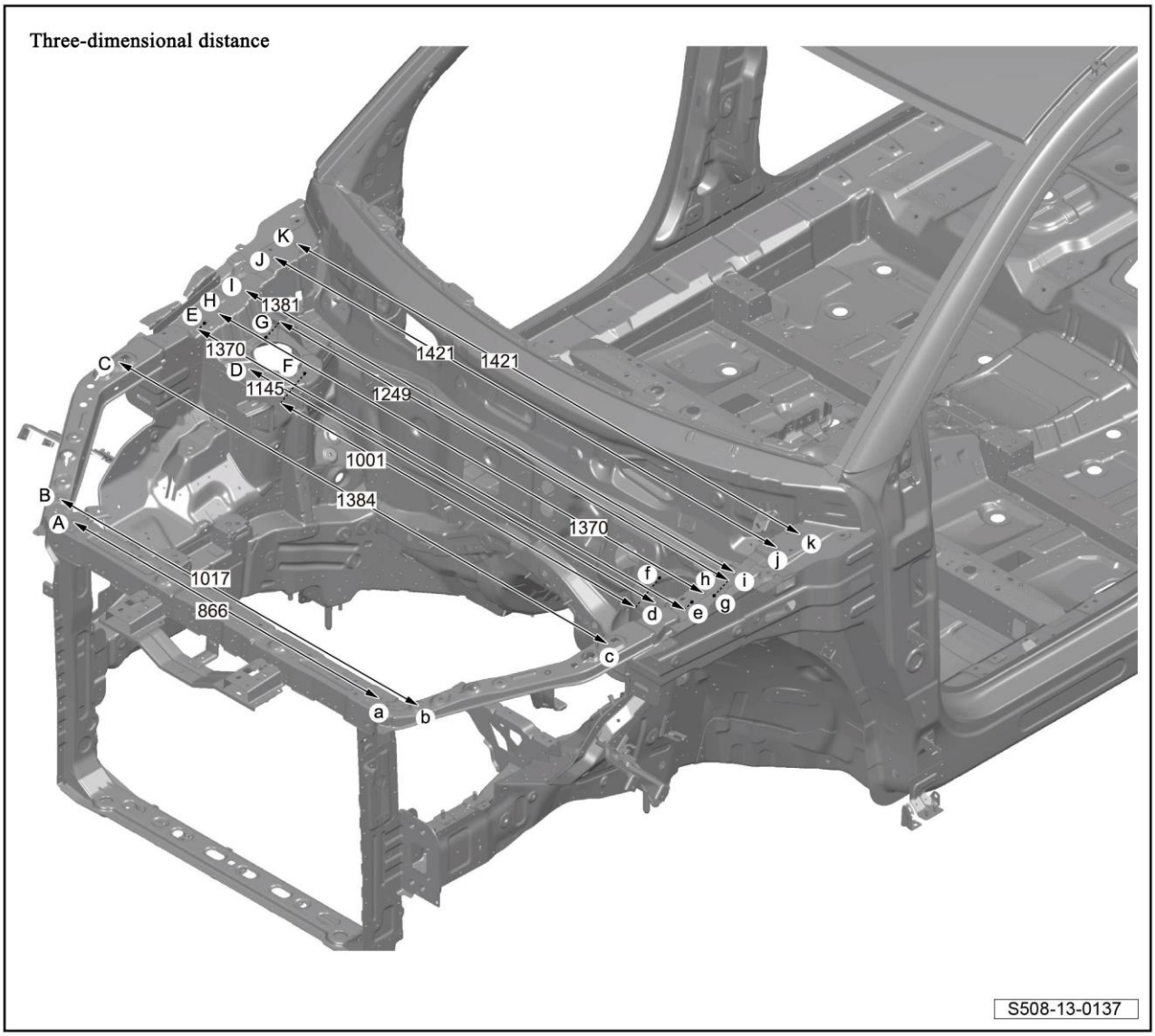
Definition of measurement point symbol

Symbol	Meaning
	Center of round hole
	Center of elliptical hole
	Sheet metal angle (only with arrow)
	Front direction

Front engine compartment

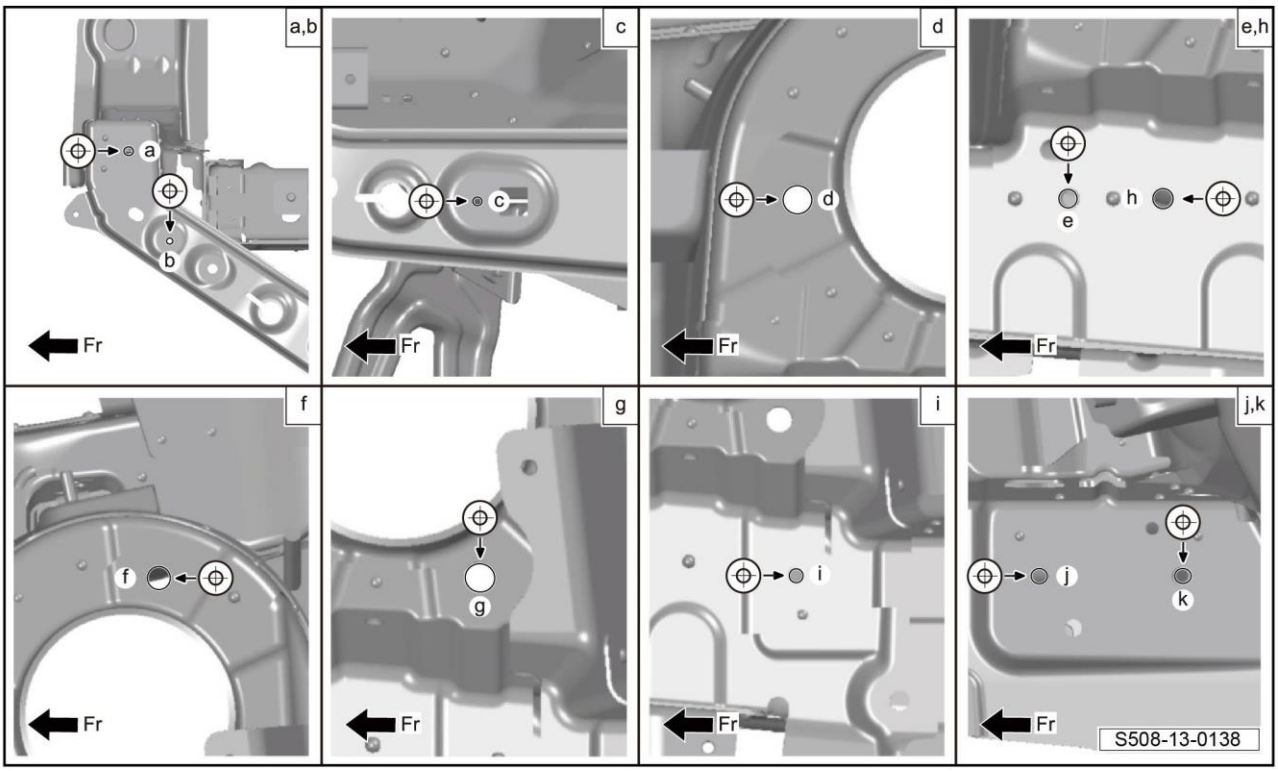
Three-dimensional distance





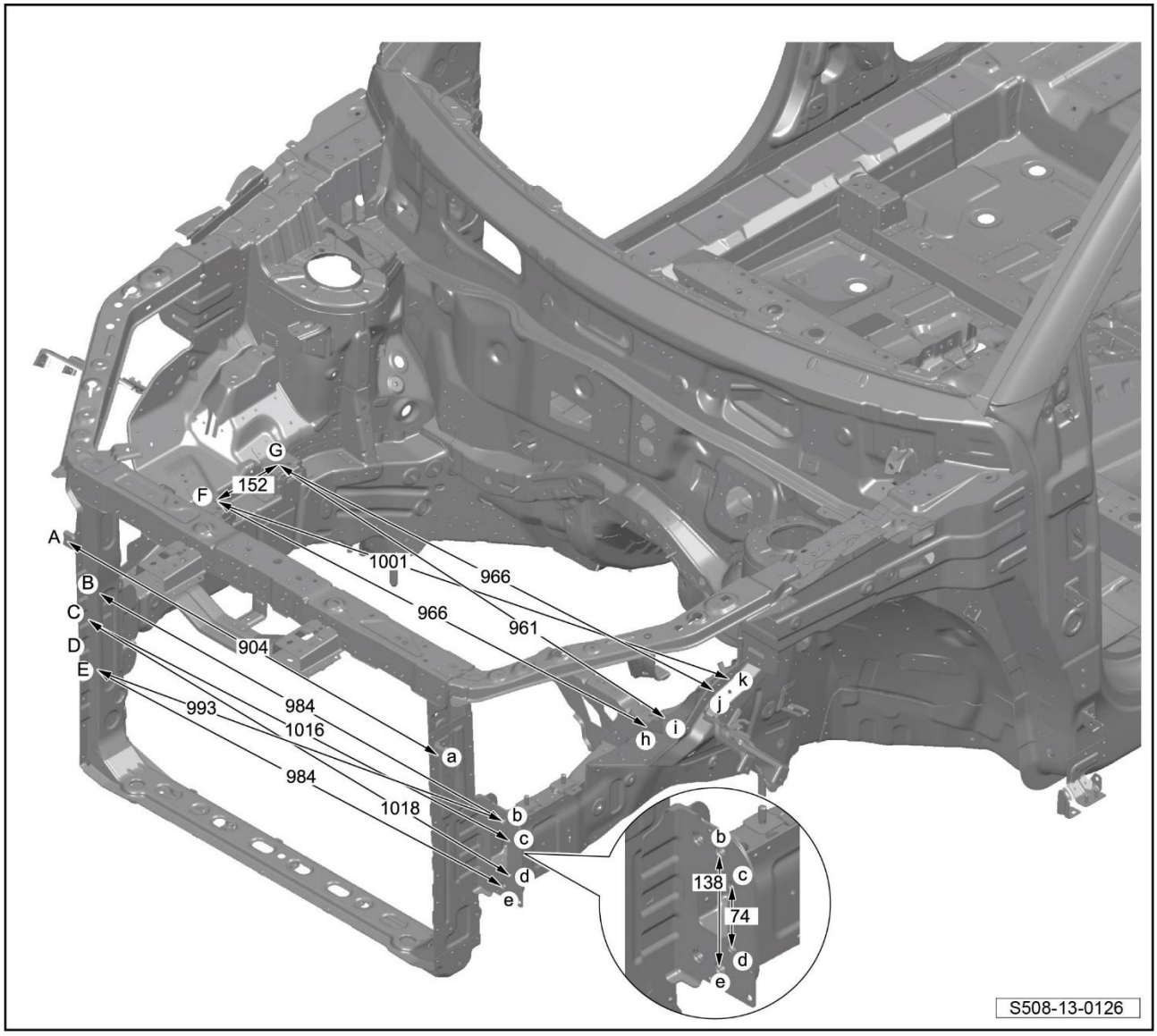
Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).



Point symbol	Description	Point symbol	Description
A, a	Process hole for upper crossmember assembly on water tank	B, b	Process hole for upper crossmember assembly on water tank
C, c	Process hole for upper crossmember assembly on water tank	D, d	Front shock absorber mounting hole
E, e	Mounting hole for engine hood stay rod	F, f	Front shock absorber mounting hole
G, g	Front shock absorber mounting hole	H, h	Mounting hole for engine hood stay rod
I, i	Mounting hole for front fender	J, j	Bonnet hinge mounting hole
K, k	Bonnet hinge mounting hole		

Front engine compartment



Description

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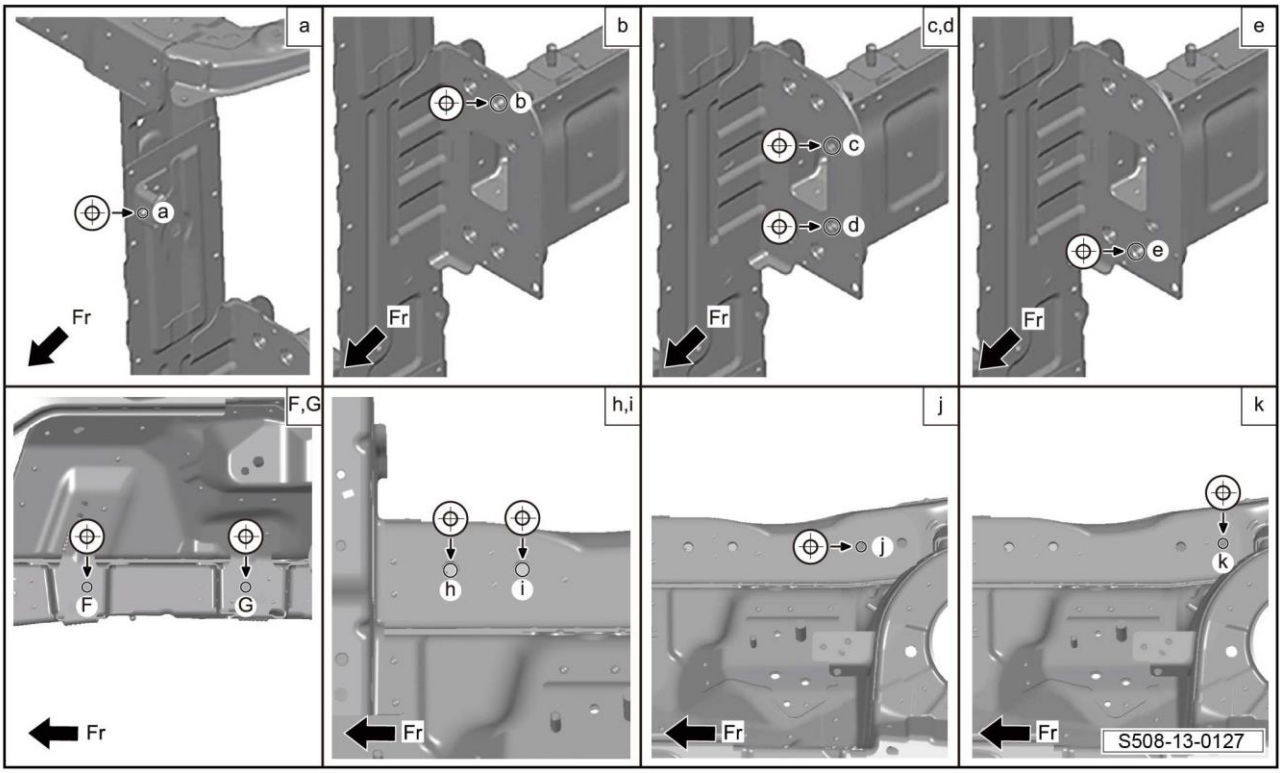
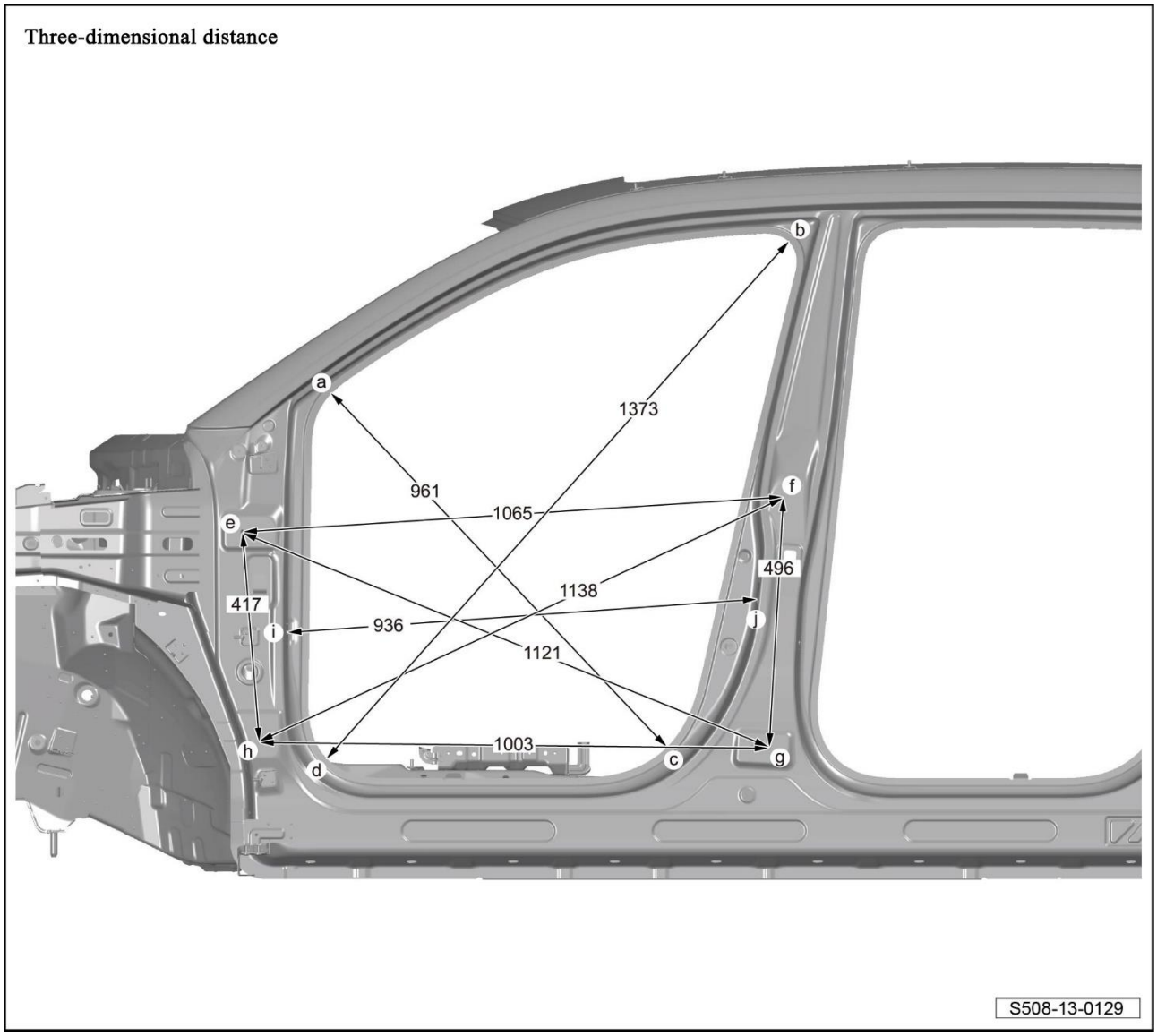


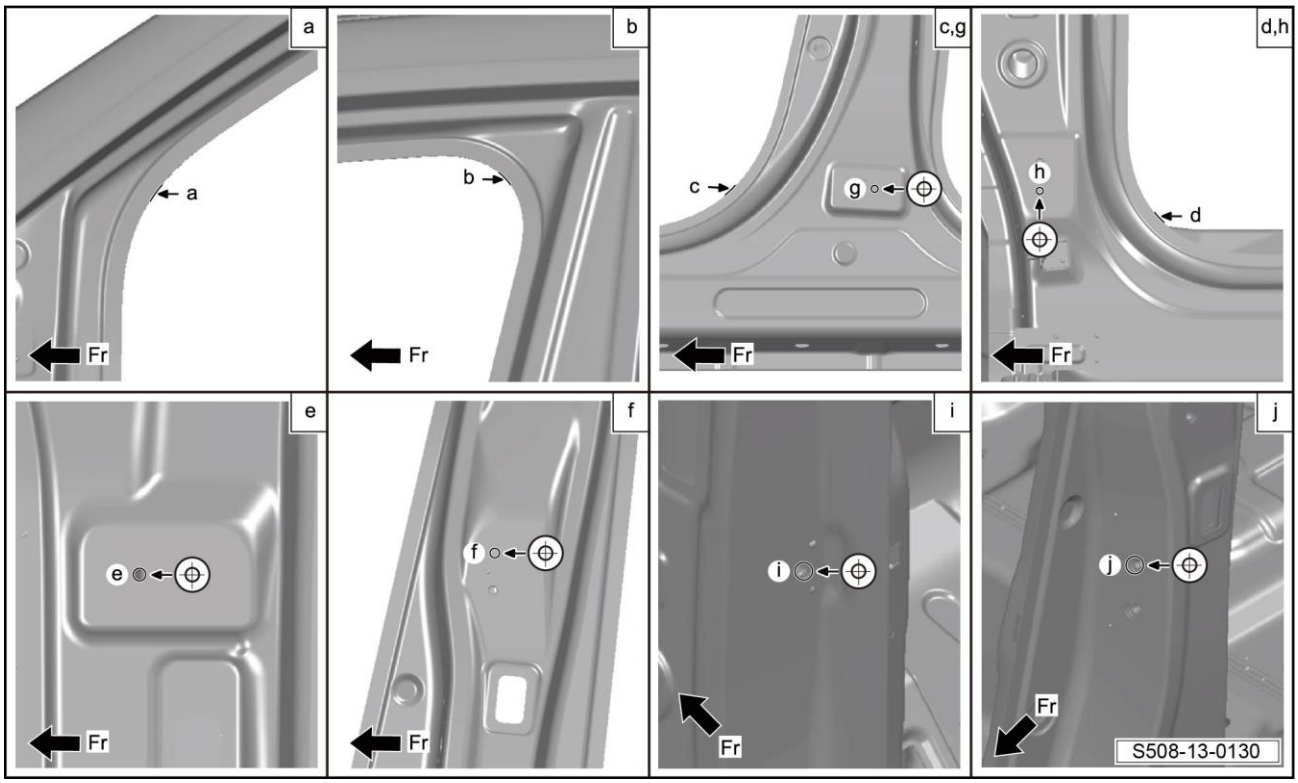
Point symbol	Description	Point symbol	Description
A, a	Front combination headlight mounting hole	B, b	Front anti-collision beam mounting hole
C, c	Front anti-collision beam mounting hole	D, d	Front anti-collision beam mounting hole
E, e	Suspension assembly mounting hole	F	Suspension assembly mounting hole
G	Suspension assembly mounting hole	h	Suspension assembly mounting hole
i	Suspension assembly mounting hole	j	Suspension assembly mounting hole
k	Suspension assembly mounting hole	—	—

Front door



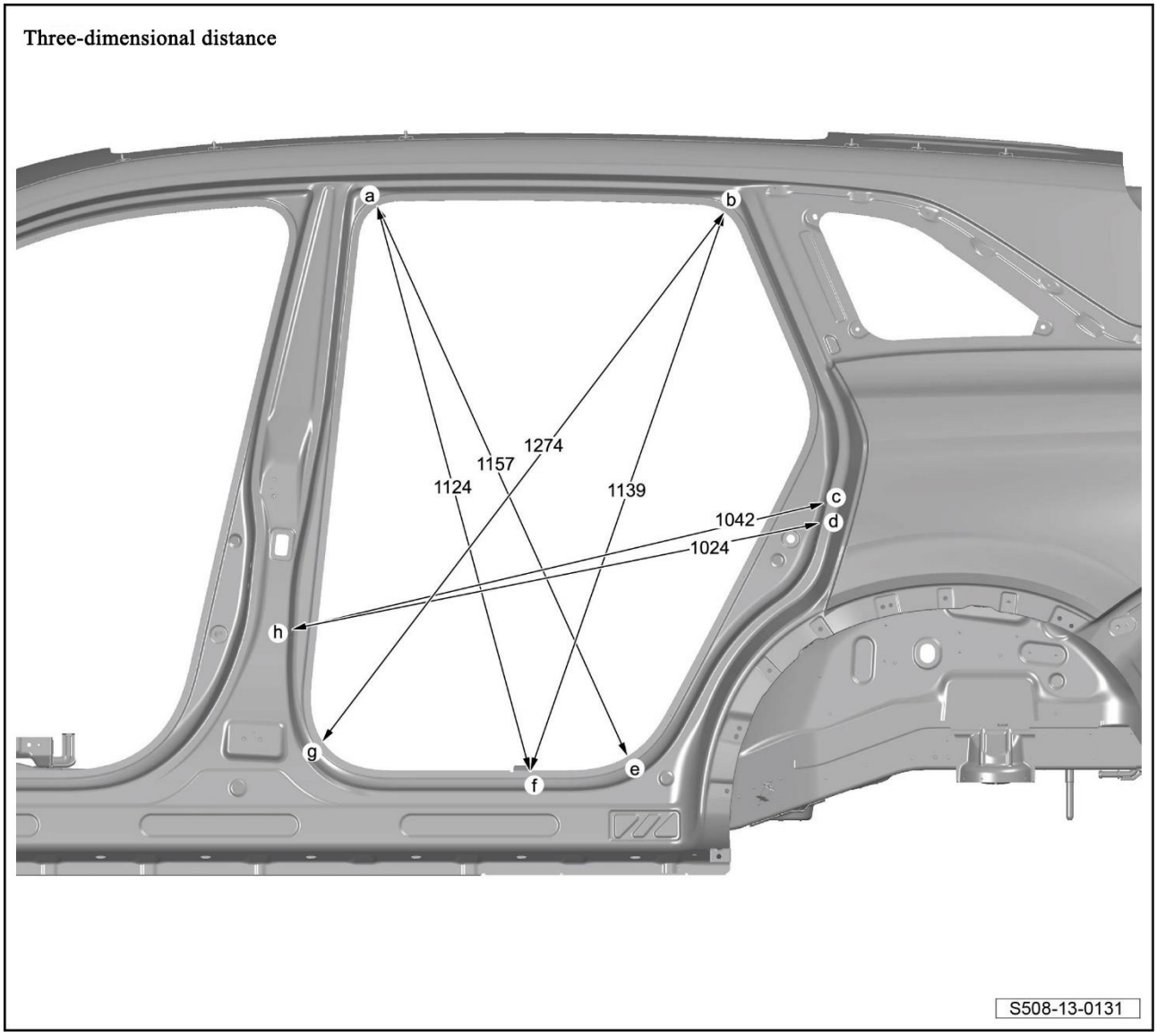
Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).



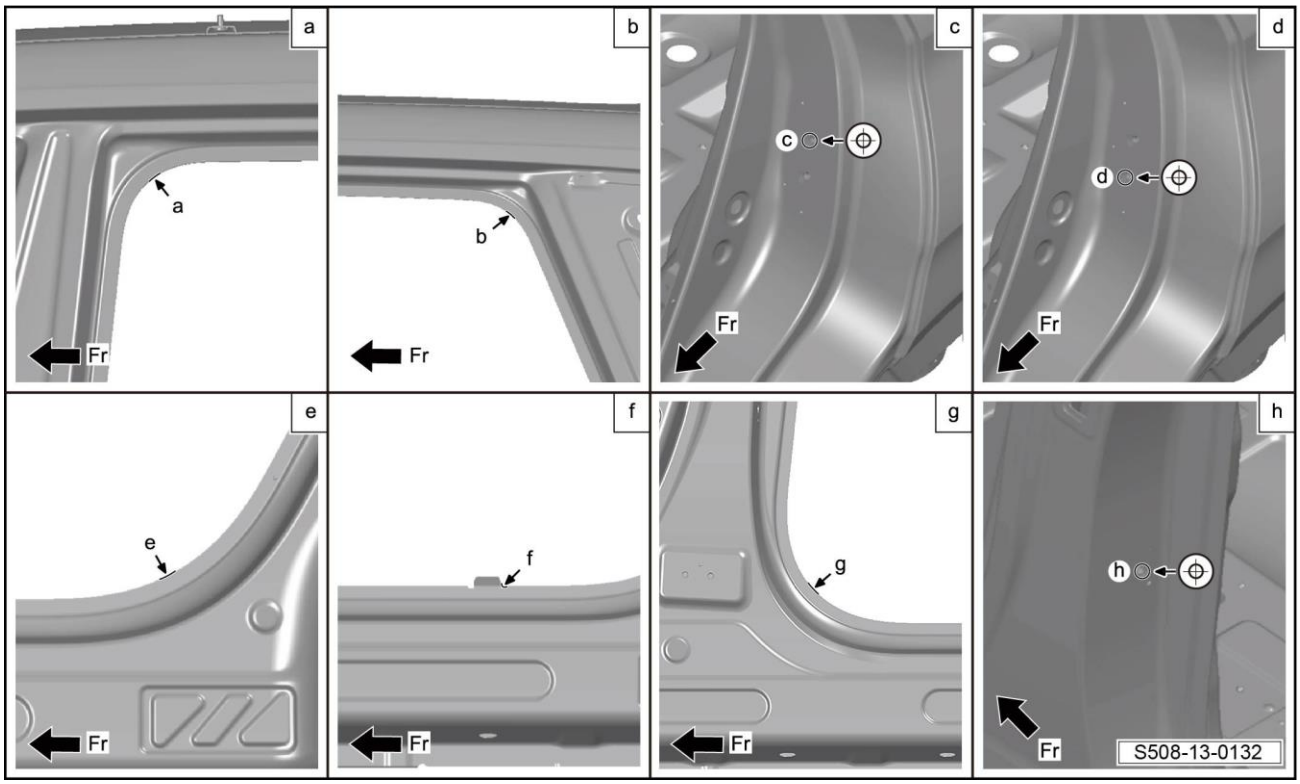
Point symbol	Description	Point symbol	Description
A, a	Door frame notch	B, b	Door frame notch
C, c	Door frame notch	D, d	Door frame notch
E, e	Front door upper hinge mounting hole	F, f	Rear door upper hinge mounting hole
G, g	Rear door lower hinge mounting hole	H, h	Front door lower hinge mounting hole
I, i	Mounting hole for front door checkstrap	J, j	Mounting hole of front door lock catch

Rear door



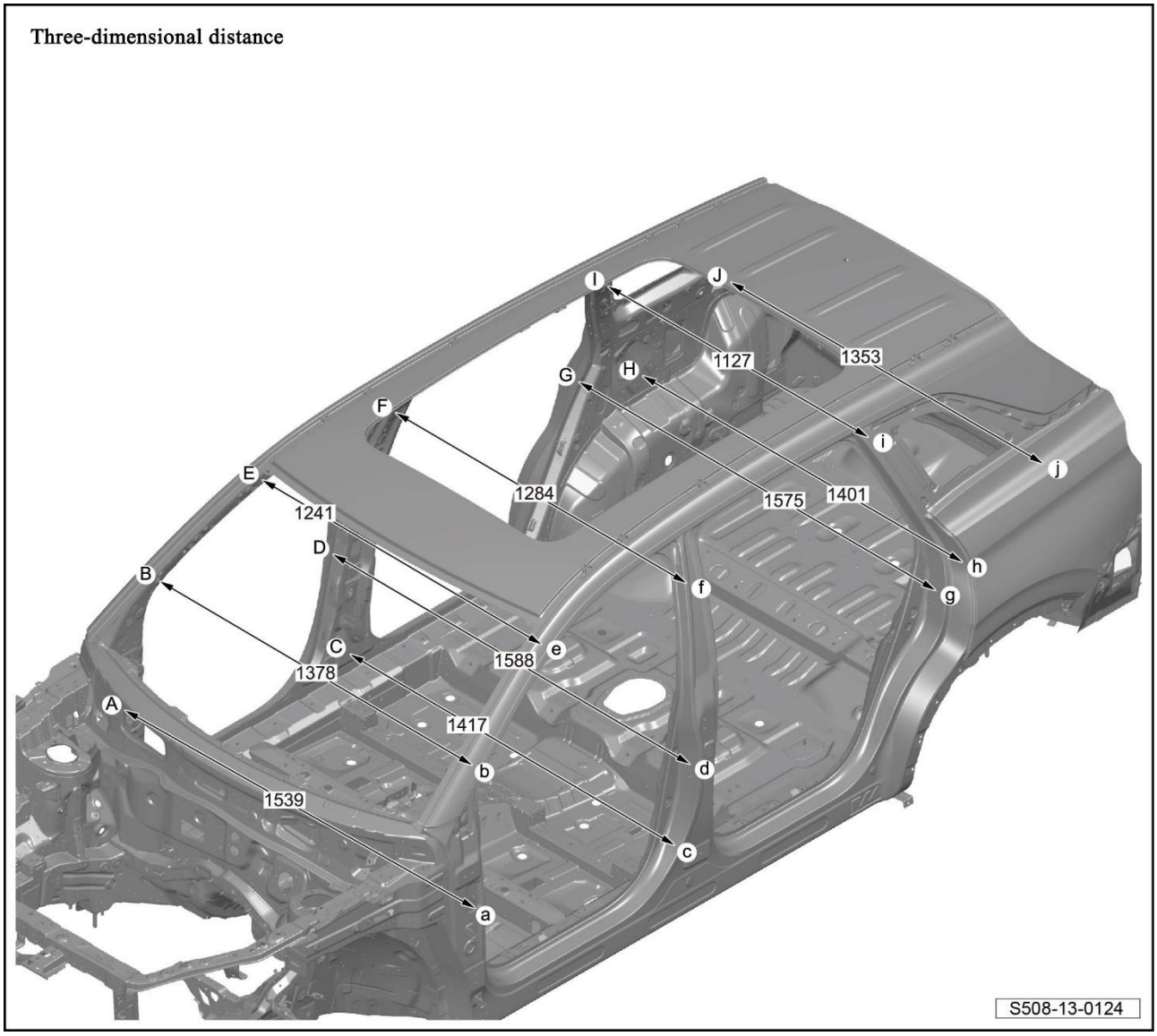
Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).



Point symbol	Description	Point symbol	Description
A, a	Door frame notch	B, b	Door frame notch
C, c	Mounting hole of door lock catch	D, d	Mounting hole of door lock catch
E, e	Door frame notch	F, f	Door frame notch
G, g	Door frame notch	H, h	Mounting hole for rear door checkstrap

Body middle part



Description

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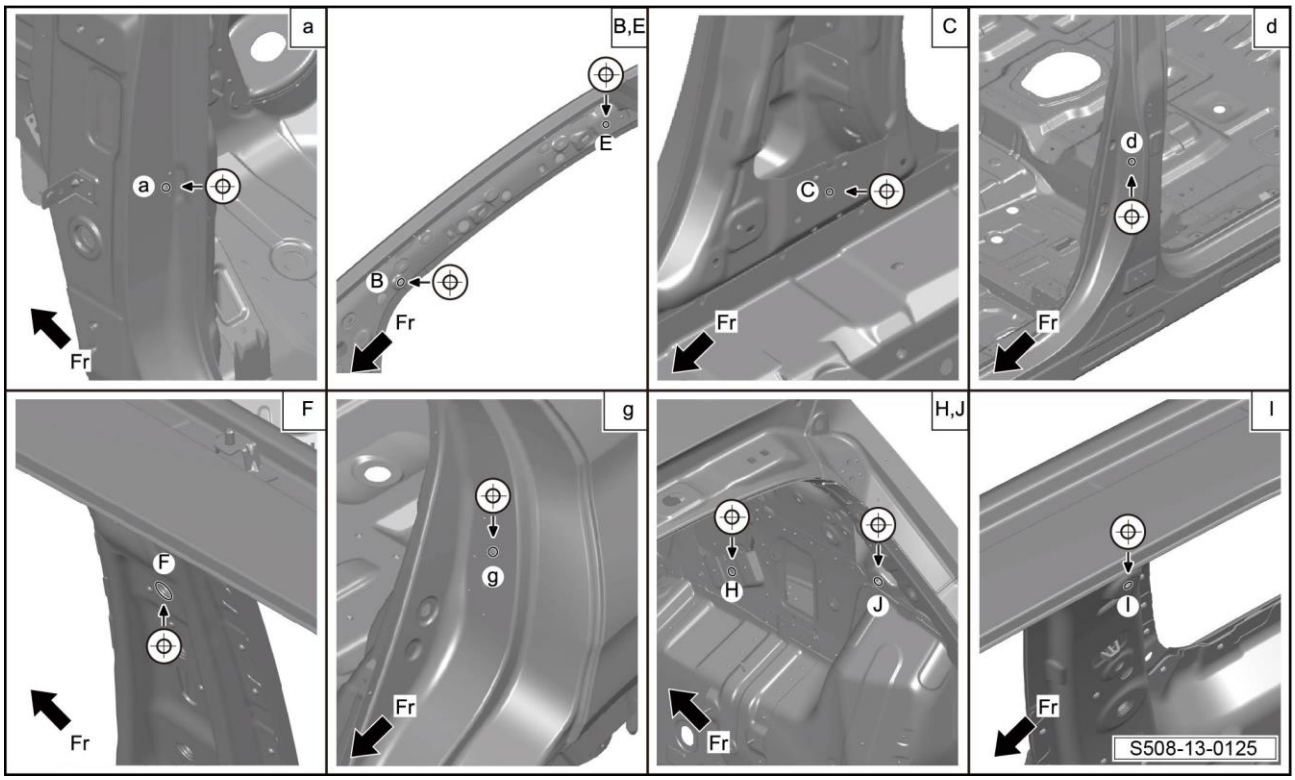
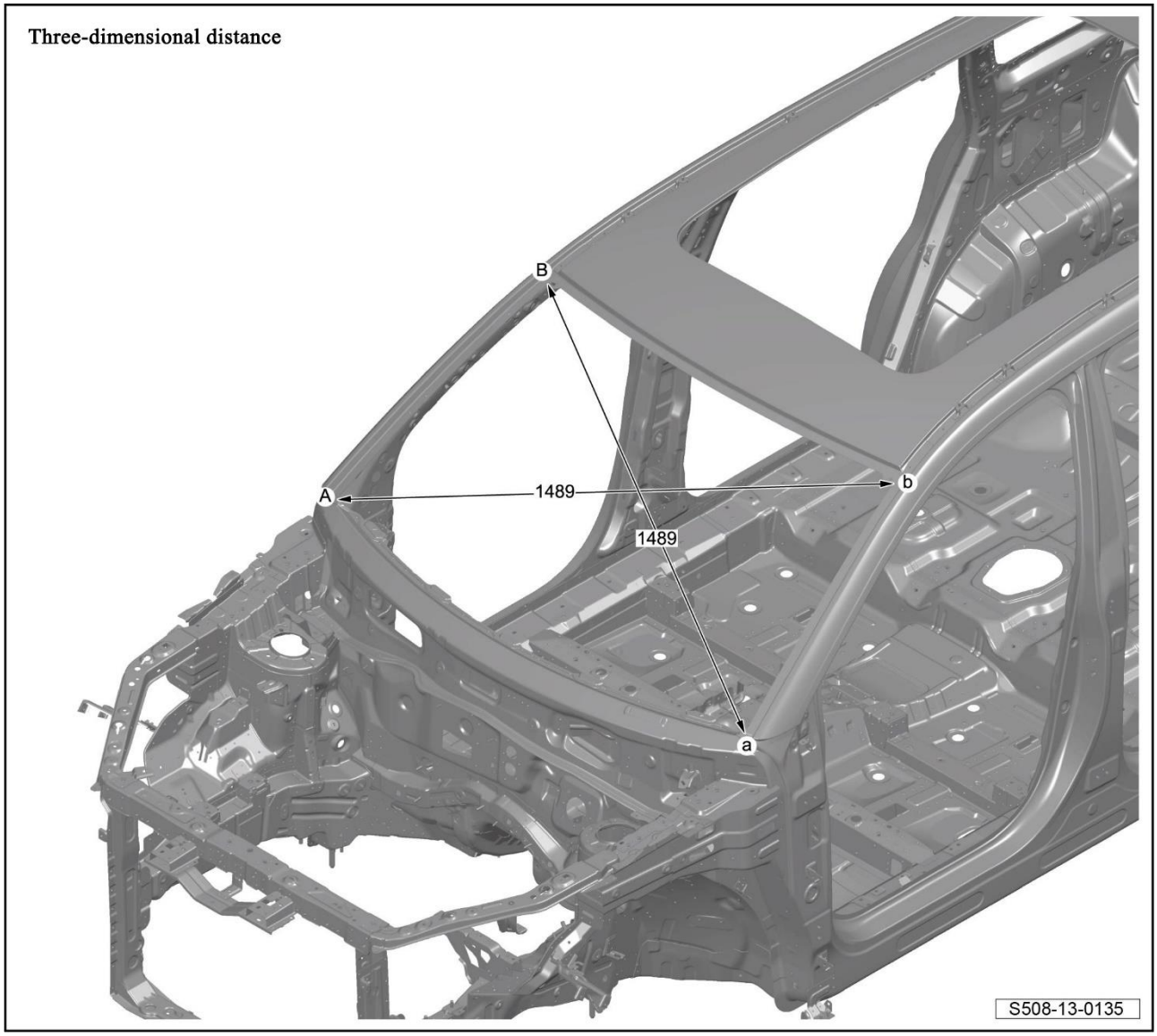


Point symbol	Description	Point symbol	Description
A, a	Mounting hole for front door checkstrap	B, b	Mounting hole of A-pillar inner trim panel
C, c	Mounting hole for front seat belt	D, d	Mounting hole of door lock catch
E, e	Mounting hole of A-pillar inner trim panel	F, f	Mounting hole for front seat belt height adjuster
G, g	Mounting hole of door lock catch	H, h	Second-row seat belt mounting hole
I, i	Mounting hole of C-pillar inner trim panel	J, j	Third-row seat belt mounting hole

Front windshield



Description

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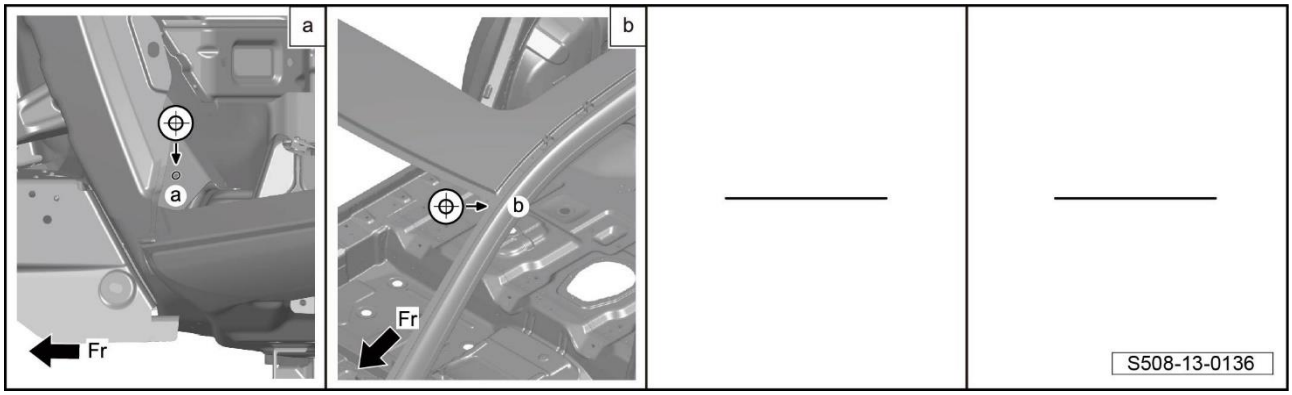
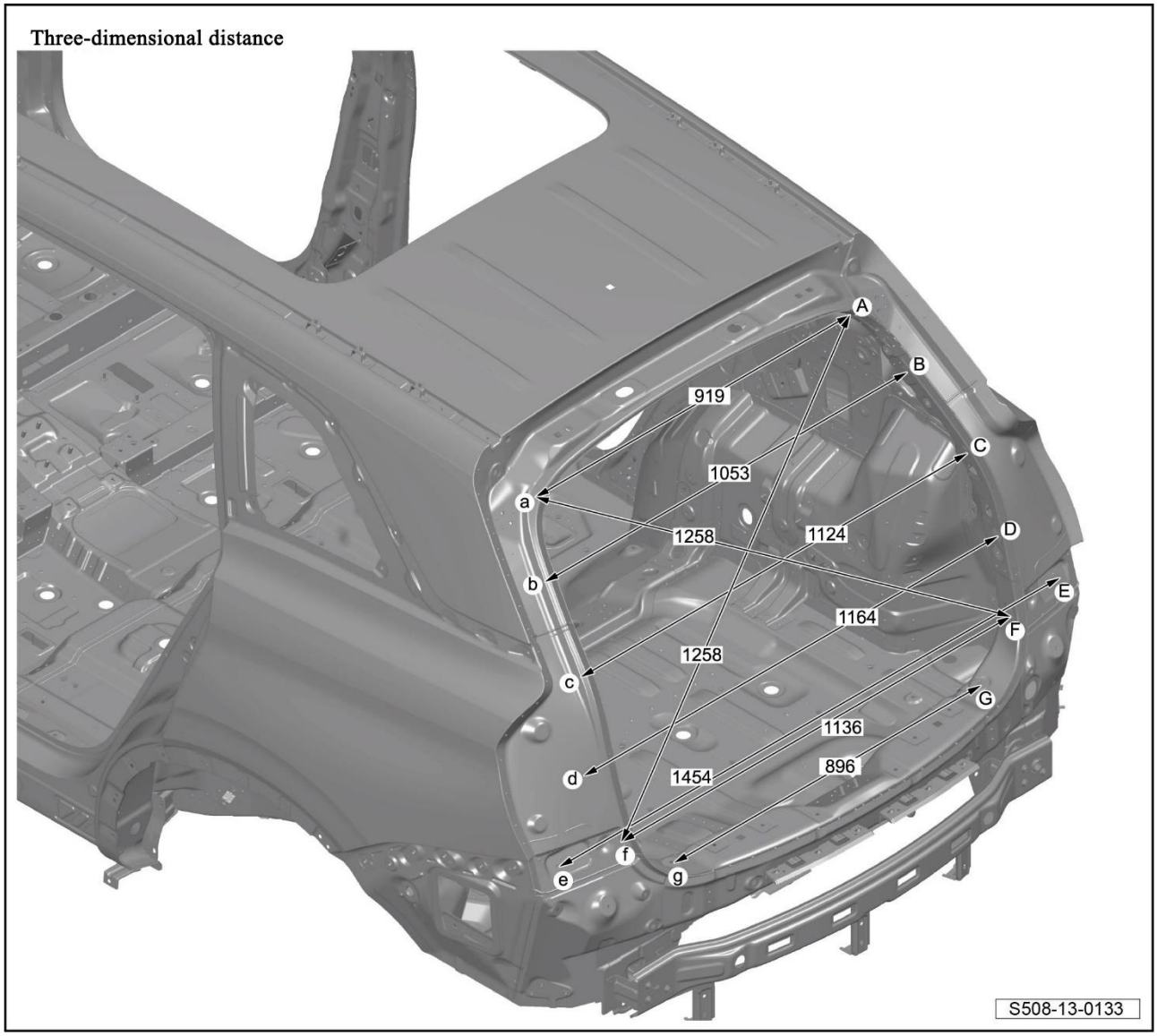


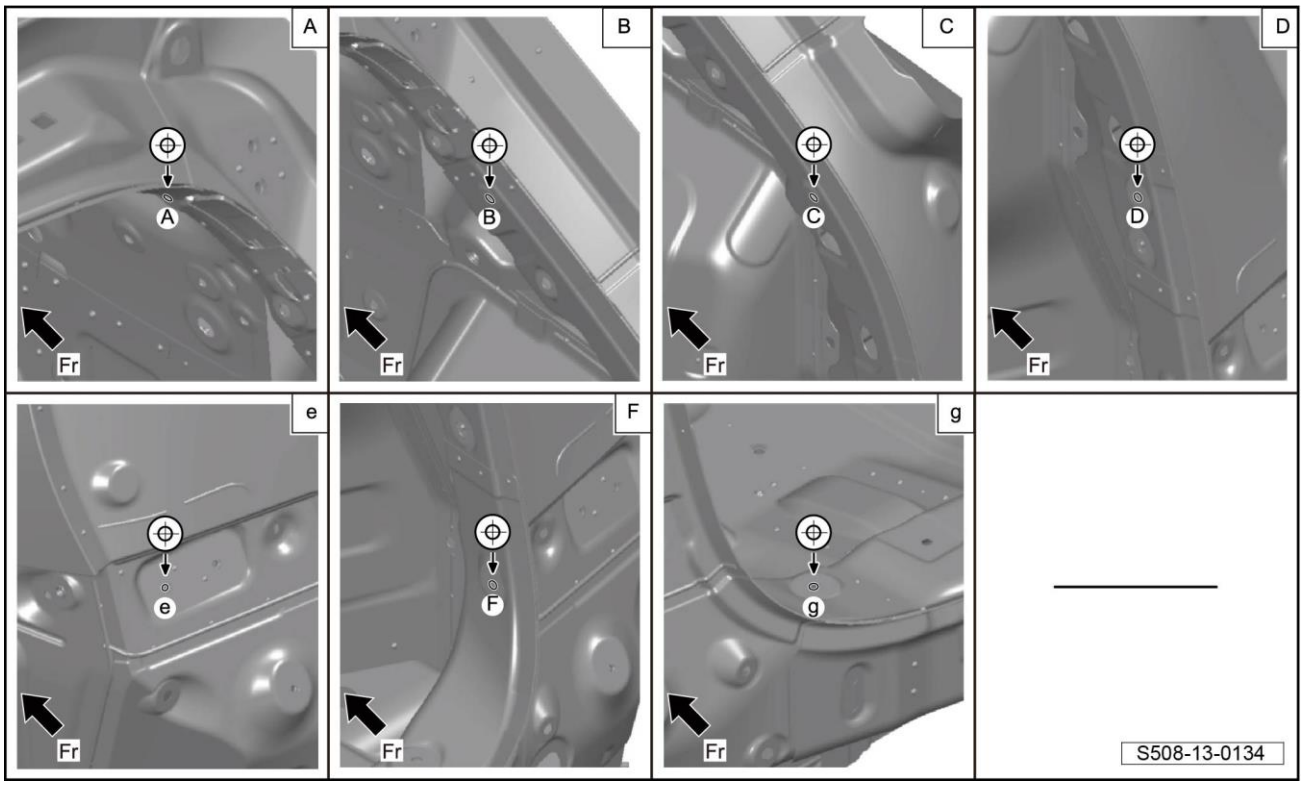
Point symbol	Description	Point symbol	Description
A, a	Front windshield pitch	B, b	Front windshield pitch

Rear body

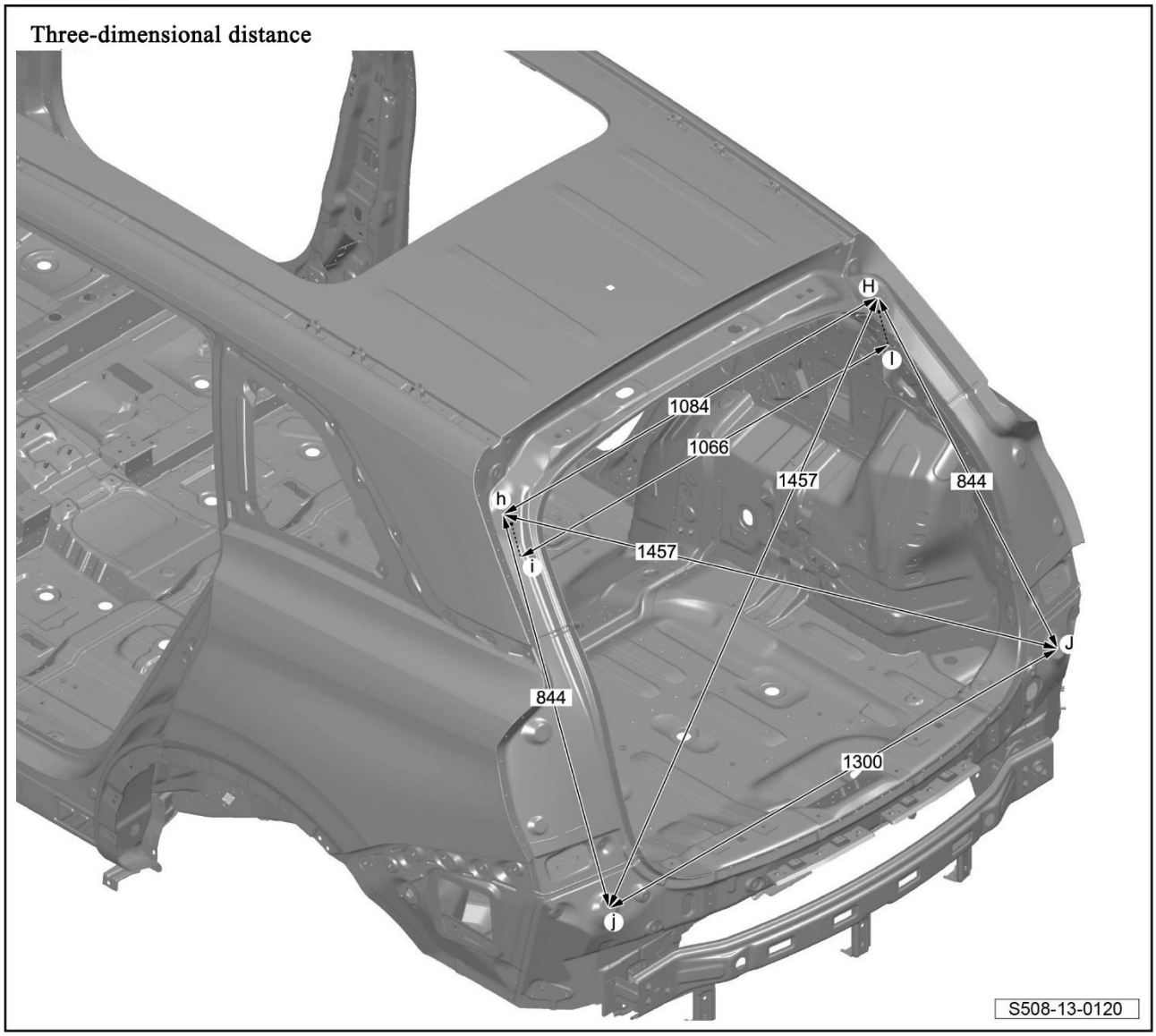


Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).



Point symbol	Description	Point symbol	Description
A, a	Mounting hole of C-pillar upper trim panel	B, b	Mounting hole of C-pillar upper trim panel
C, c	Mounting hole of C-pillar lower trim panel	D, d	Mounting hole of C-pillar lower trim panel
E, e	Mounting hole for rear bumper	F, f	Mounting hole of C-pillar lower trim panel
G, g	Mounting hole for lift gate sill trim panel	—	—



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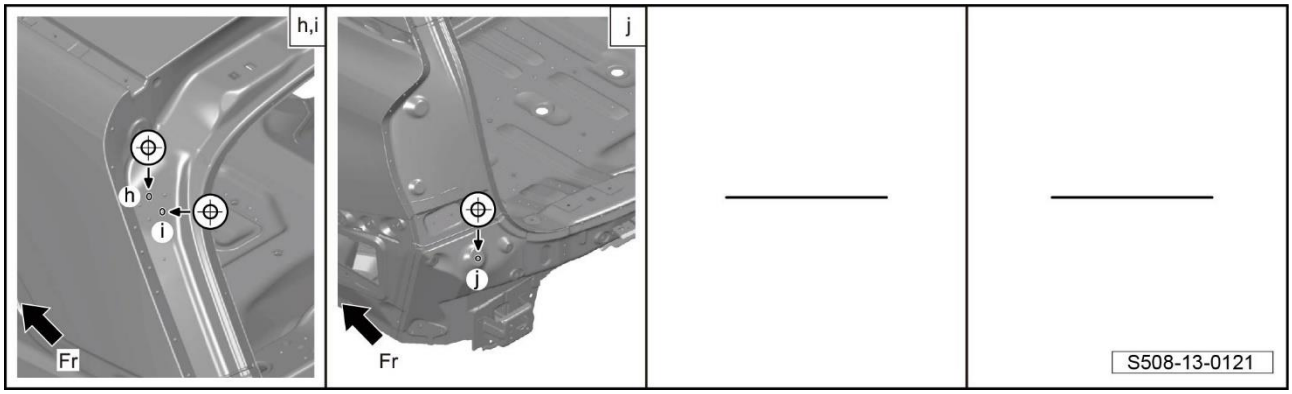
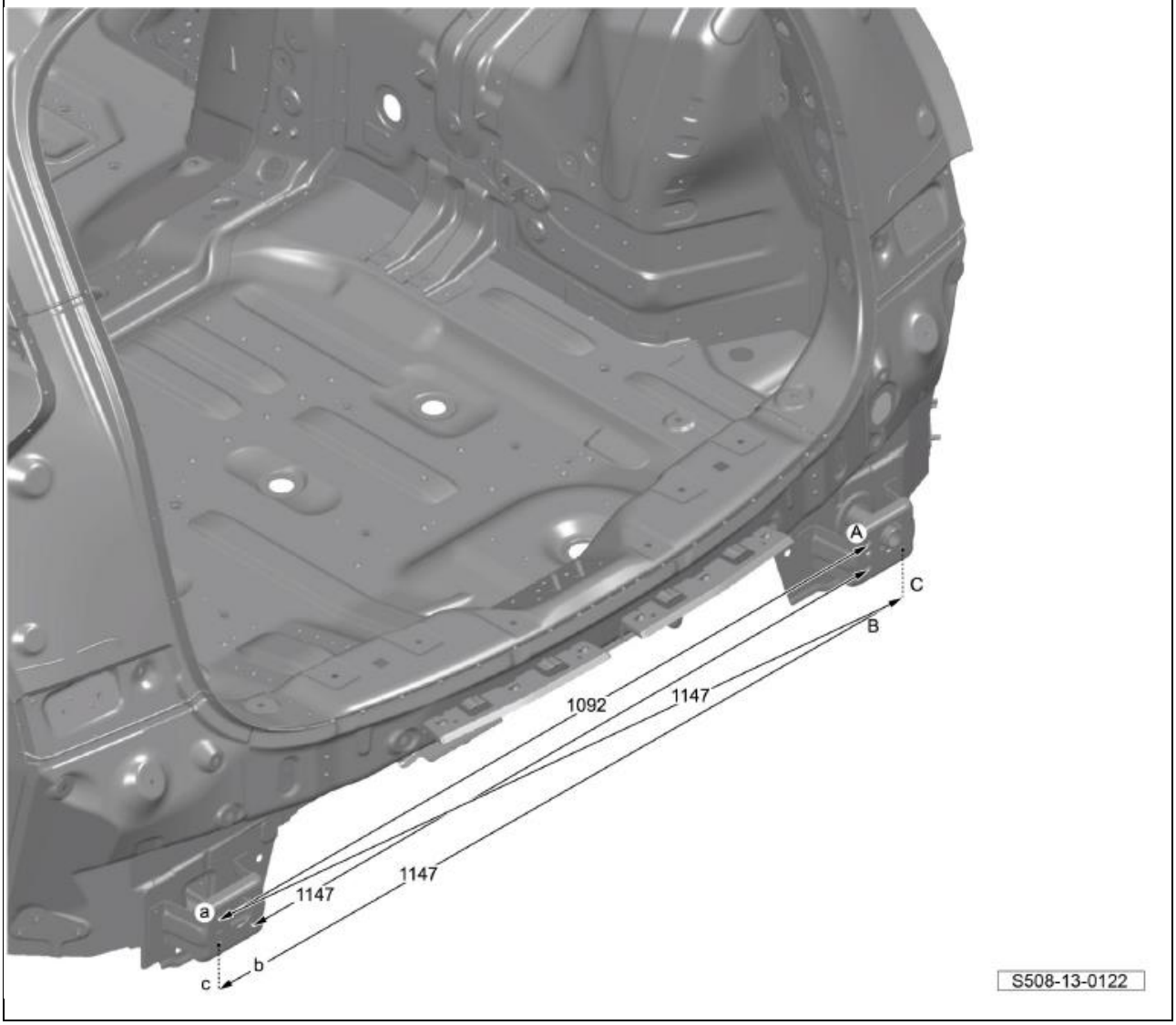


Point symbol	Description	Point symbol	Description
A, a	Lift gate gas spring upper bracket mounting hole	I, i	Lift gate gas spring upper bracket mounting hole

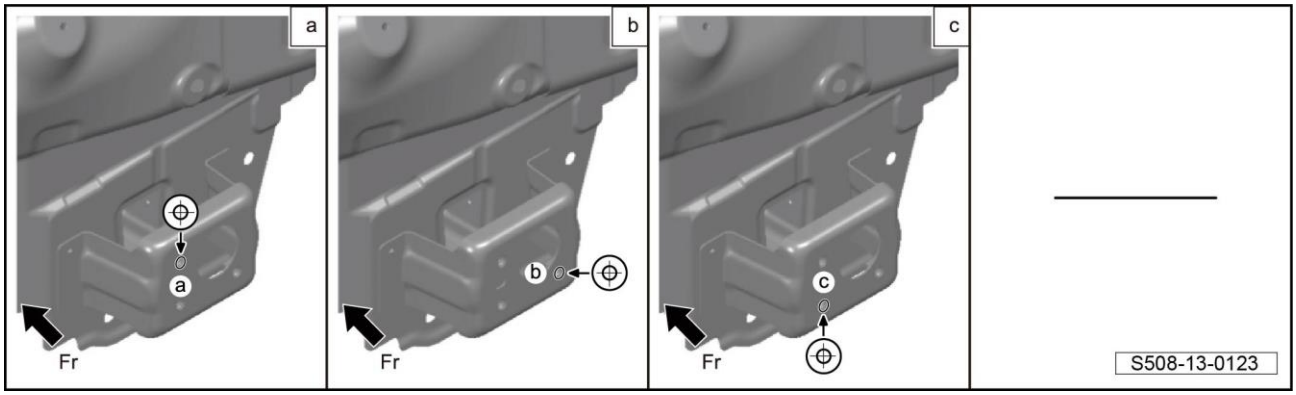
C, c	Mounting hole for rear bumper	—	—

Three-dimensional distance



Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).

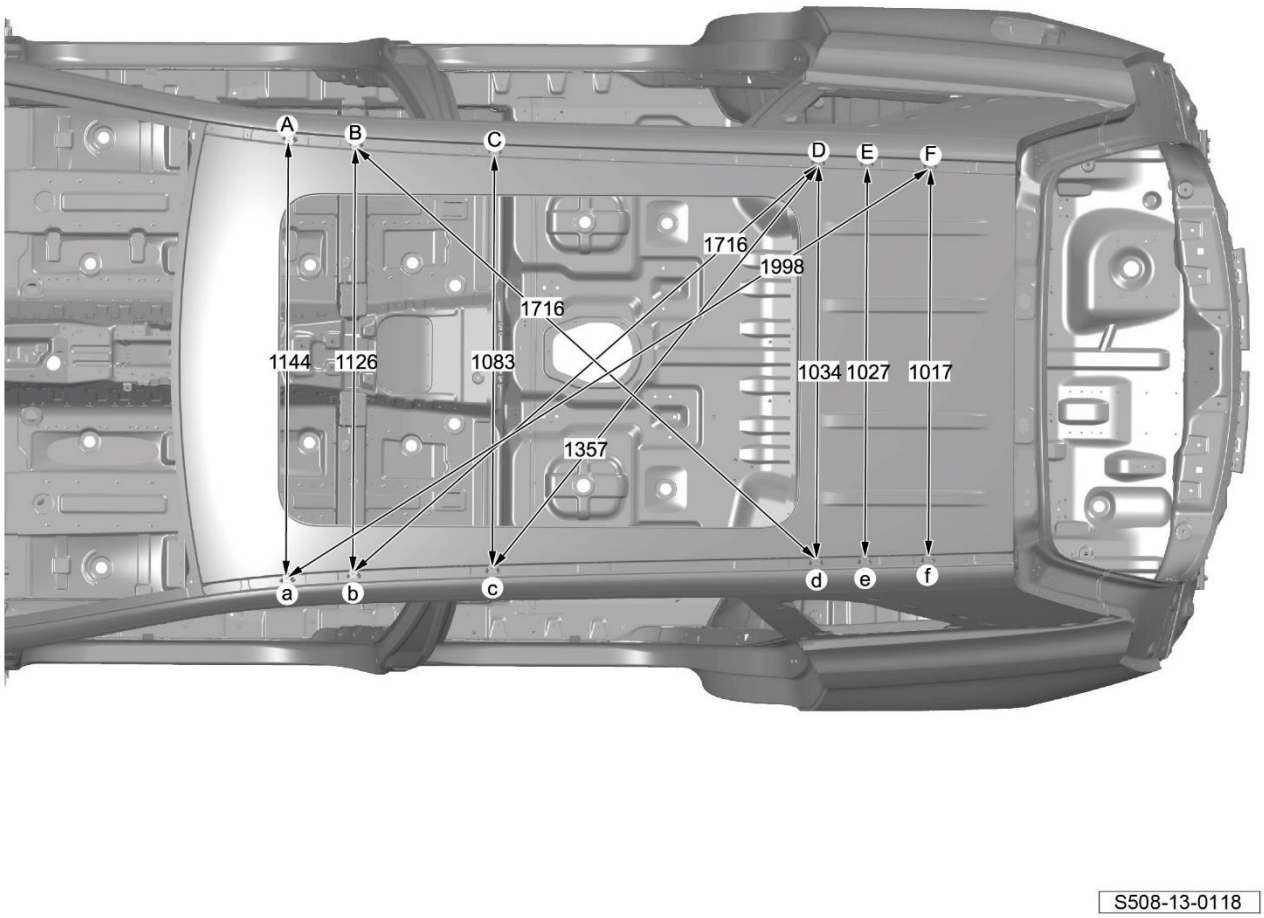


Point symbol	Description	Point symbol	Description
A, a	Mounting hole of rear anti-collision beam	B, b	Mounting hole of rear anti-collision beam

C, c	Mounting hole of rear anti-collision beam	—	—

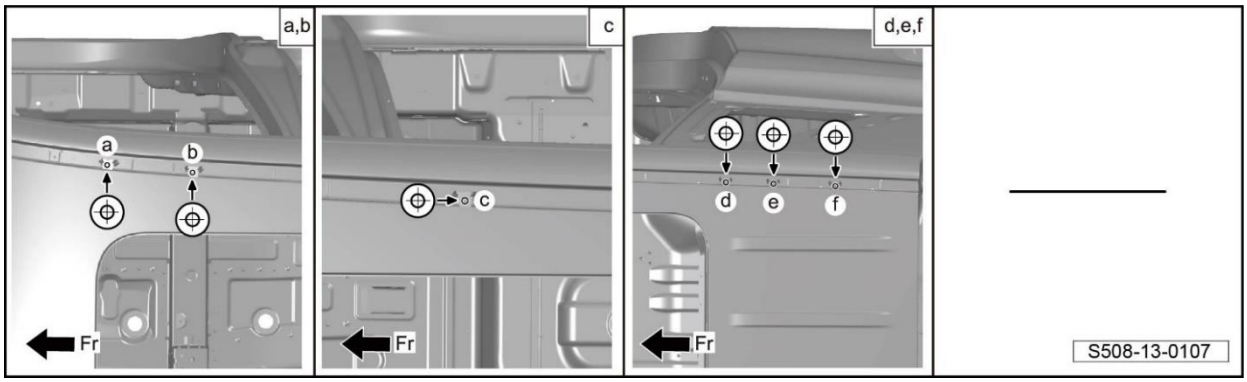
Body roof (panoramic sunroof)

Three-dimensional distance



Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).

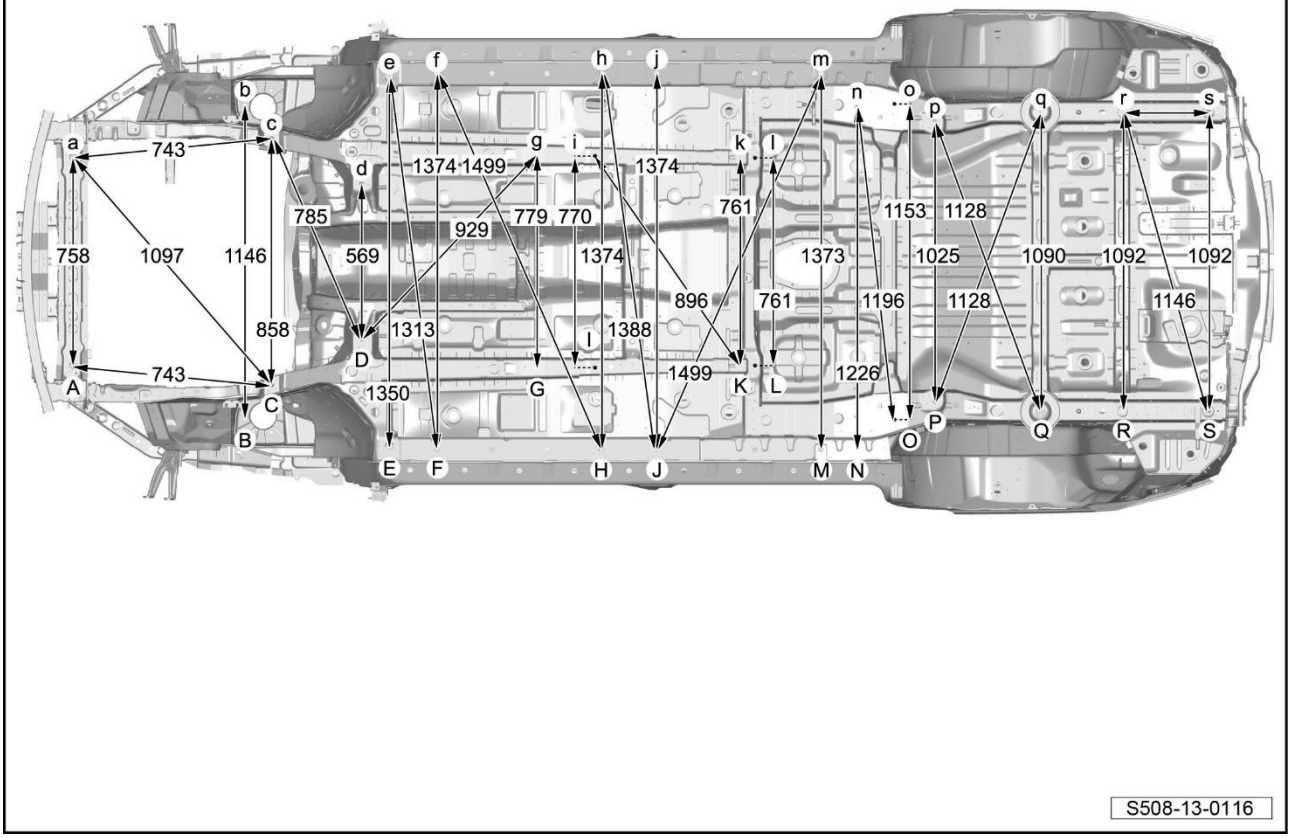


Point symbol	Description	Point symbol	Description
A, a	Roof trim strip mounting hole	B, b	Roof trim strip mounting hole
C, c	Roof trim strip mounting hole	D, d	Roof trim strip mounting hole

E, e	Roof trim strip mounting hole	F, f	Roof trim strip mounting hole

Underbody (3D distance)

Three-dimensional distance

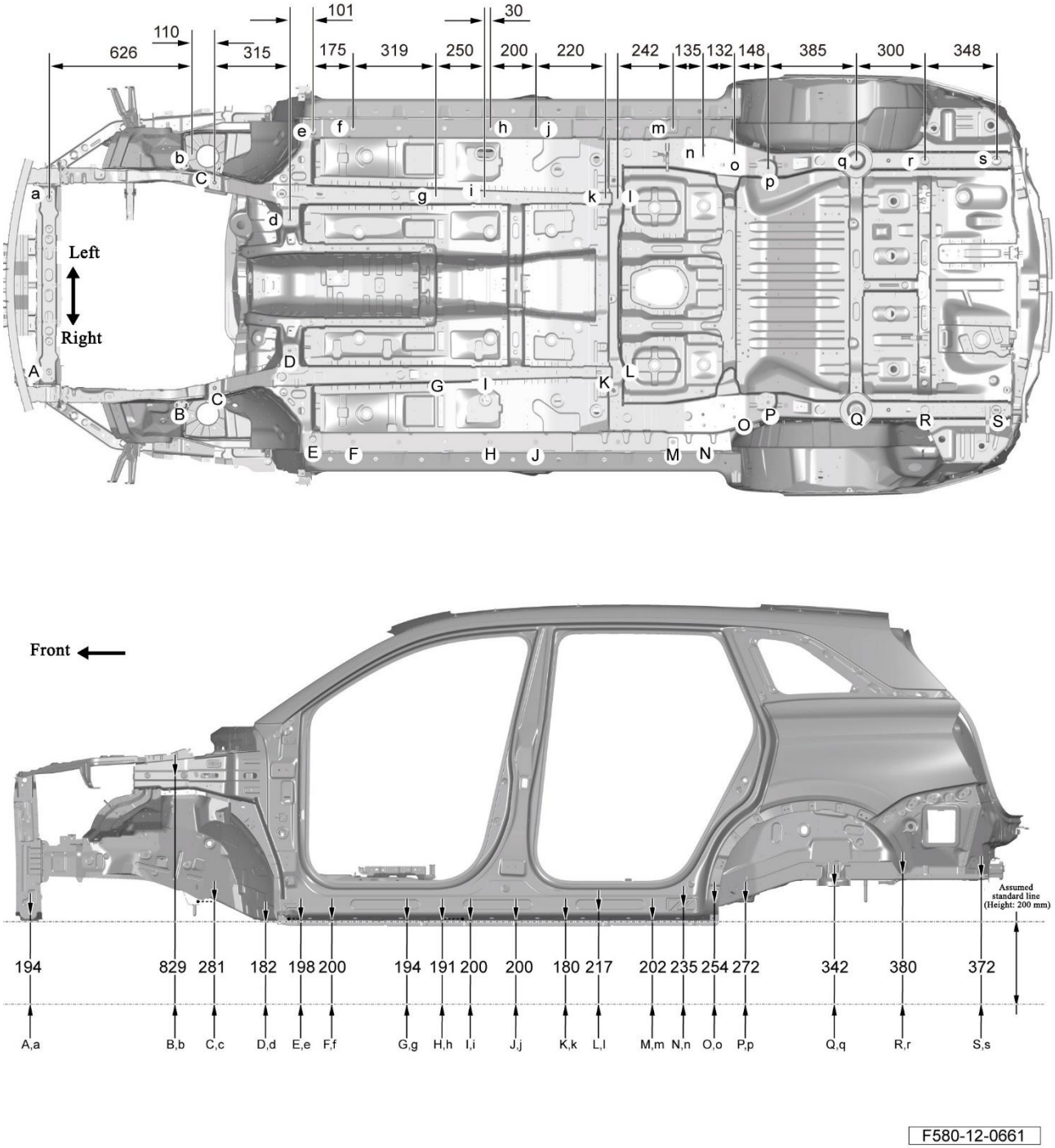


Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).

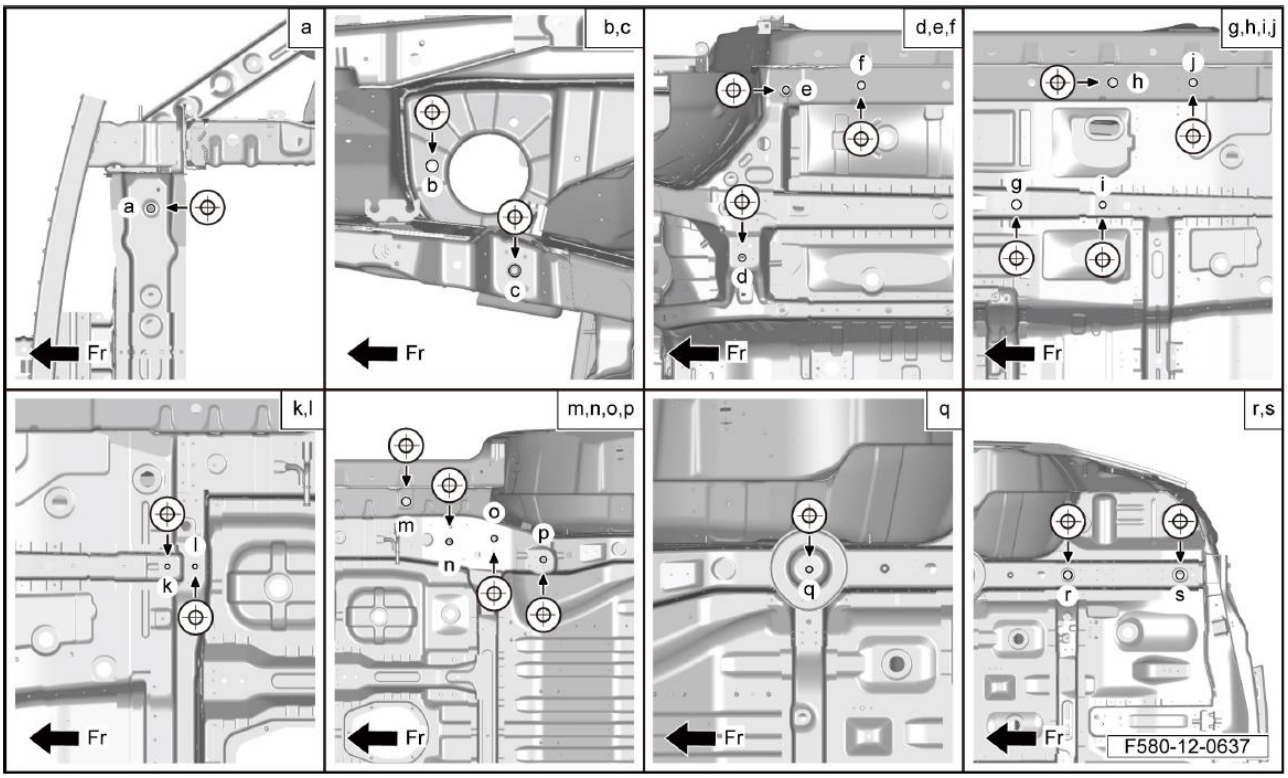
Underbody (2D distance)

Two-dimensional distance



Description

The capital letters indicate the right side of the vehicle and the lowercase letters indicate the left side (view from the rear end of vehicle to the front).



Point symbol	Description	Point symbol	Description
A, a	Front lower crossmember mounting hole	B, b	Mounting hole for front damper assembly
C, c	Mounting hole for front subframe	D, d	Mounting hole for front subframe
E, e	Process hole of inner sill beam	F, f	Process hole for inner panel of side sill of front floor
G, g	Process hole for rear plate of longitudinal beam of front engine compartment	H, h	Process hole for inner panel of side sill of front floor
I, i	Process hole for rear plate of longitudinal beam of front engine compartment	J, j	Process hole for inner panel of side sill of front floor
K, k	Process hole for rear plate of longitudinal beam of front engine compartment	L, l	Fuel tank strap mounting hole
M, m	Process hole for inner panel of side sill of front floor	N, n	Mounting hole of inner bracket of rear trailing arm
O, o	Mounting hole of inner bracket of rear trailing arm	P, p	Mounting hole of inner bracket of rear trailing arm
Q, q	Mounting process hole of rear coil spring	R, r	Process hole for rear longitudinal beam
S, s	Process hole for rear longitudinal beam	—	—

10.2.3 Sealing and anti-corrosion specifications

10.2.3.1 Note on sealing and anti-corrosion treatment

General Requirements and Instructions of Sealant Application for Body Sealing and Anti-Corrosion

- The main function of the body sealing and anti-rust coating is to seal, preventing infiltration of liquid and impurities and increasing the body's resistance to corrosion.
- All the welds to be applied with sealant are indicated by thick lines. The indistinguishable welds to be applied with sealant are illustrated by sectional views.
- Application of sealant shall be continuous, complete and aesthetic and hold down the welds, without omissions.
- The performance of the sealant used must comply with relevant technical standards of materials.

During sealant application, the following items must be observed:

1 The sealant manufacturer's instructions shall be followed.

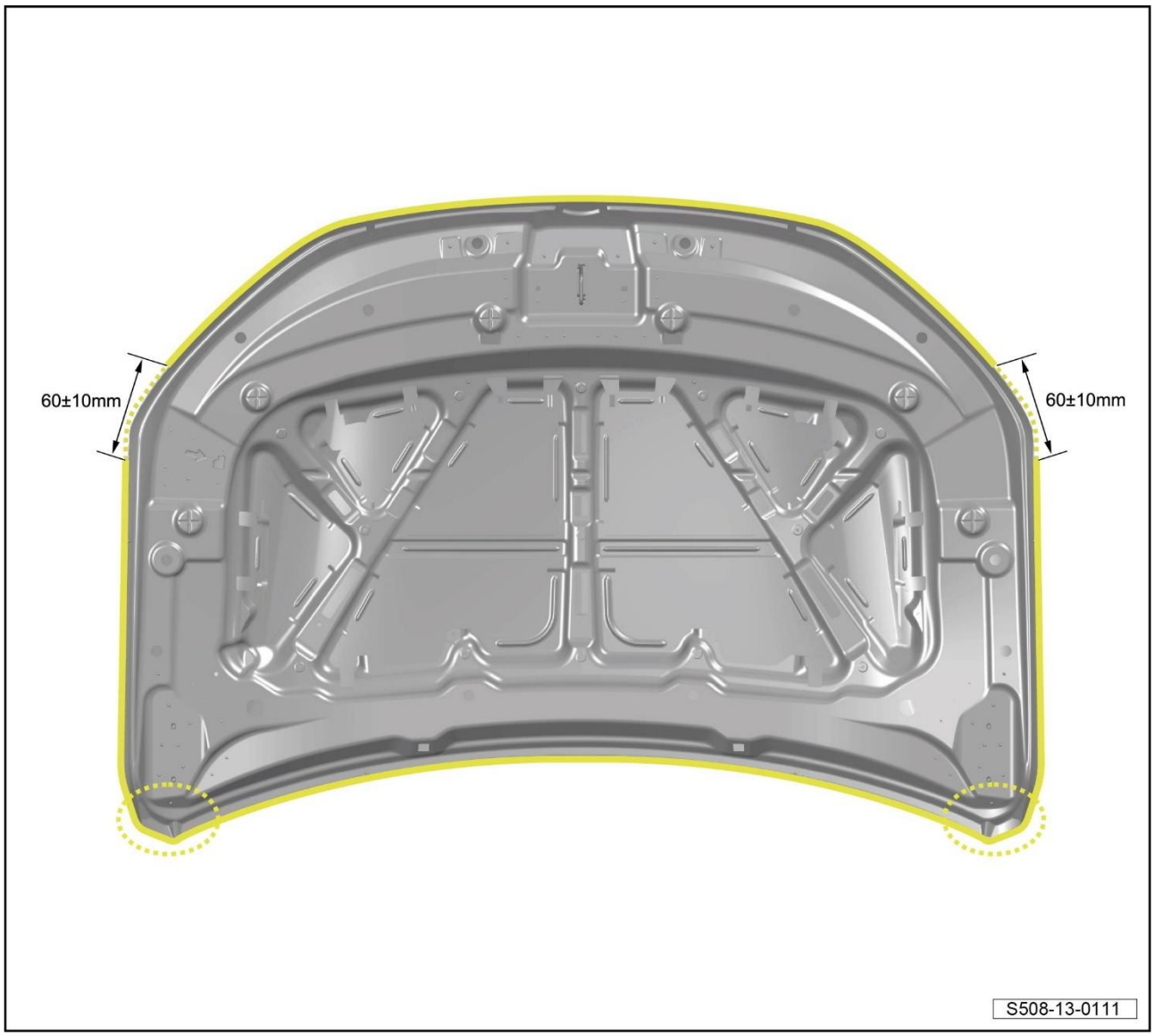
2 Before the weld sealant is applied, the area to be sealed shall be cleaned up with degreasant.

3 When the parts and components to be sealed are at a correct position, the sealant shall be visible.

4 When it is necessary to apply sealant to the areas such as the front engine compartment, front and rear floor holes and opening slots, the appearance of the sealant shall be as consistent as possible with the original ones.

10.2.3.2 Body front sealing area

Engine compartment gluing I



Requirements for sealant application:

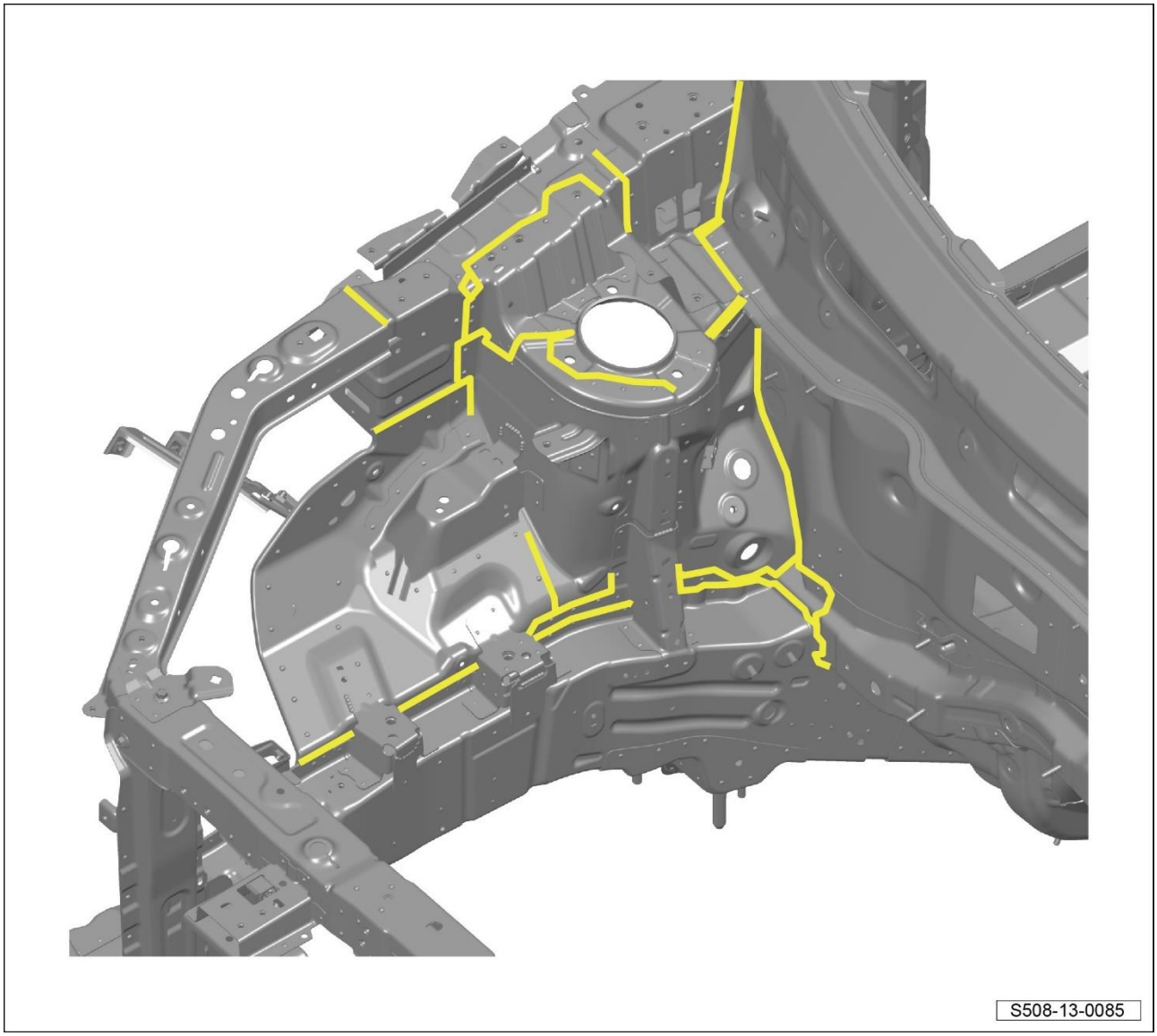
- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

Engine compartment gluing (left side)

Requirements for sealant application:

- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

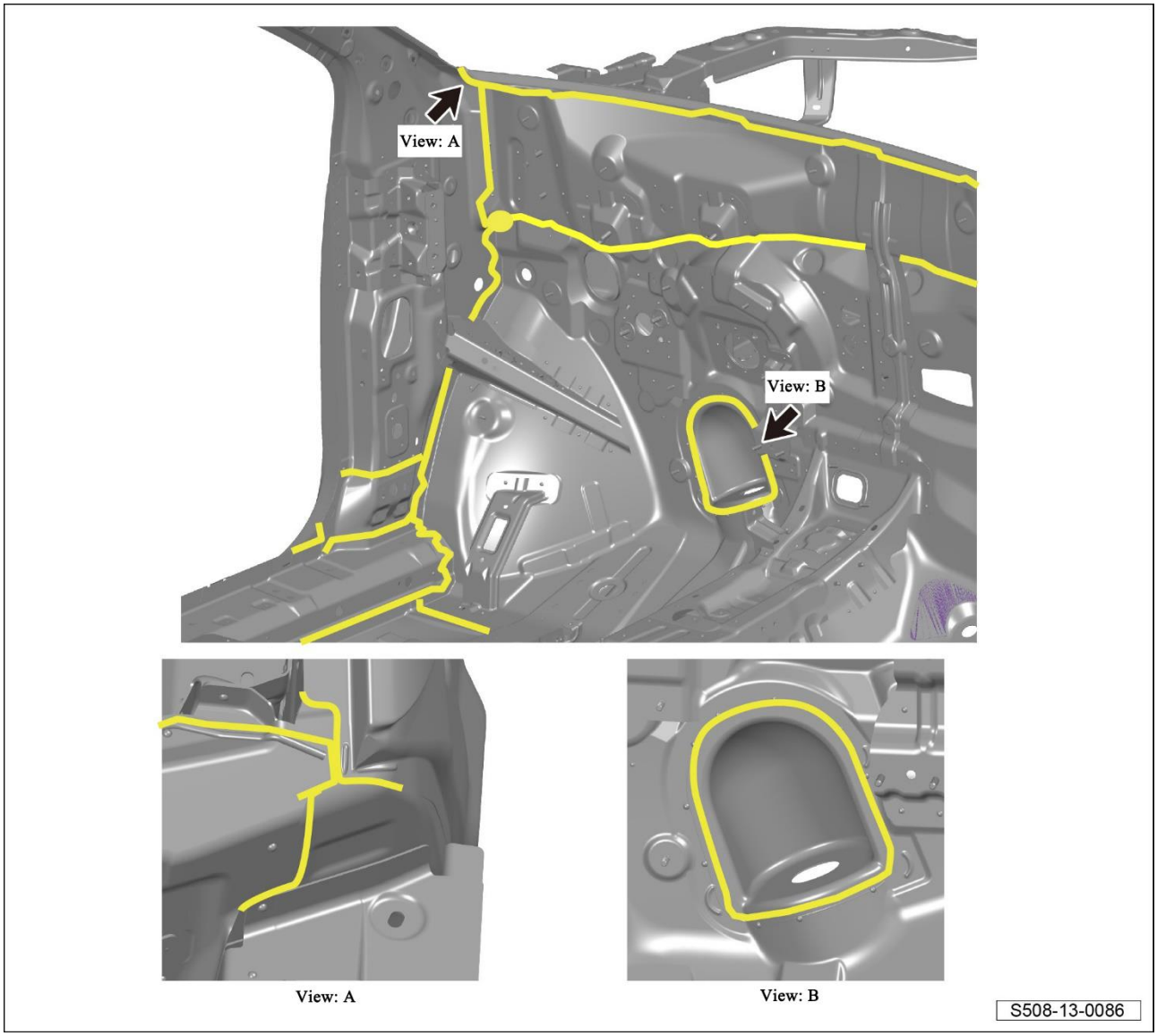
Engine compartment gluing (right side)



Requirements for sealant application:

- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

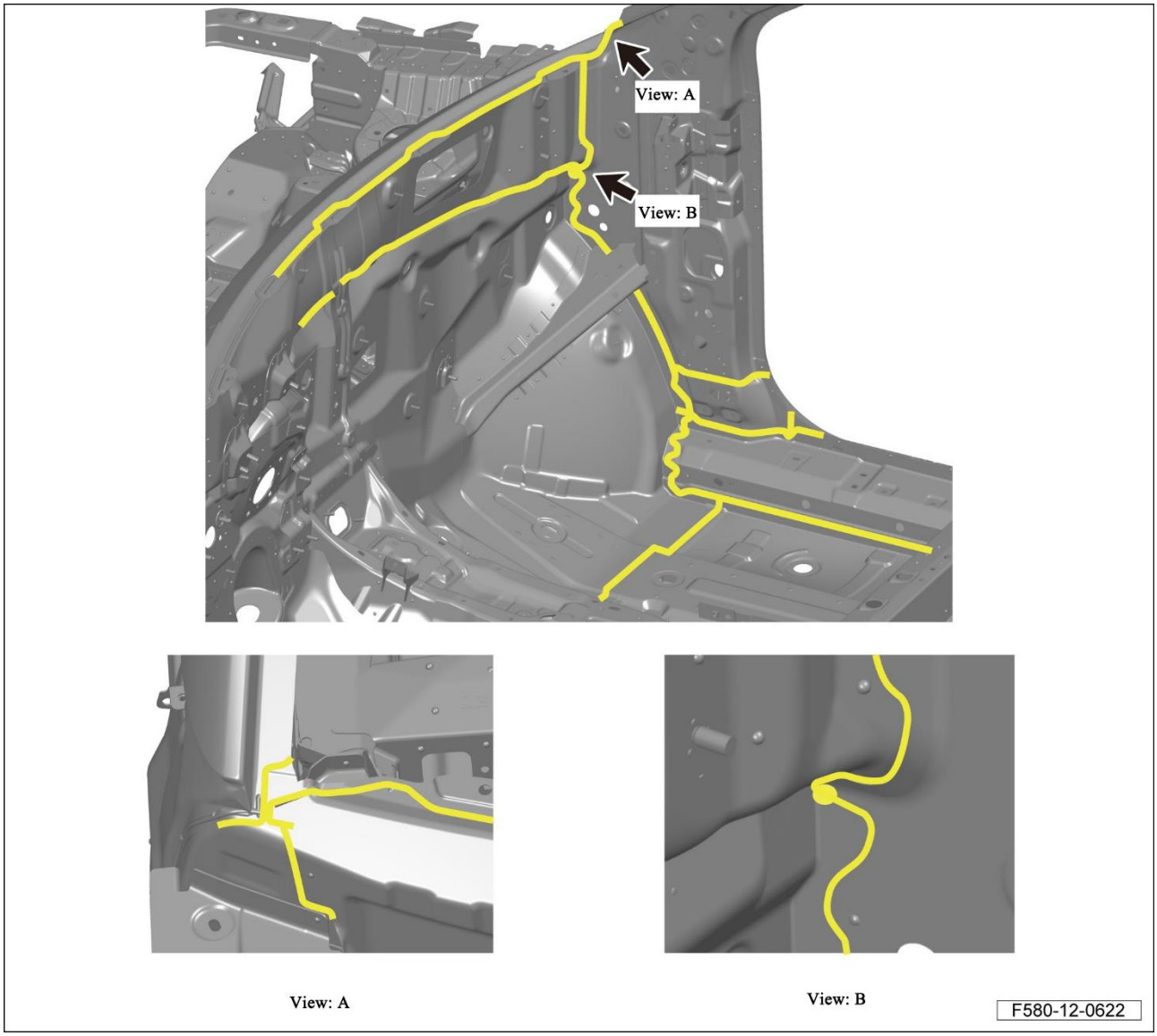
Sealant application on firewall



Requirements for sealant application:

- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

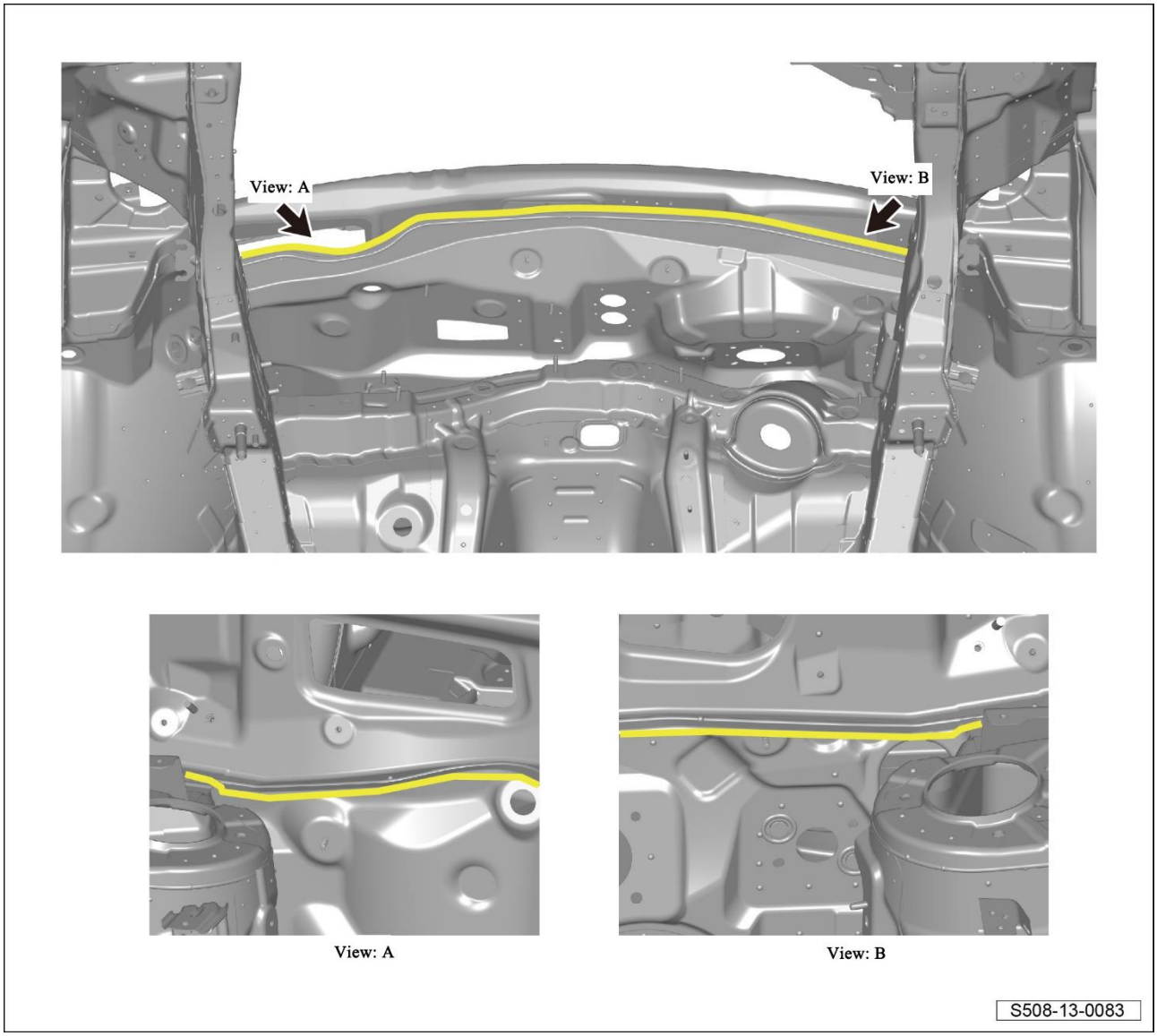
Sealant application on firewall



Requirements for sealant application:

- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

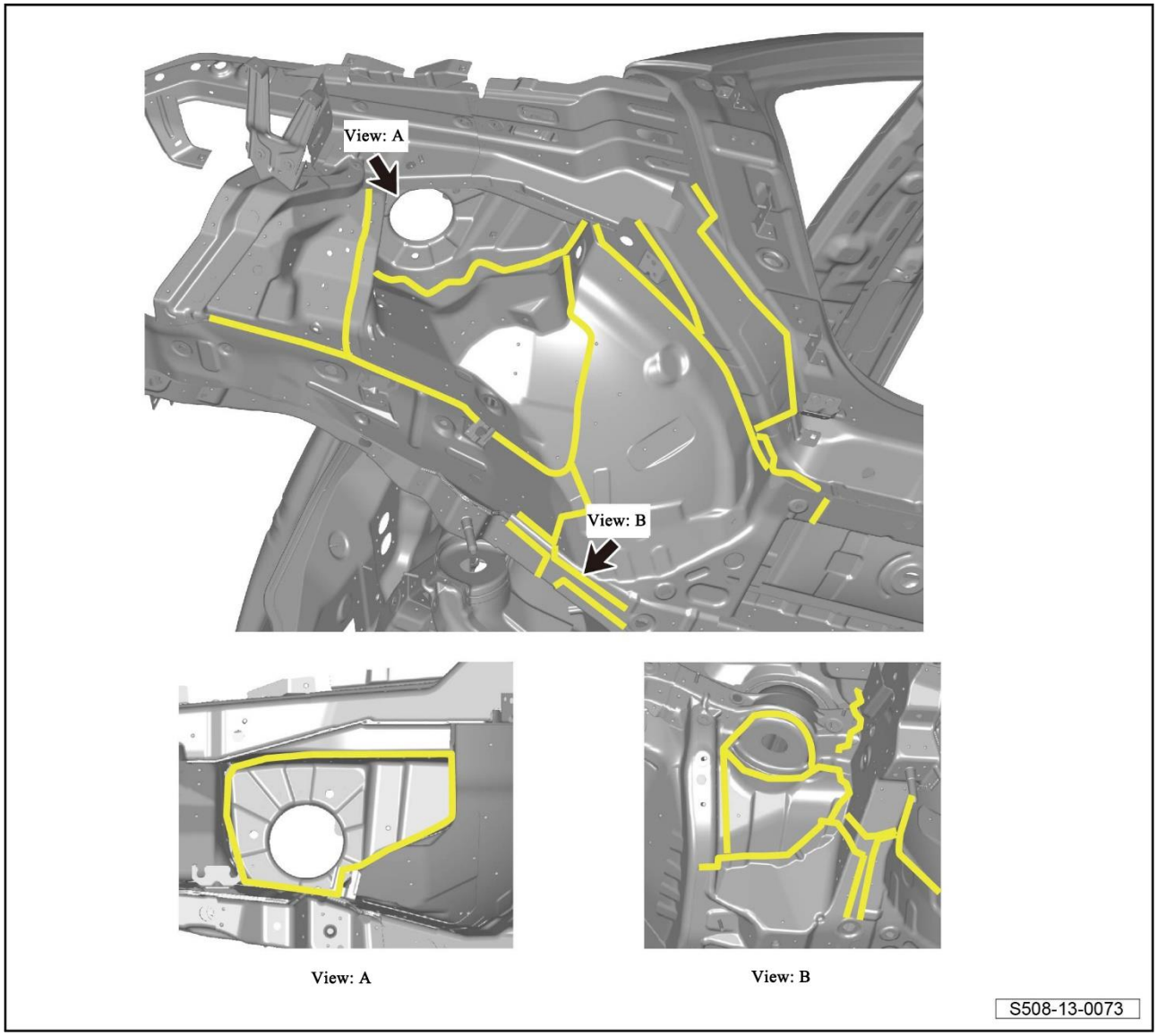
Air chamber outer panel gluing



Requirements for sealant application:

- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

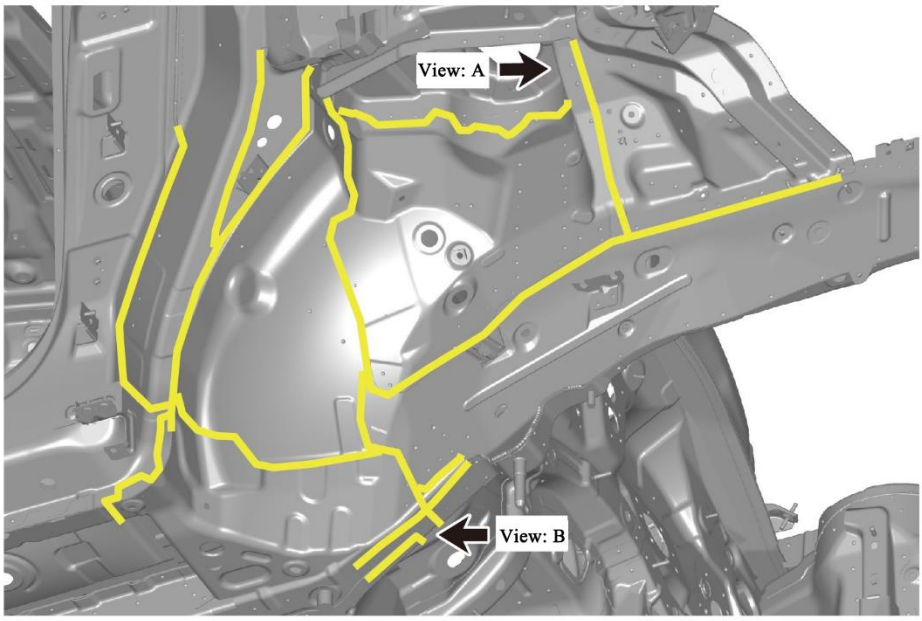
Front left wheel housing gluing

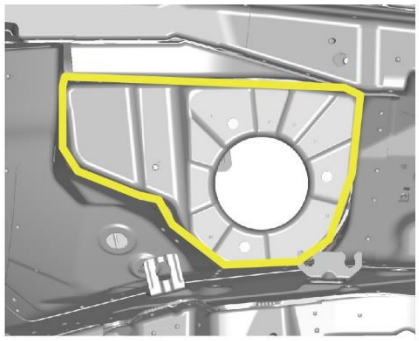


Requirements for sealant application:

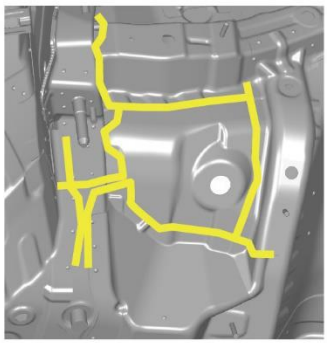
- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

Front right wheel housing gluing





View: A



View: B

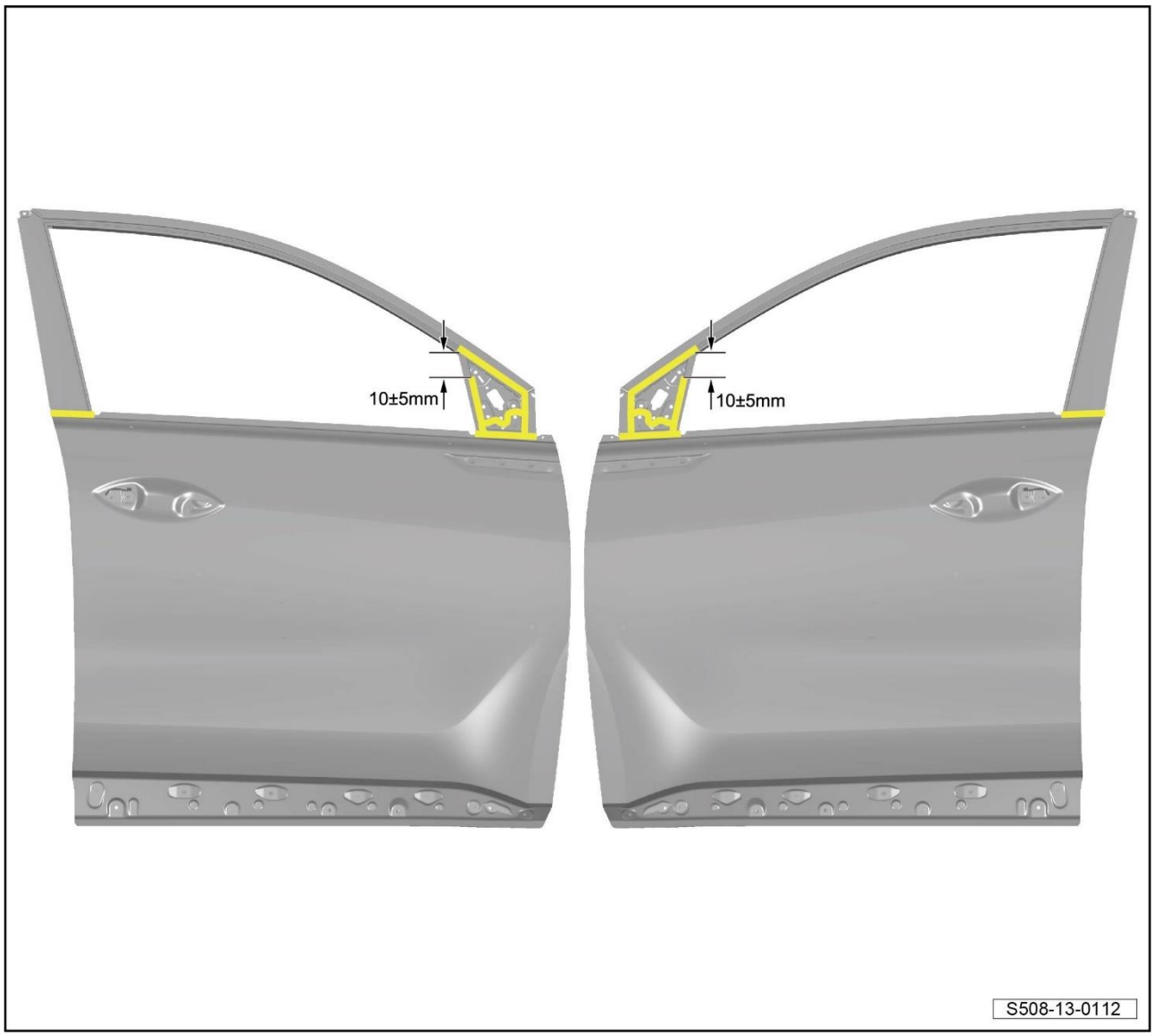
S508-13-0074

Requirements for sealant application:

- No sealant is allowed to be left at any position not indicated in the figure.
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.

10.2.3.3 Body middle sealing area

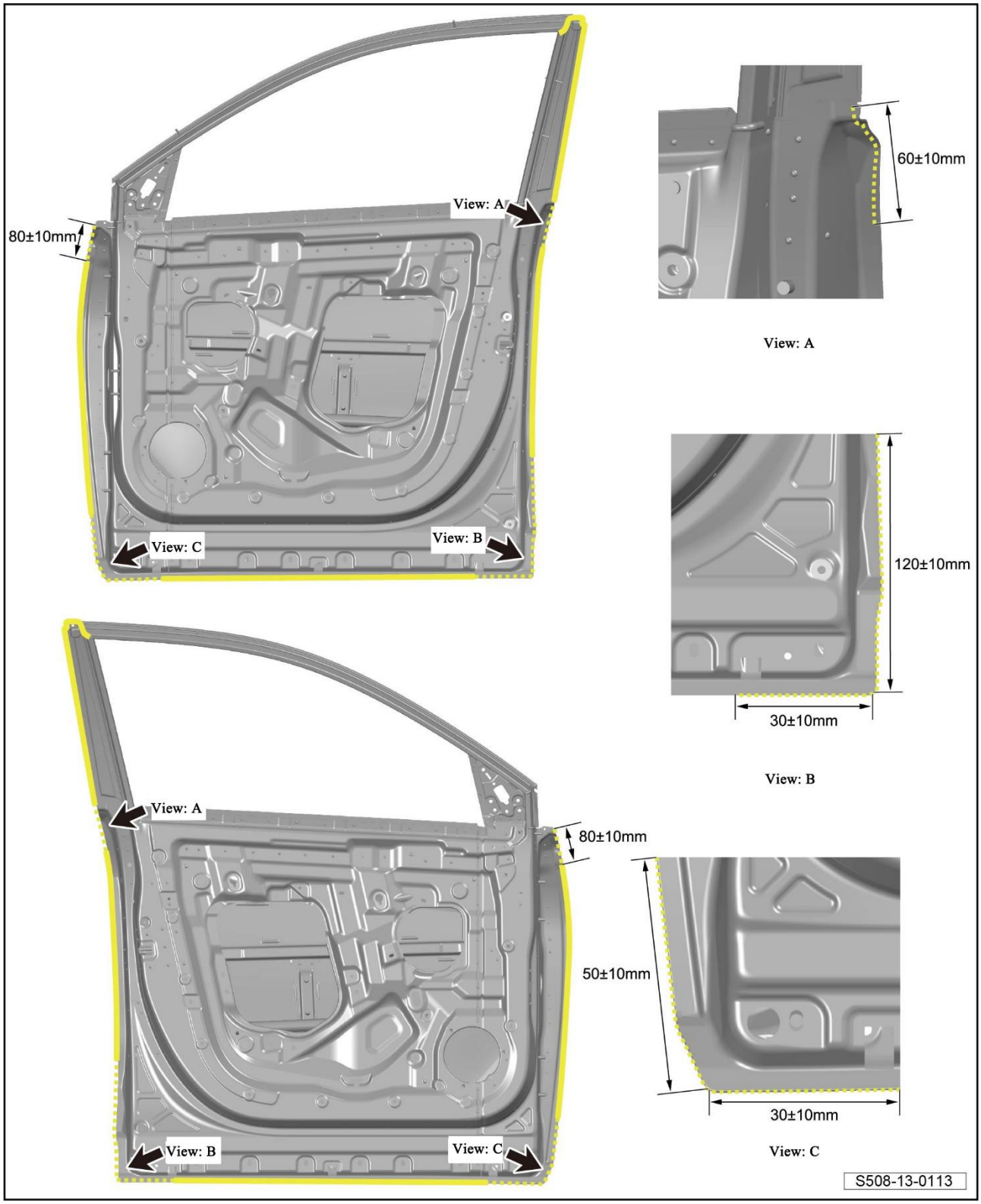
Sealant application on exterior part of front door



Requirements for sealant application:

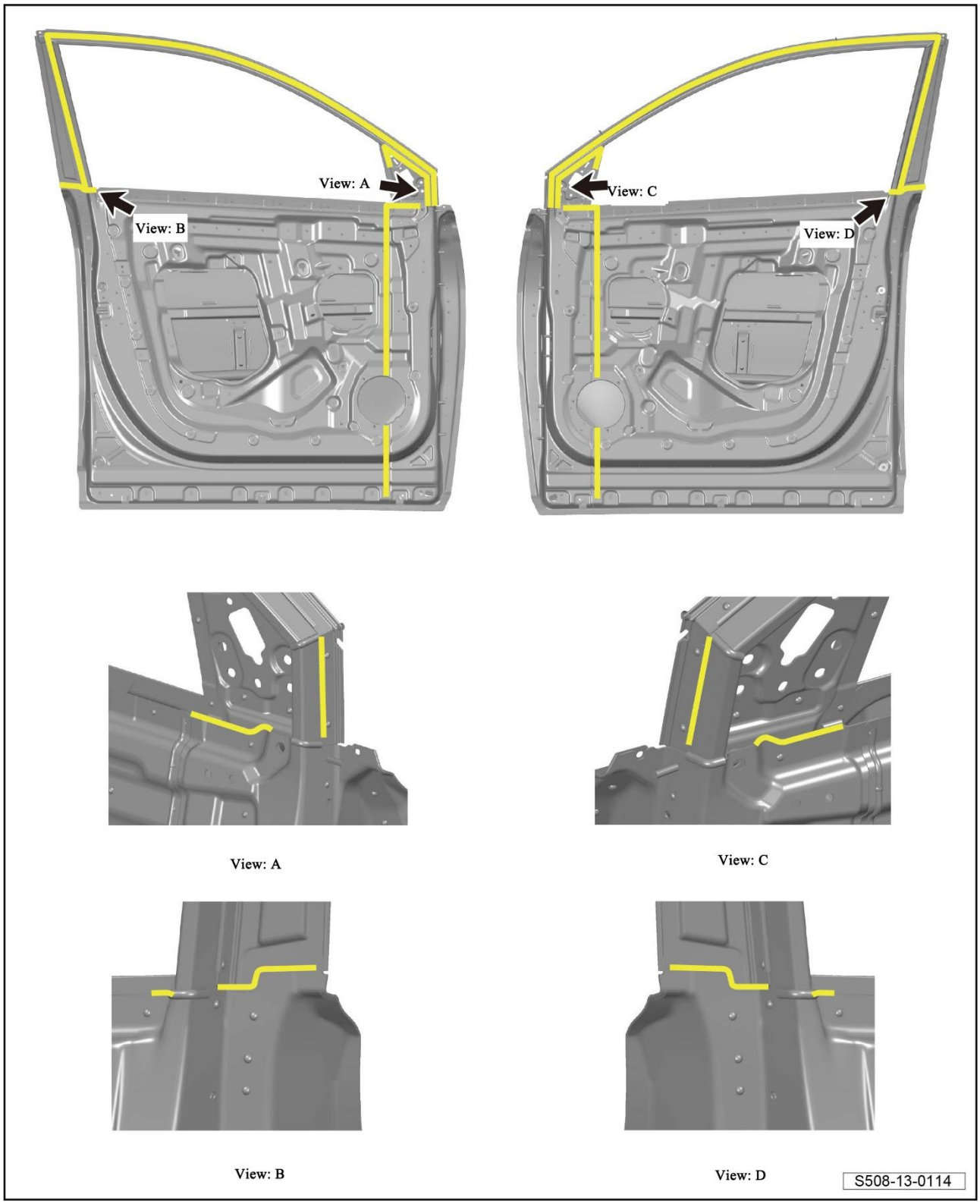
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

Sealant application on interior part of front door



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.



Requirements for sealant application:

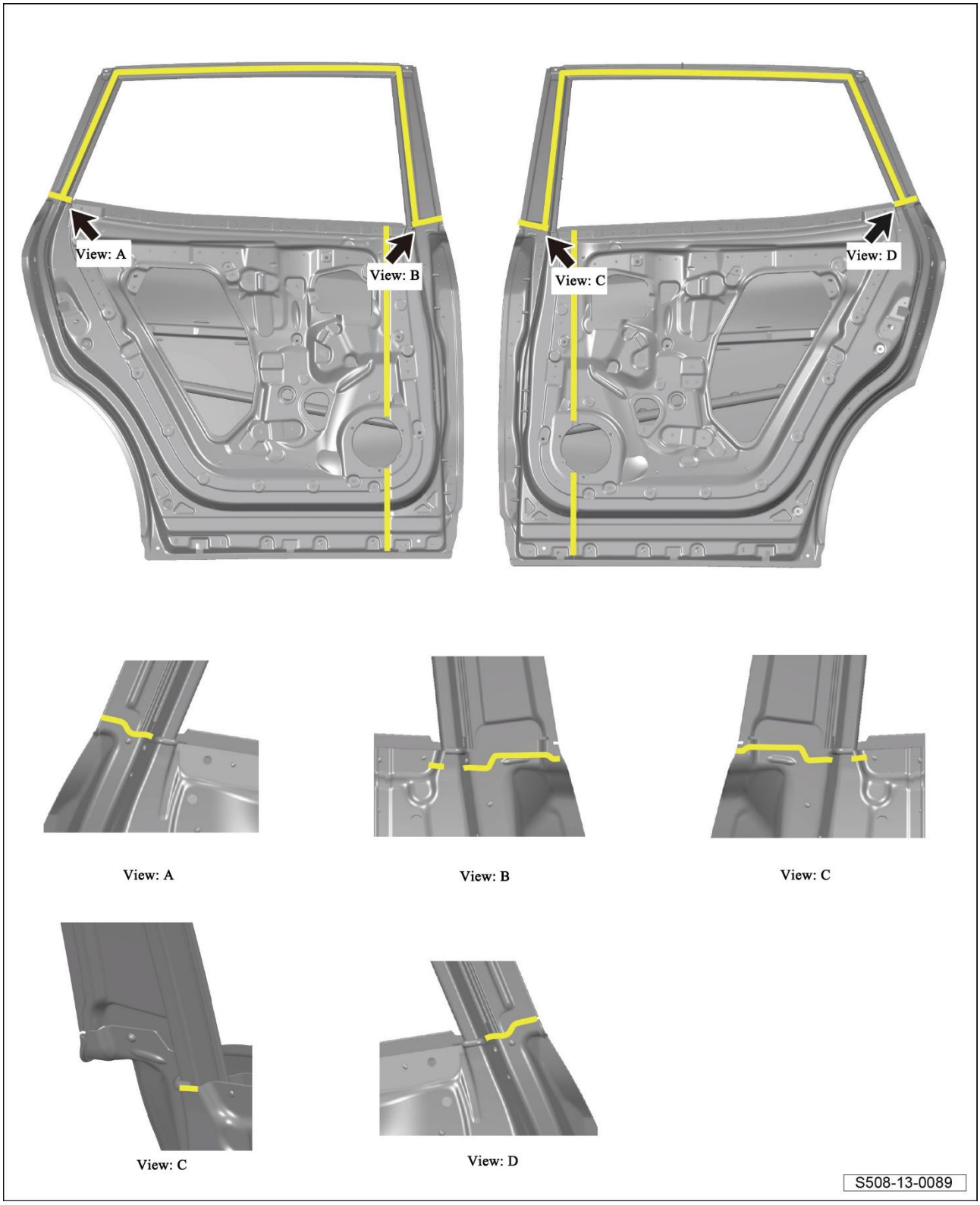
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

Sealant application on exterior part of rear door

Requirements for sealant application:

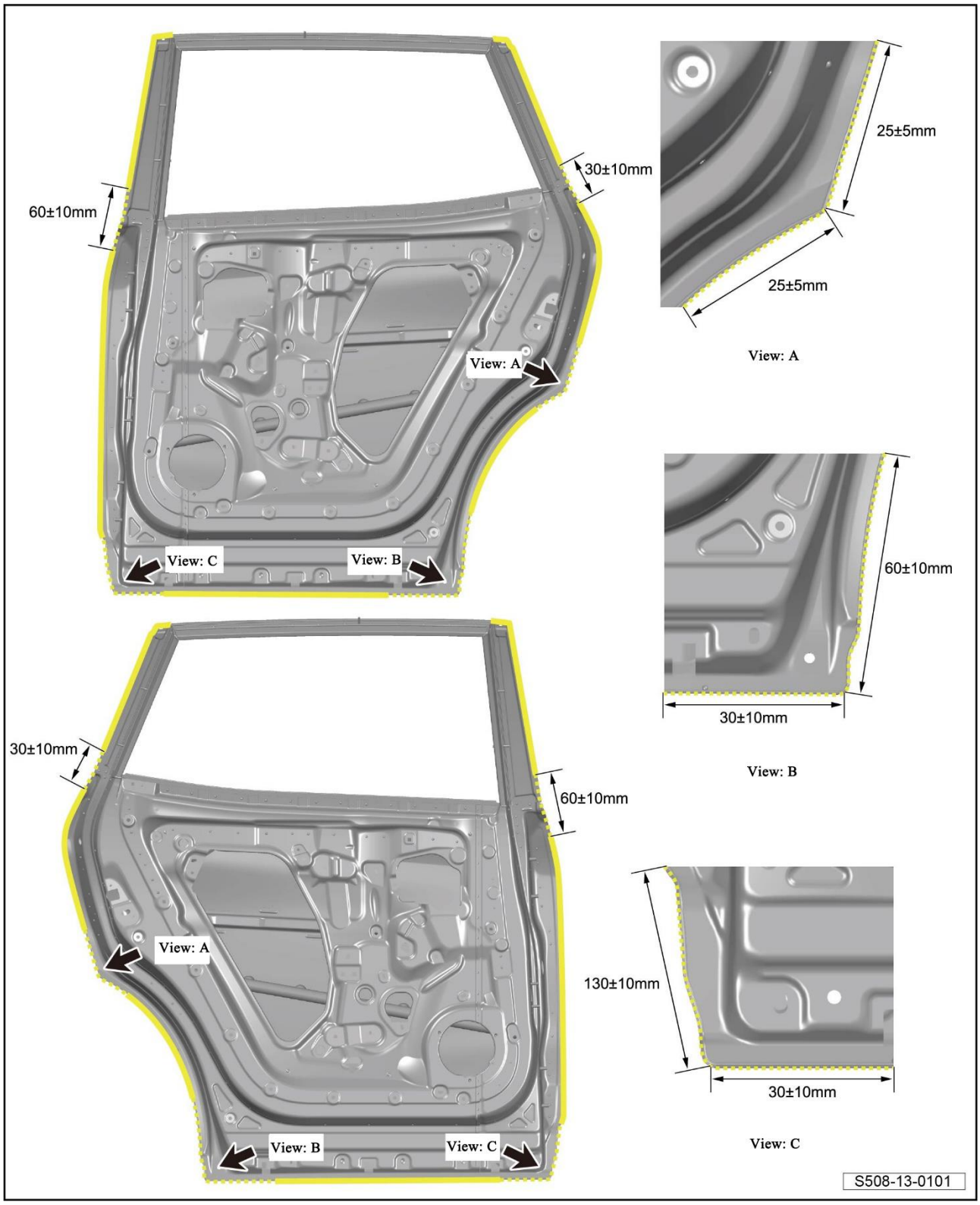
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

Sealant application on interior part of rear door



Requirements for sealant application:

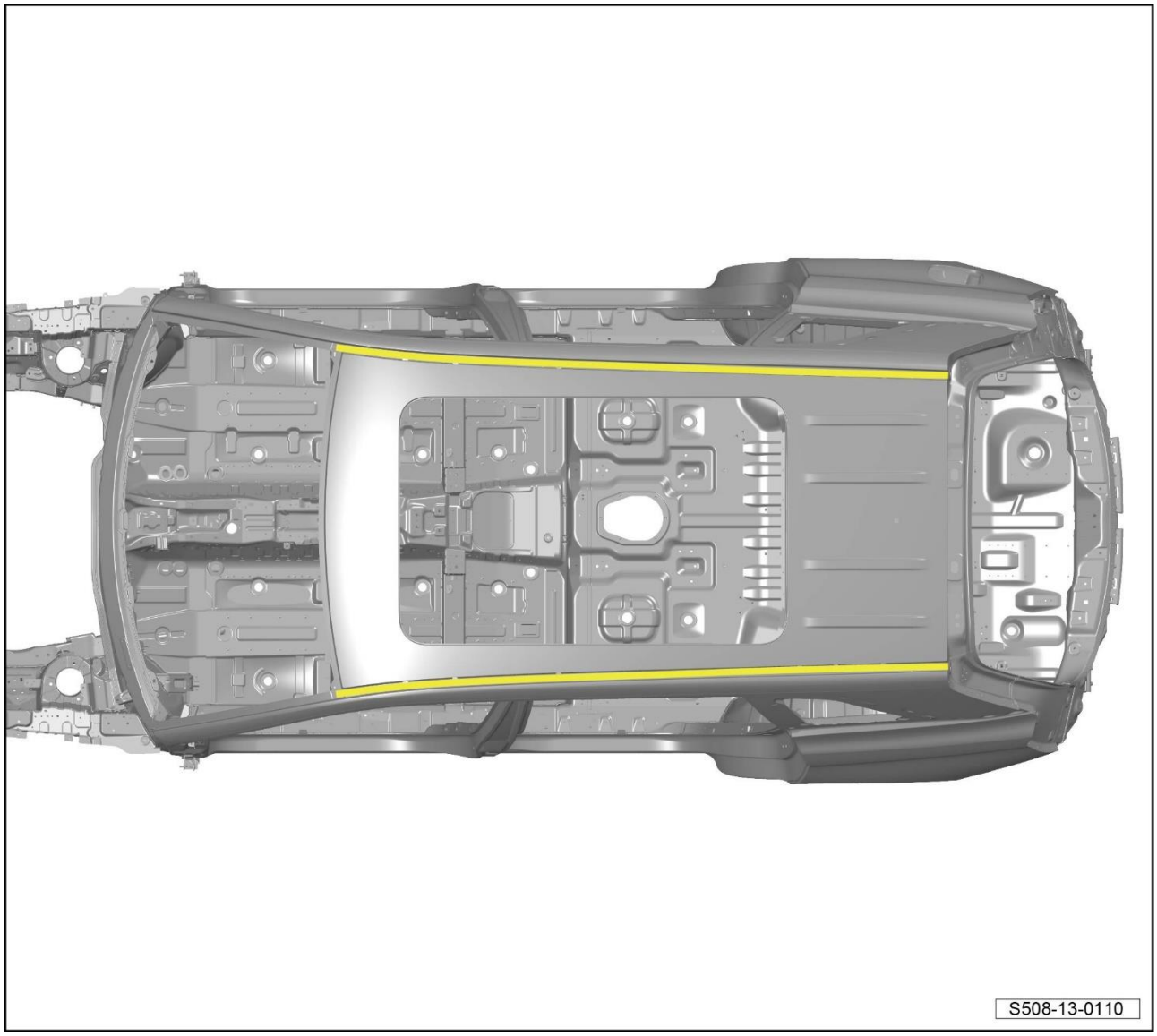
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

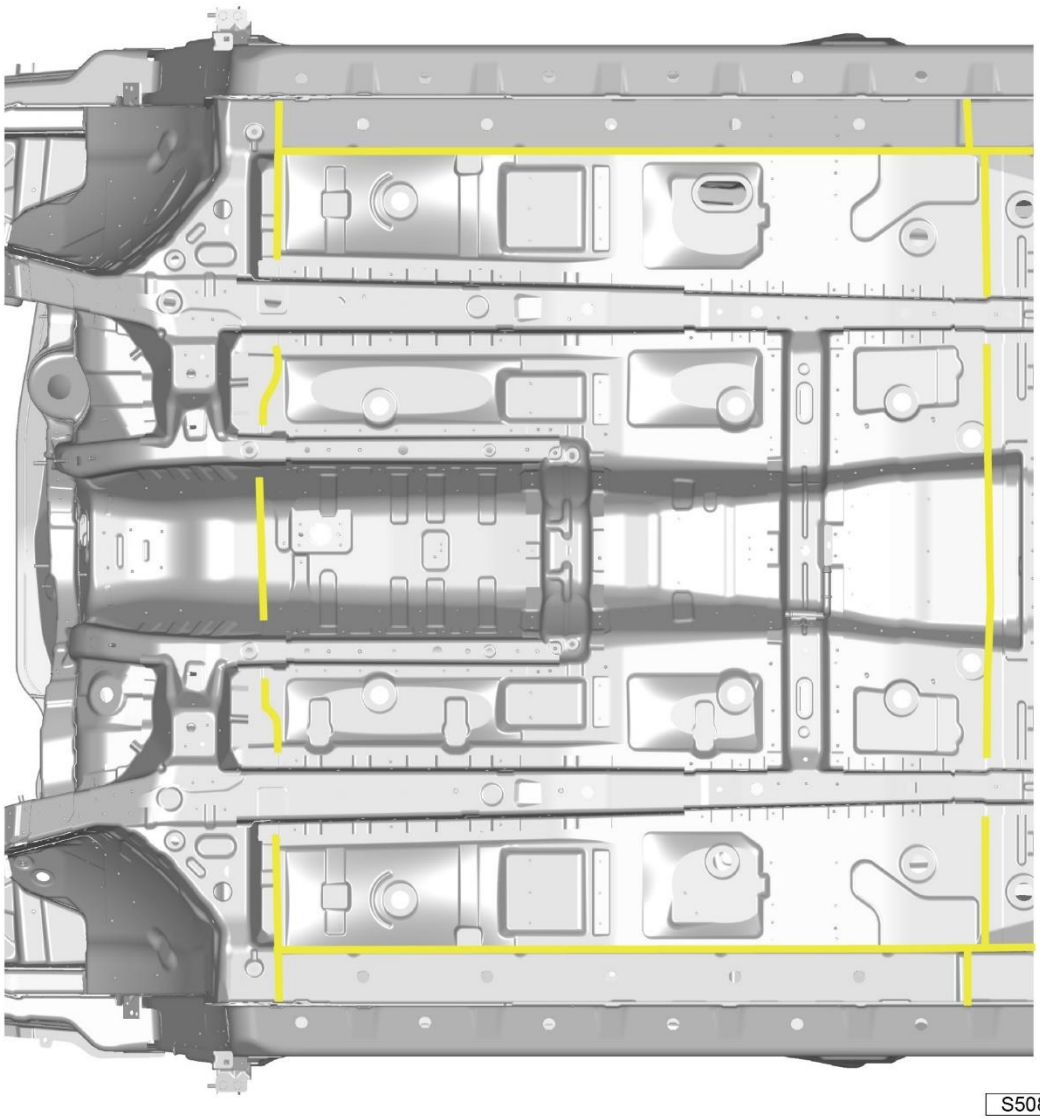
Sealant application on panel roof



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

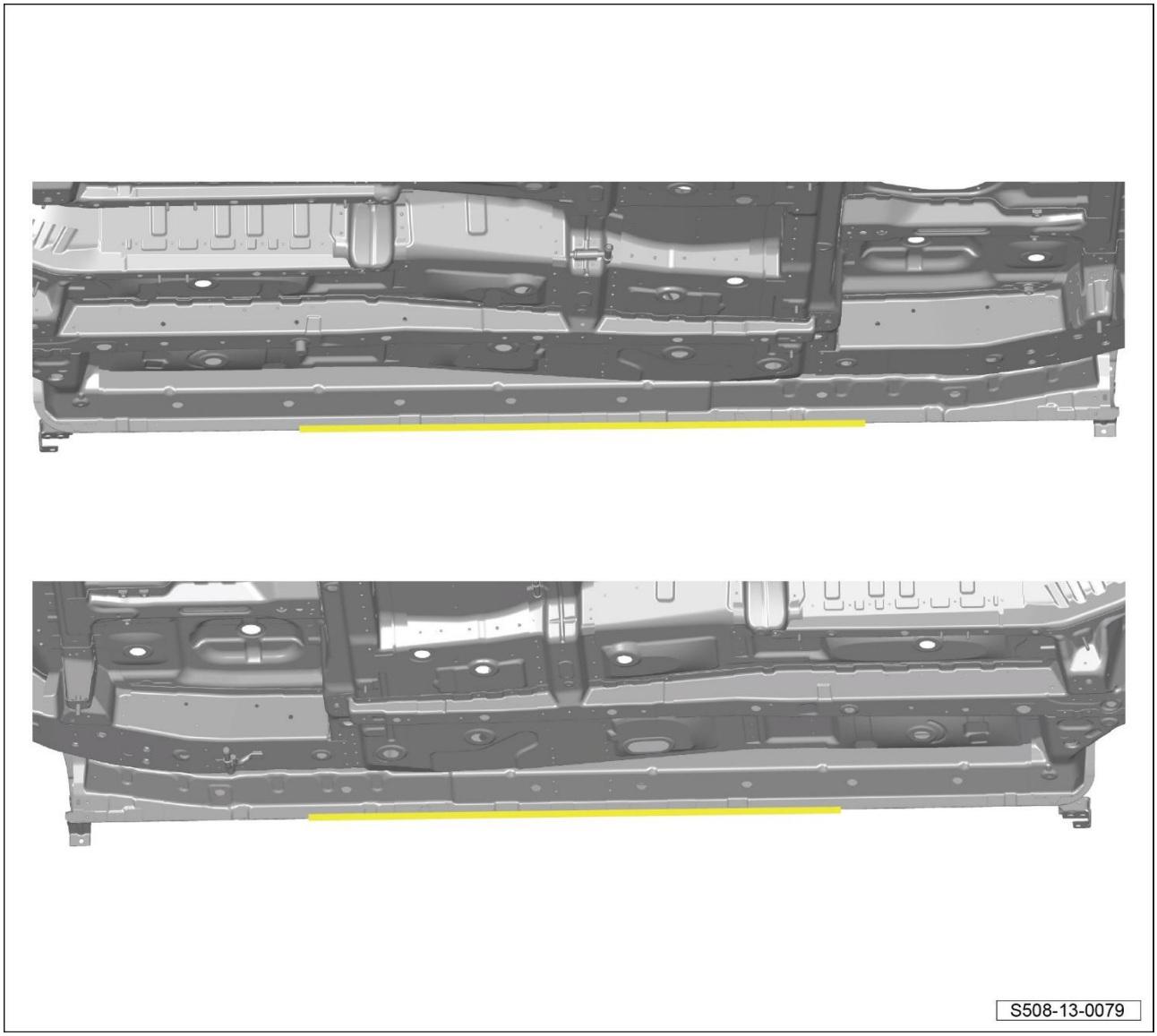
Front floor gluing



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

Side wall gluing

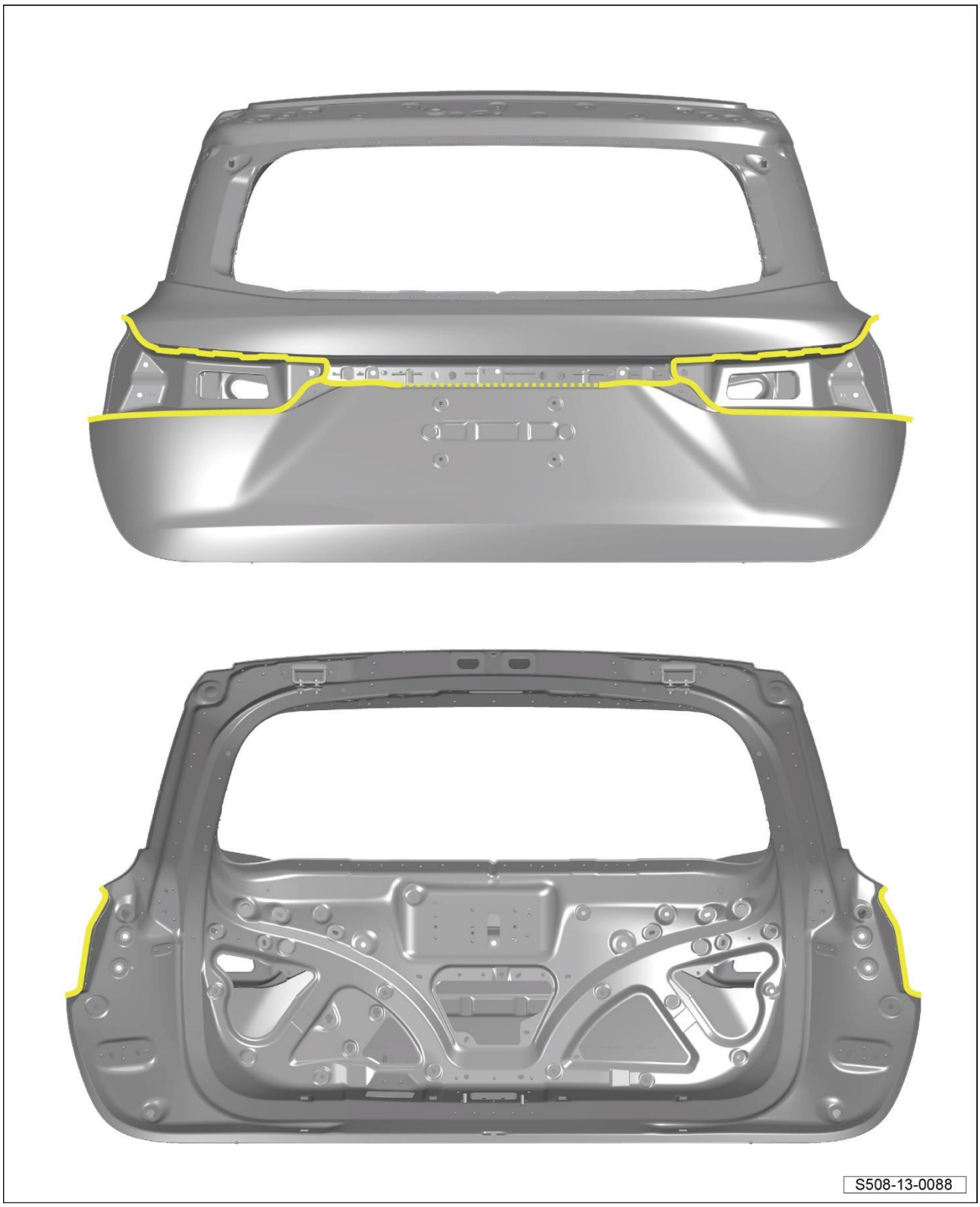


Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

10.2.3.4 Body rear sealing area

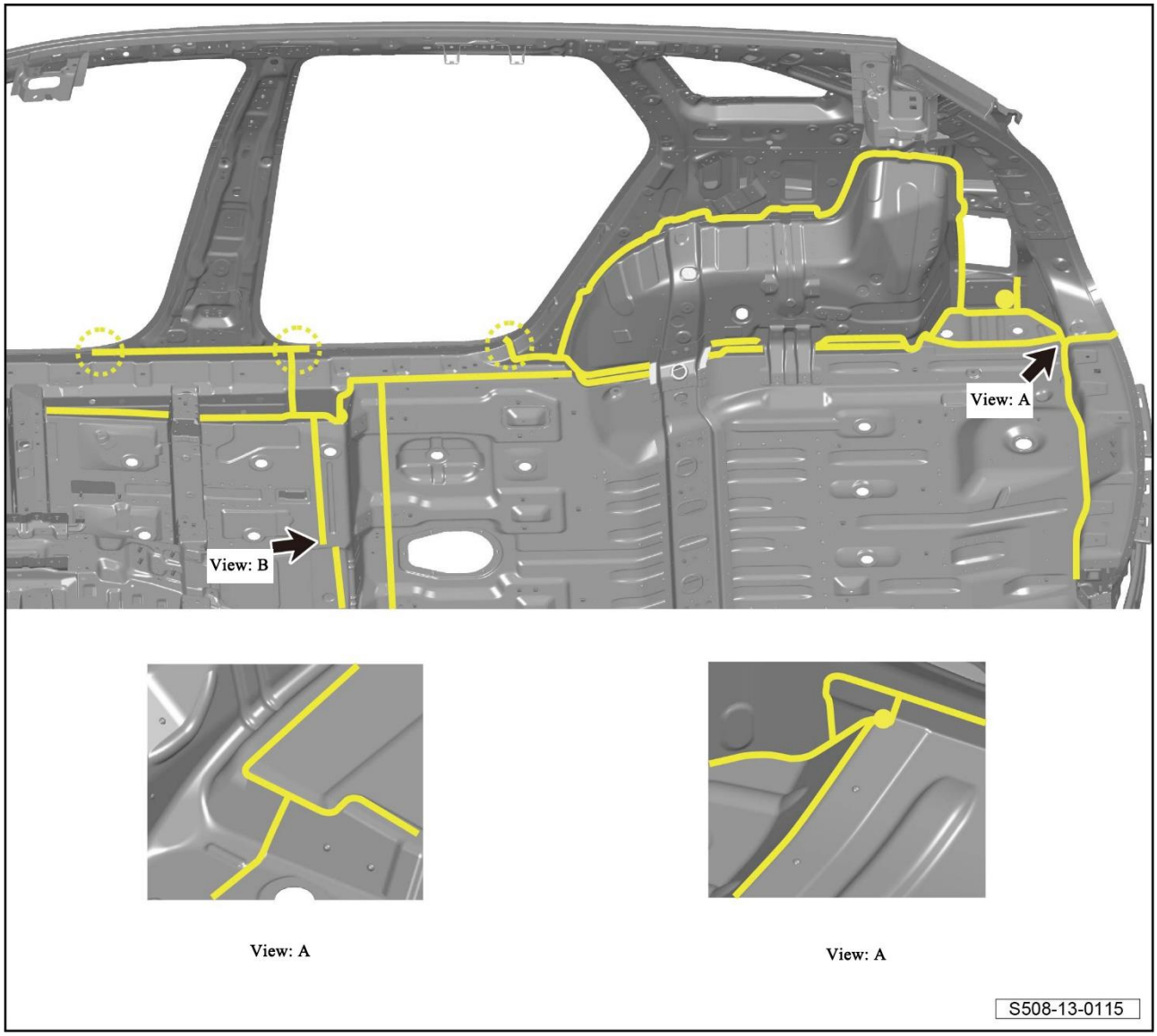
Sealant application on trunk lid



Requirements for sealant application:

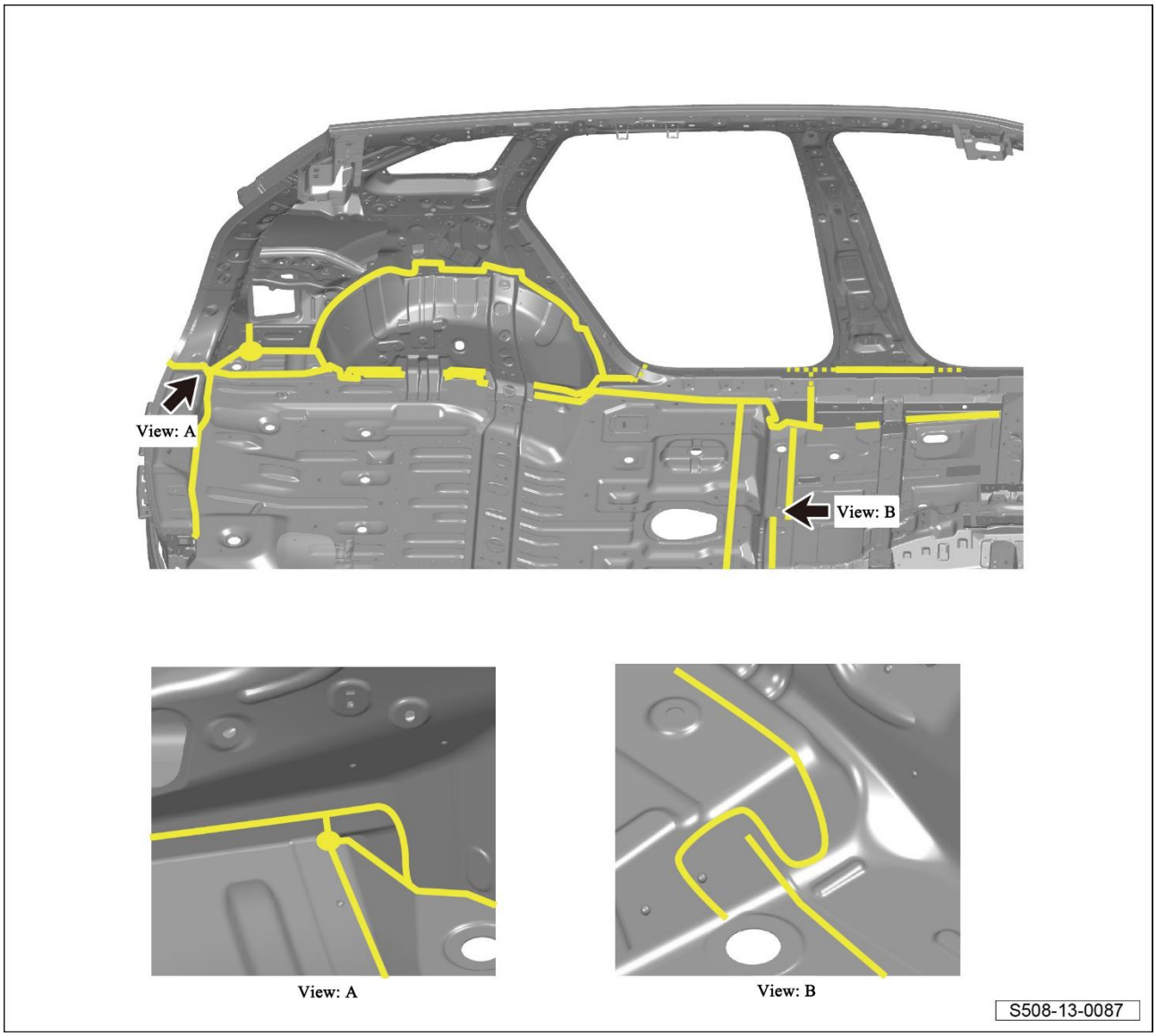
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

Middle and rear floor gluing



Requirements for sealant application:

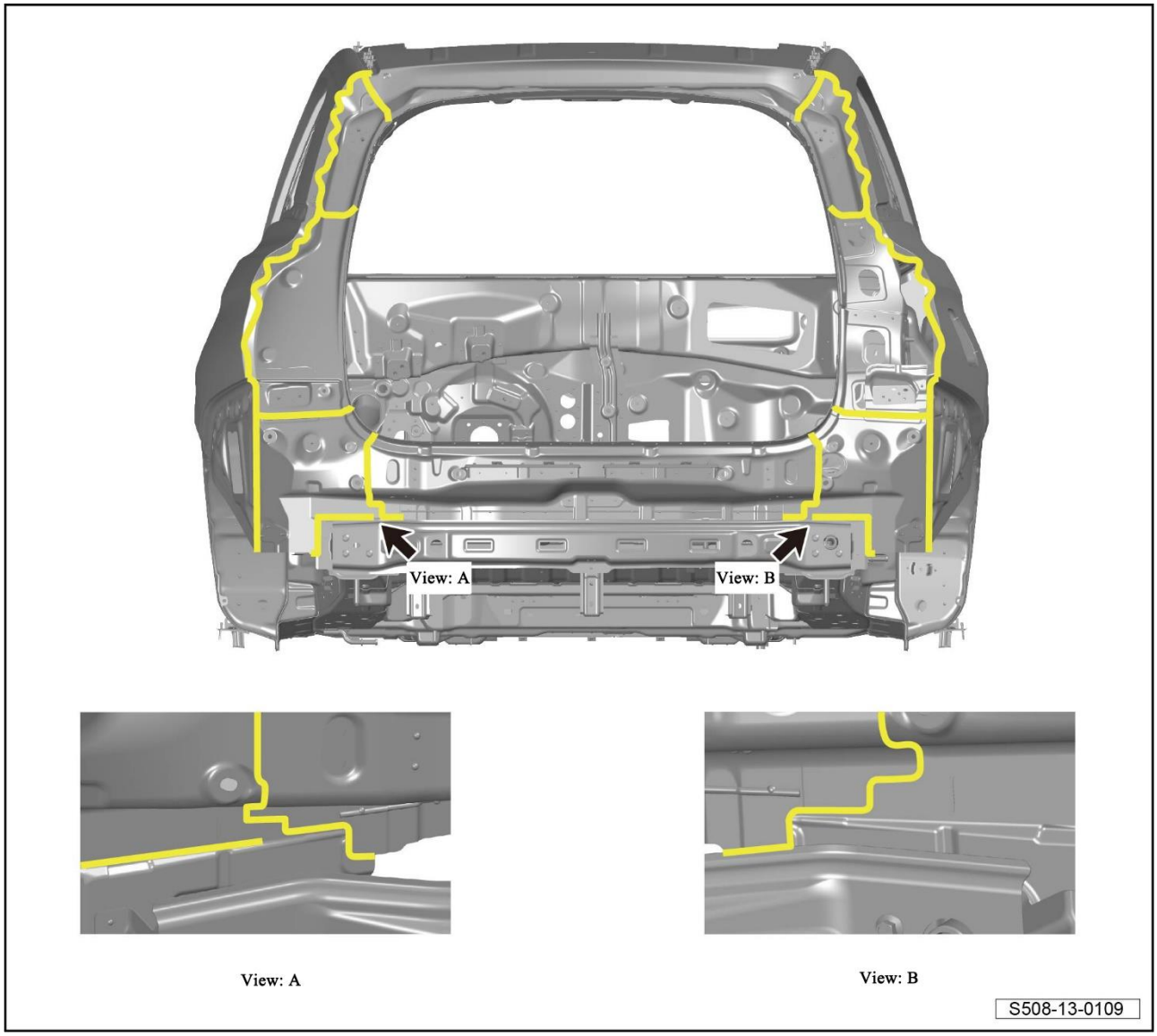
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

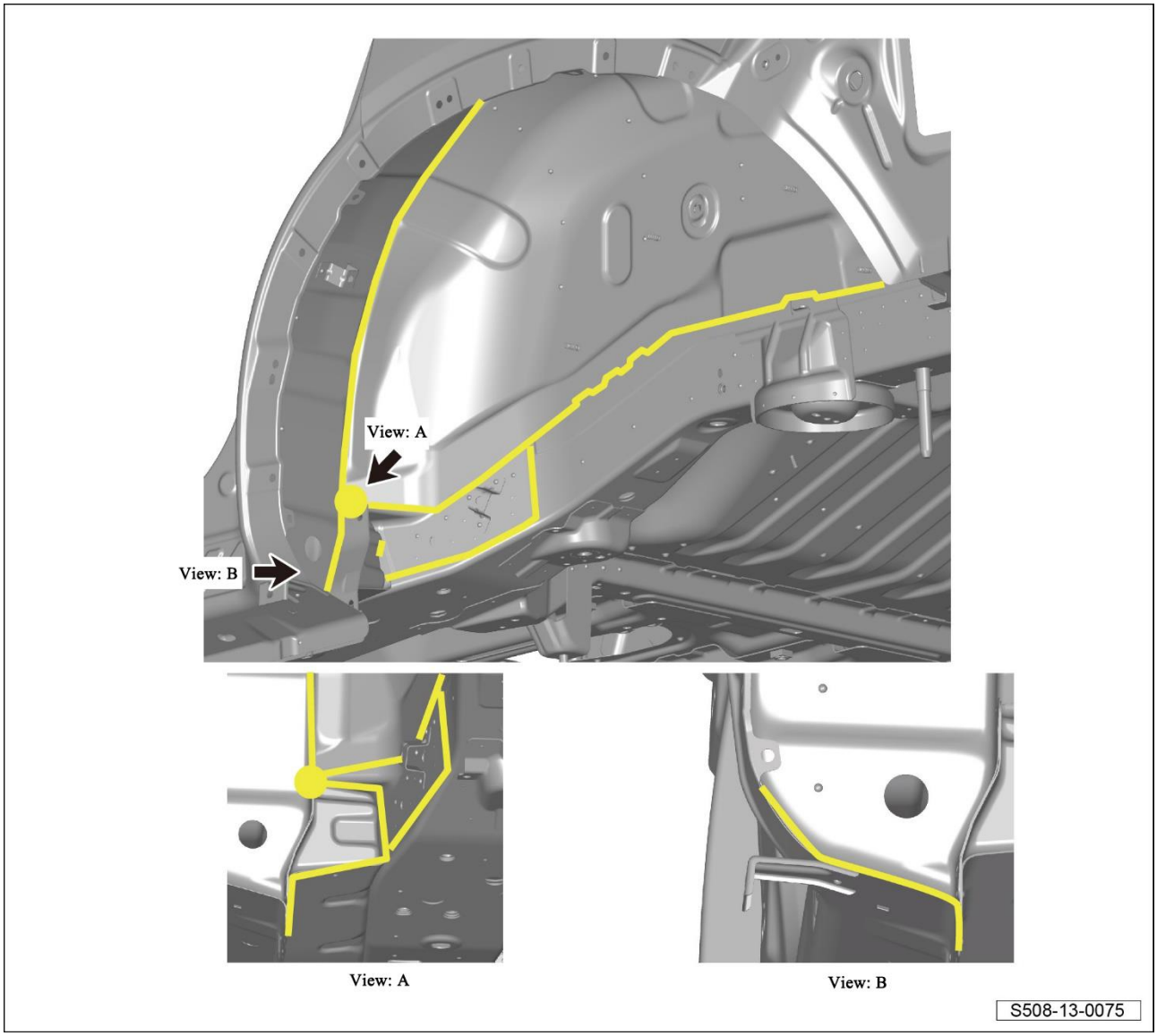
Rear end gluing



Requirements for sealant application:

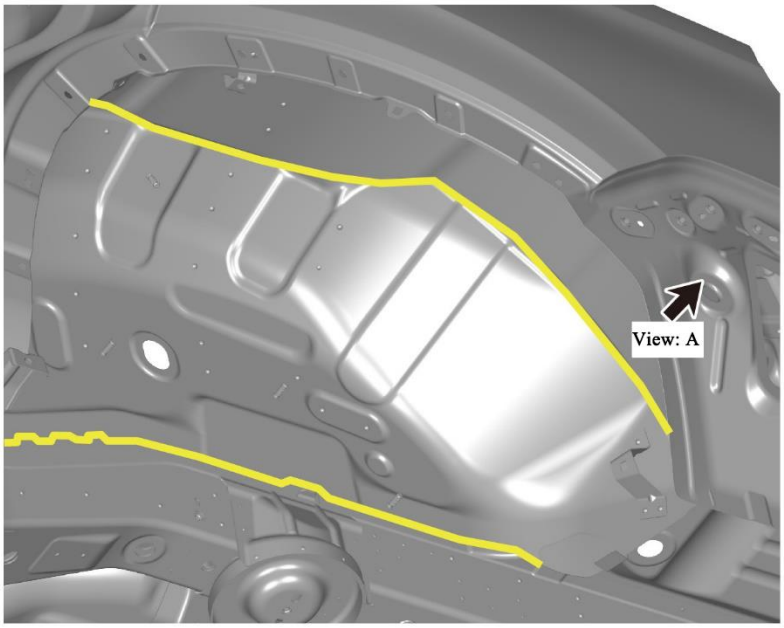
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

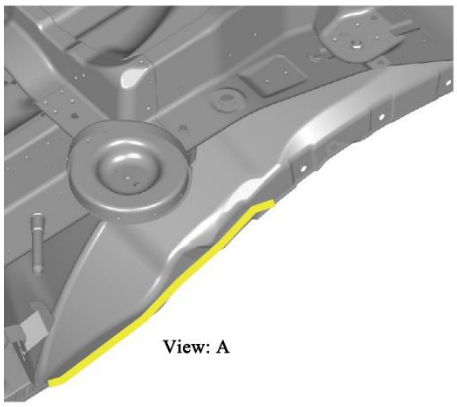
Sealant application on rear left wheel cover



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.



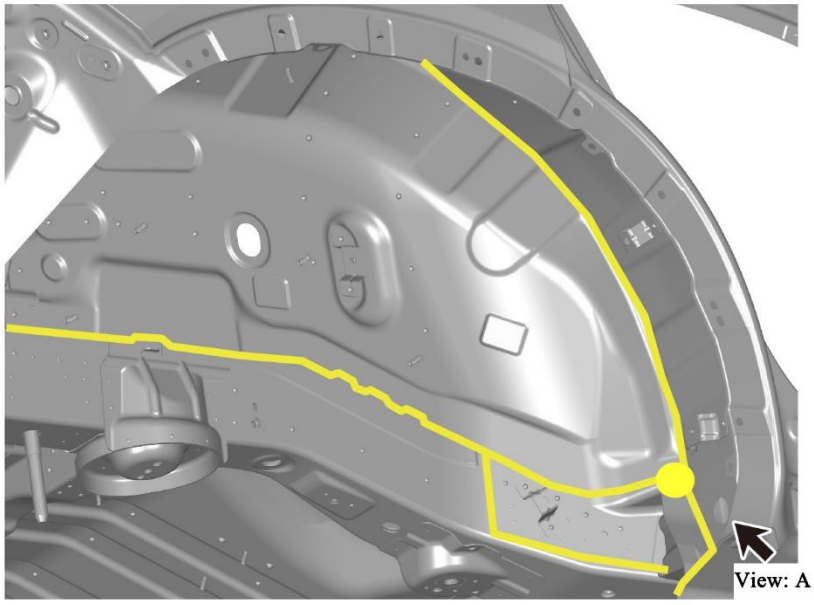


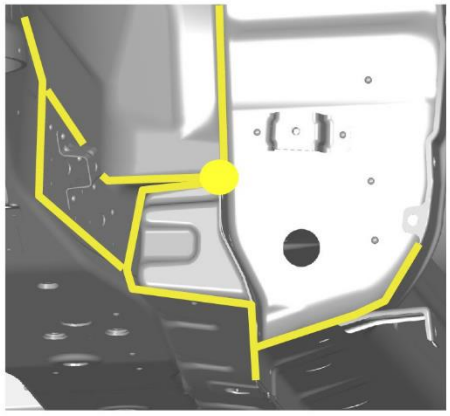
S508-13-0076

Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

Sealant application on rear right wheel cover



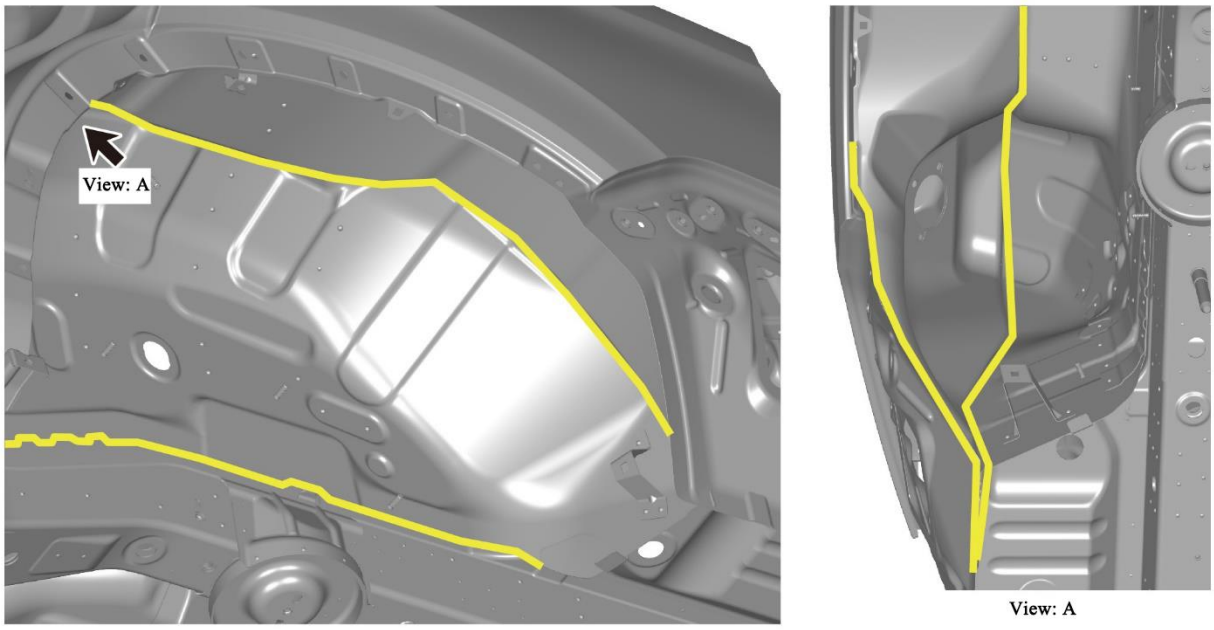


View: A

S508-13-0077

Requirements for sealant application:

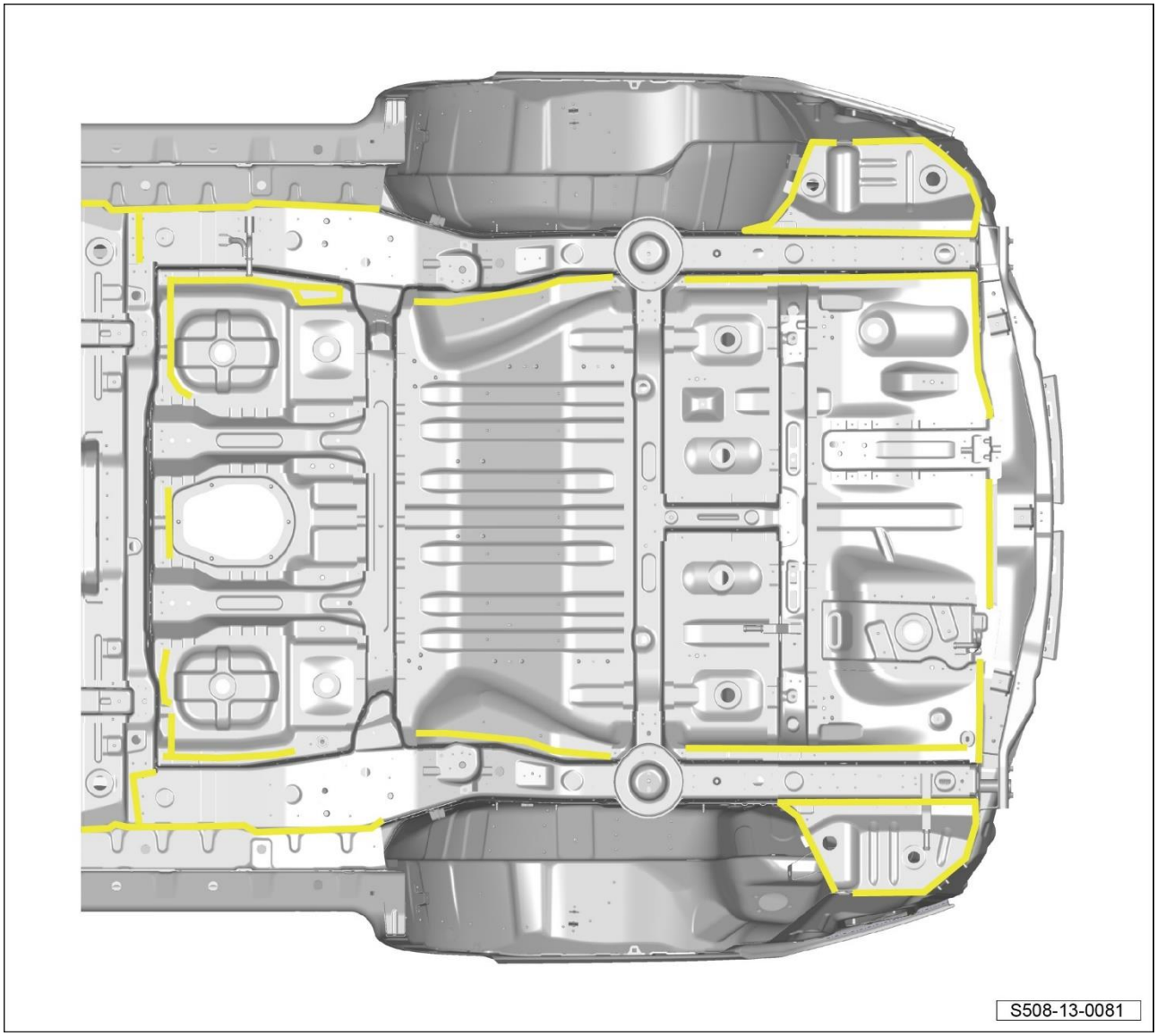
- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

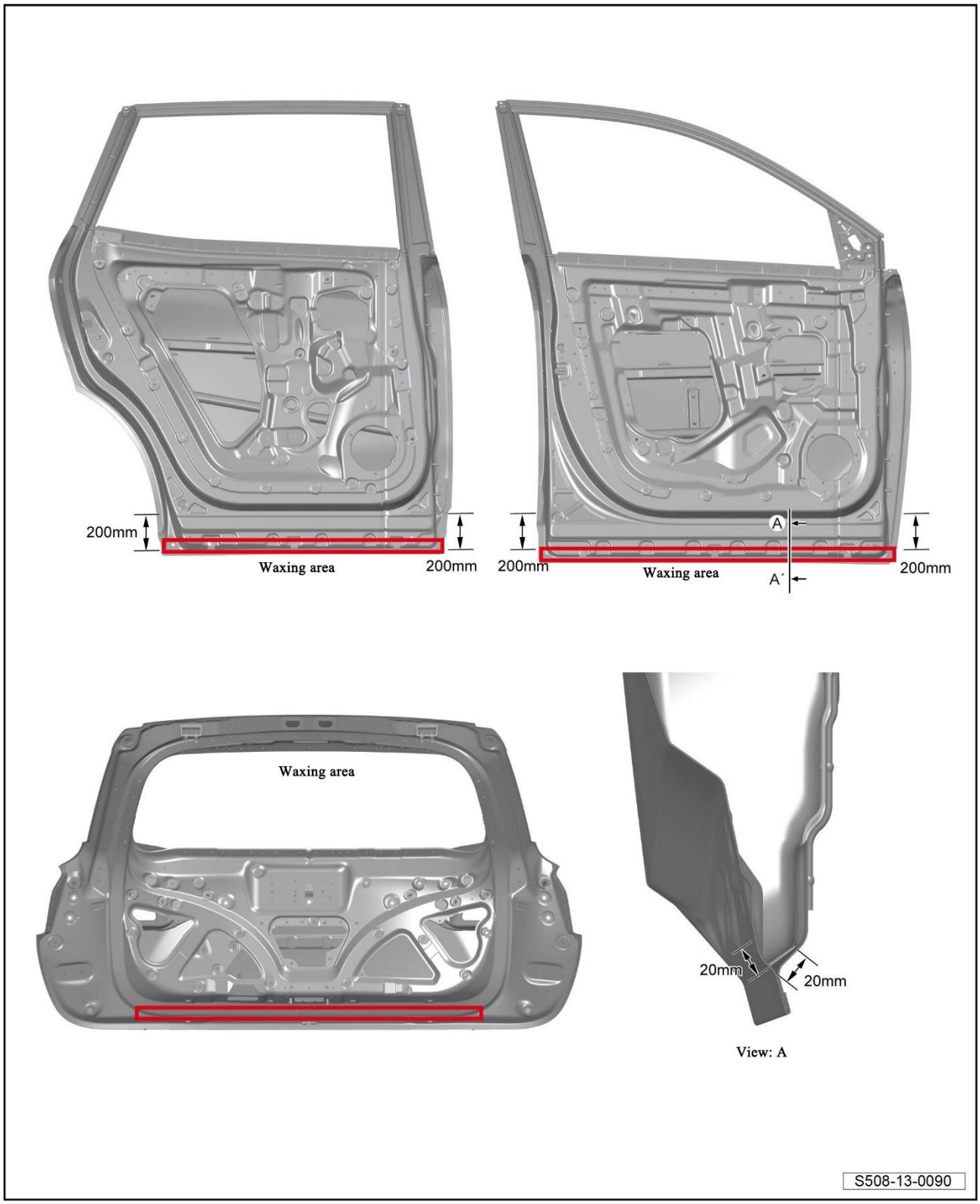
Underbody sealant application



Requirements for sealant application:

- The appearance of glue should be flat and uniform, the position marked with dash line should be dressed, and the position marked with stripe lines should be coated with glue.
- No sealant is allowed to be left at any position not indicated in the figure.

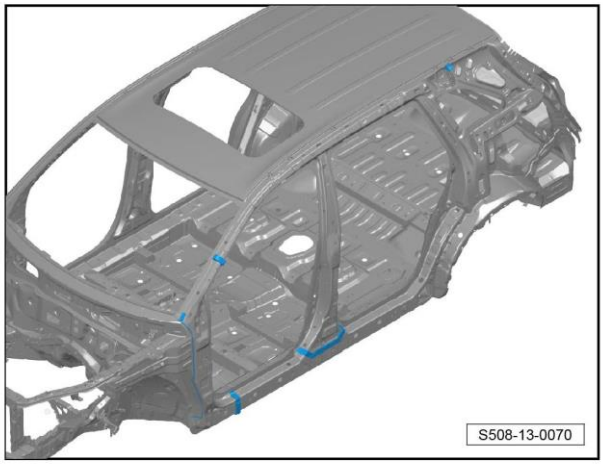
10.2.3.5 Four-door inner cavity antirust wax spraying

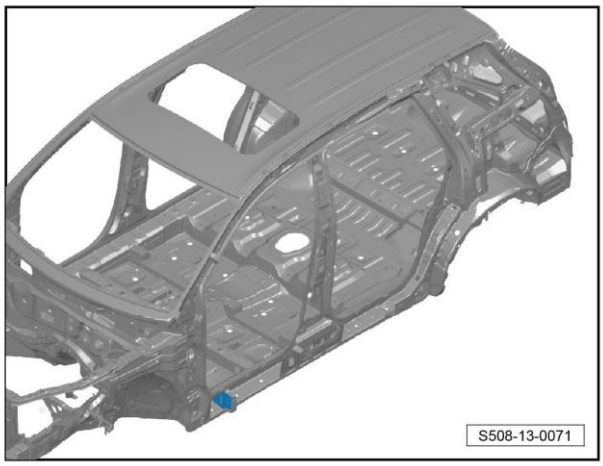


Spraying requirements:

- Spray antirust wax in the cavity at the lower end of four doors and lift gate, and the waxed area is as shown in the figure.
- The inner cavity at the lower end of the door shall be completely sprayed and the wax applied shall be continuous by visual inspection at least at one drain hole at the lower end of the door.

10.2.3.6 Styrofoam





Styrofoam is installed in the cavity of the body.

Description

- The use of styrofoam can reduce the transmission of driving noise to the interior of the vehicle.
- The exact location of styrofoam is explained in the corresponding maintenance steps.

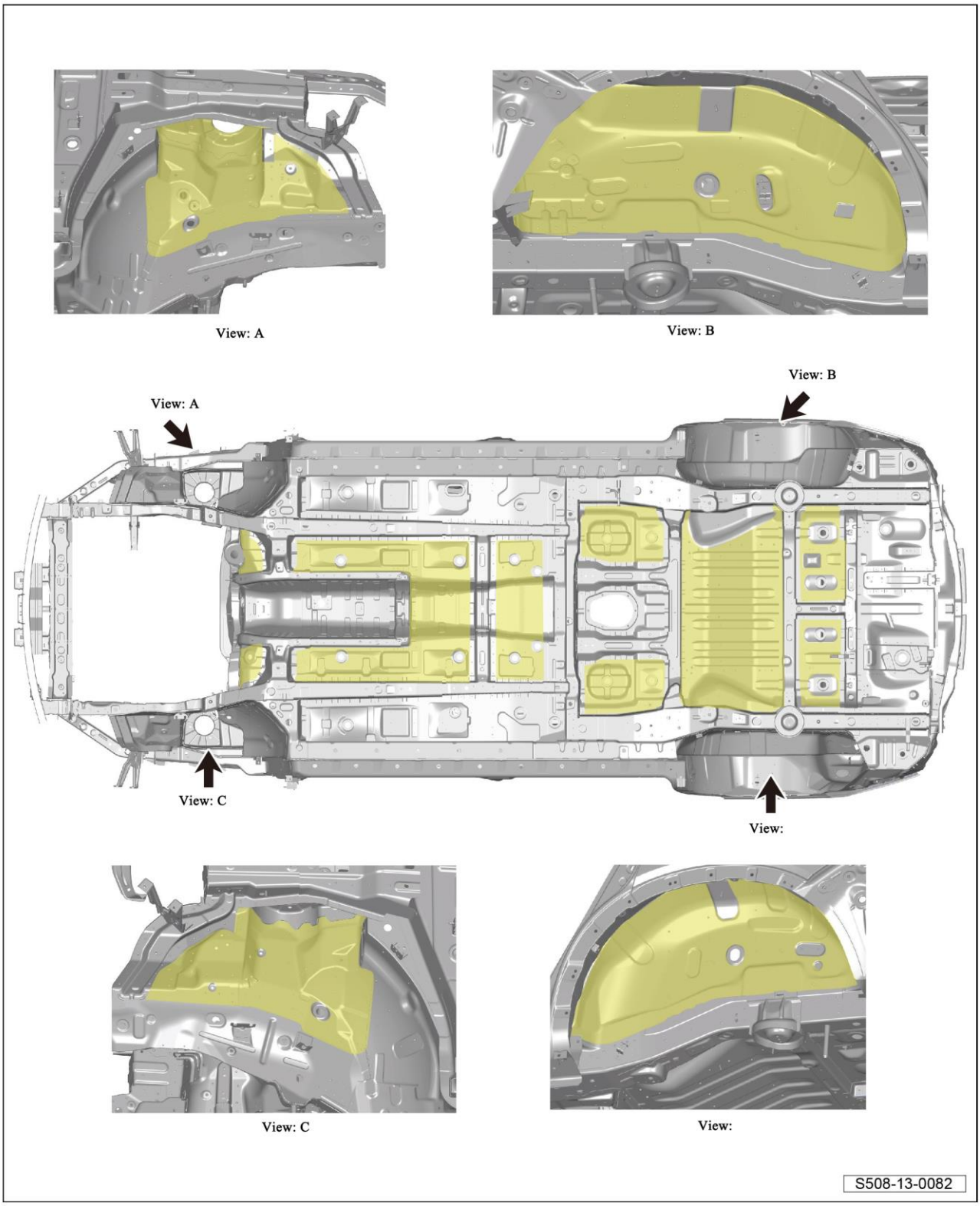
Measures to be taken before maintenance:

Before working steps, new plates should be prepared and corresponding cutting, adjustment and anti-corrosion measures should be completed.

Measures to be taken during maintenance:

- Remove the residual expansion sealant from the body.
- Follow the operating instructions in the maintenance steps.
- Carry out anti-corrosion treatment on the maintenance area after the repair is completed.

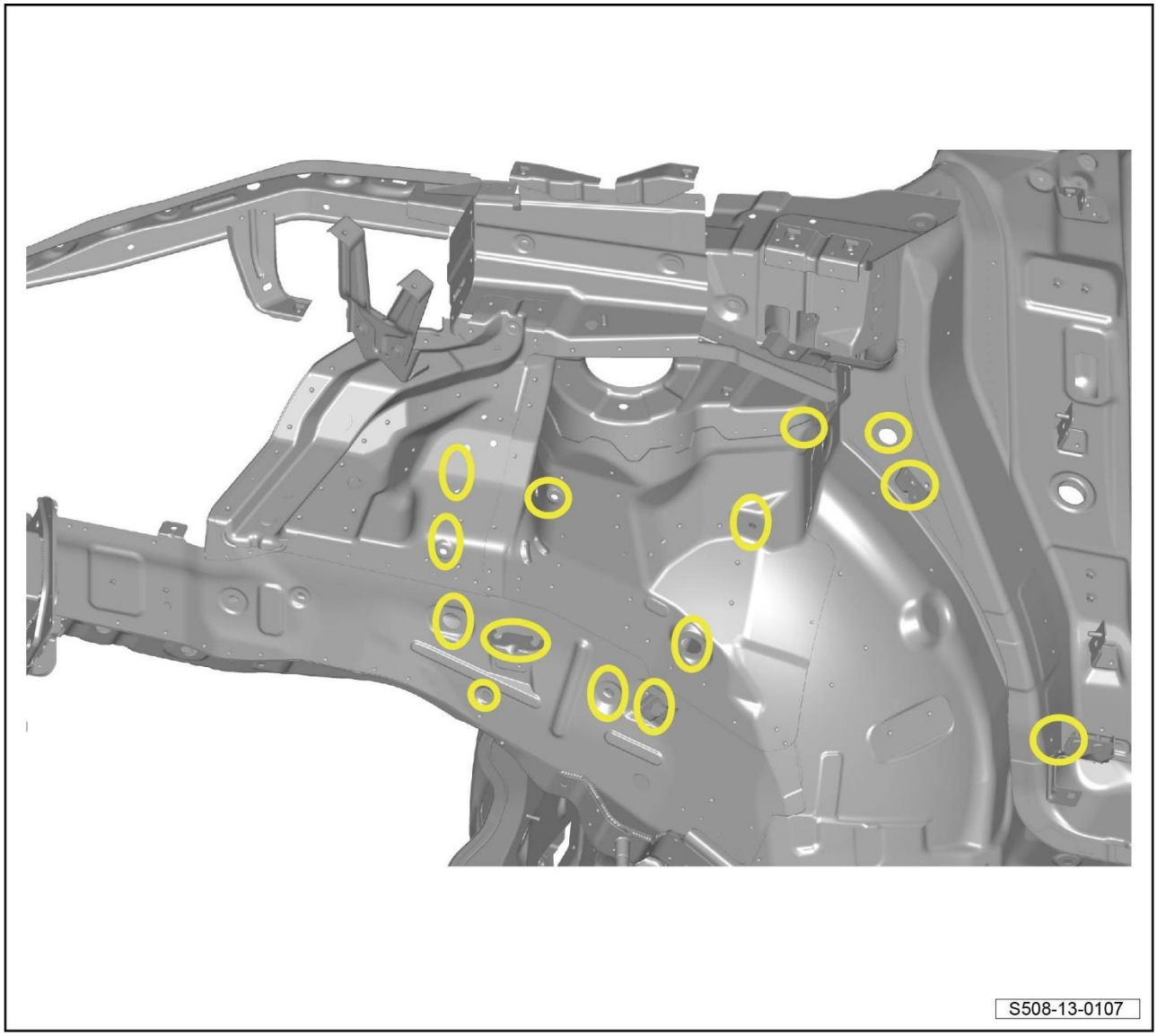
10.2.3.7 Stone-strike resistant spraying area



Spraying requirements:

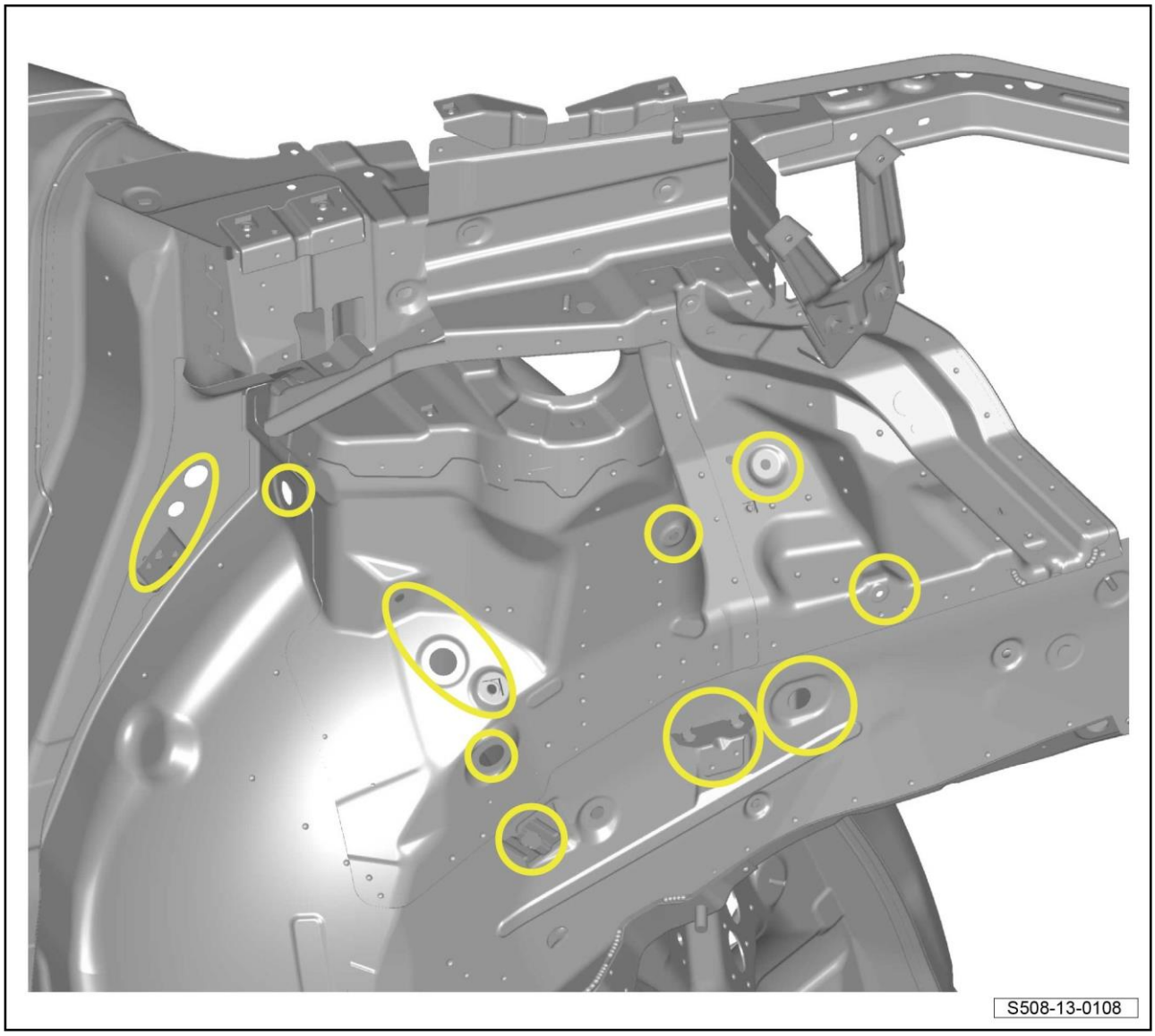
- The spraying shall be uniform and no splash of stone-strike resistant spraying shall be allowed on other parts of the body.

Summary Table of Parts Prohibited from Stone-strike Resistant Spraying



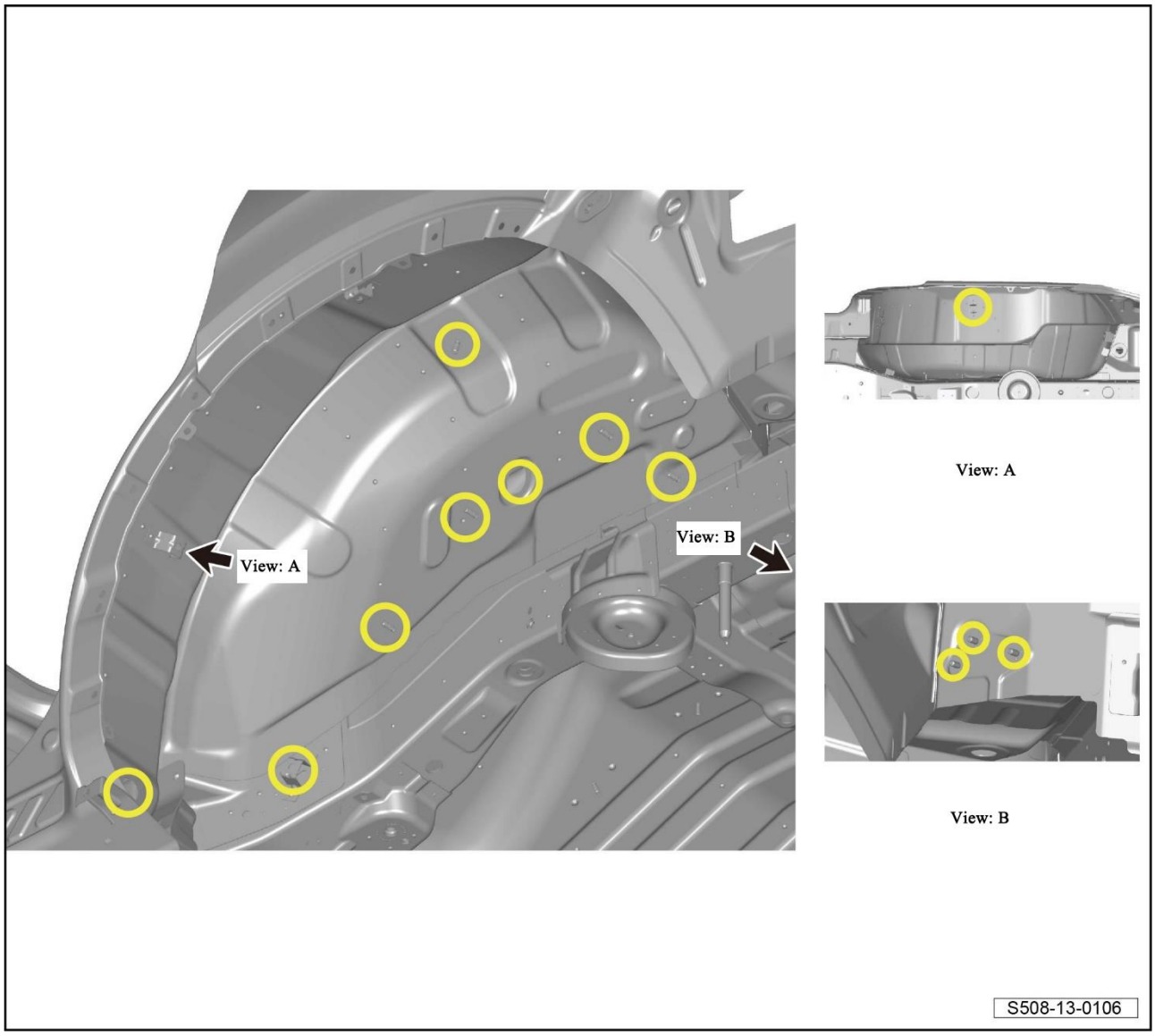
Front left hub - painting requirements:

– The figure shows the prohibited spraying area, which shall be avoided when spraying.



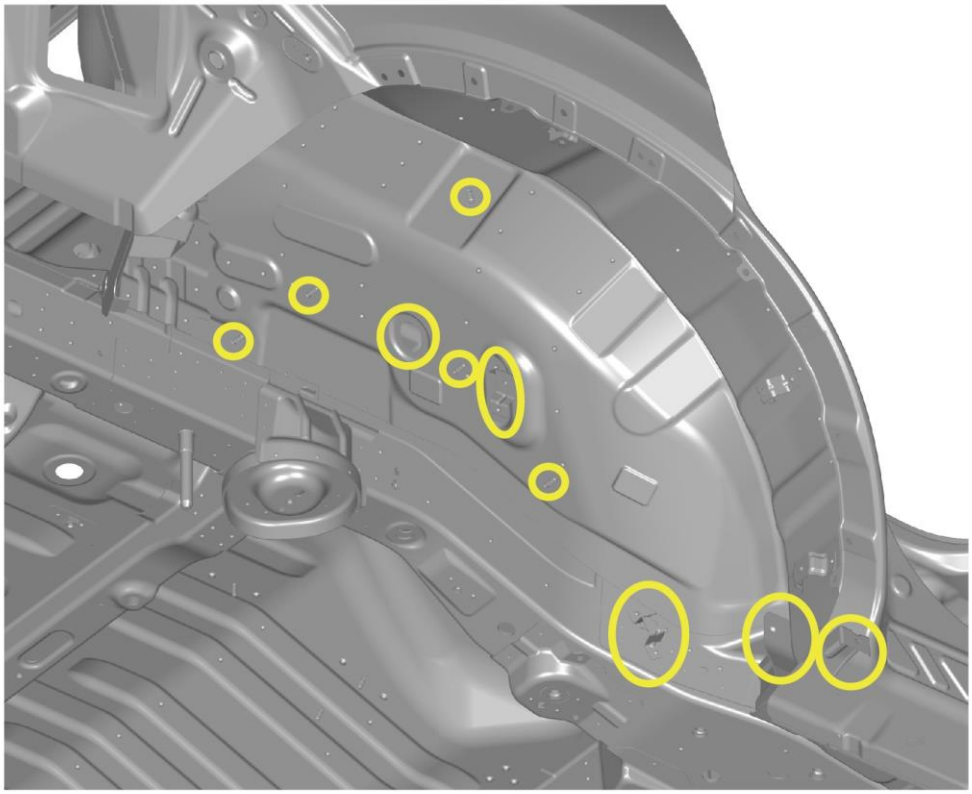
Front right hub - painting requirements:

– The figure shows the prohibited spraying area, which shall be avoided when spraying.



Rear left hub - painting requirements:

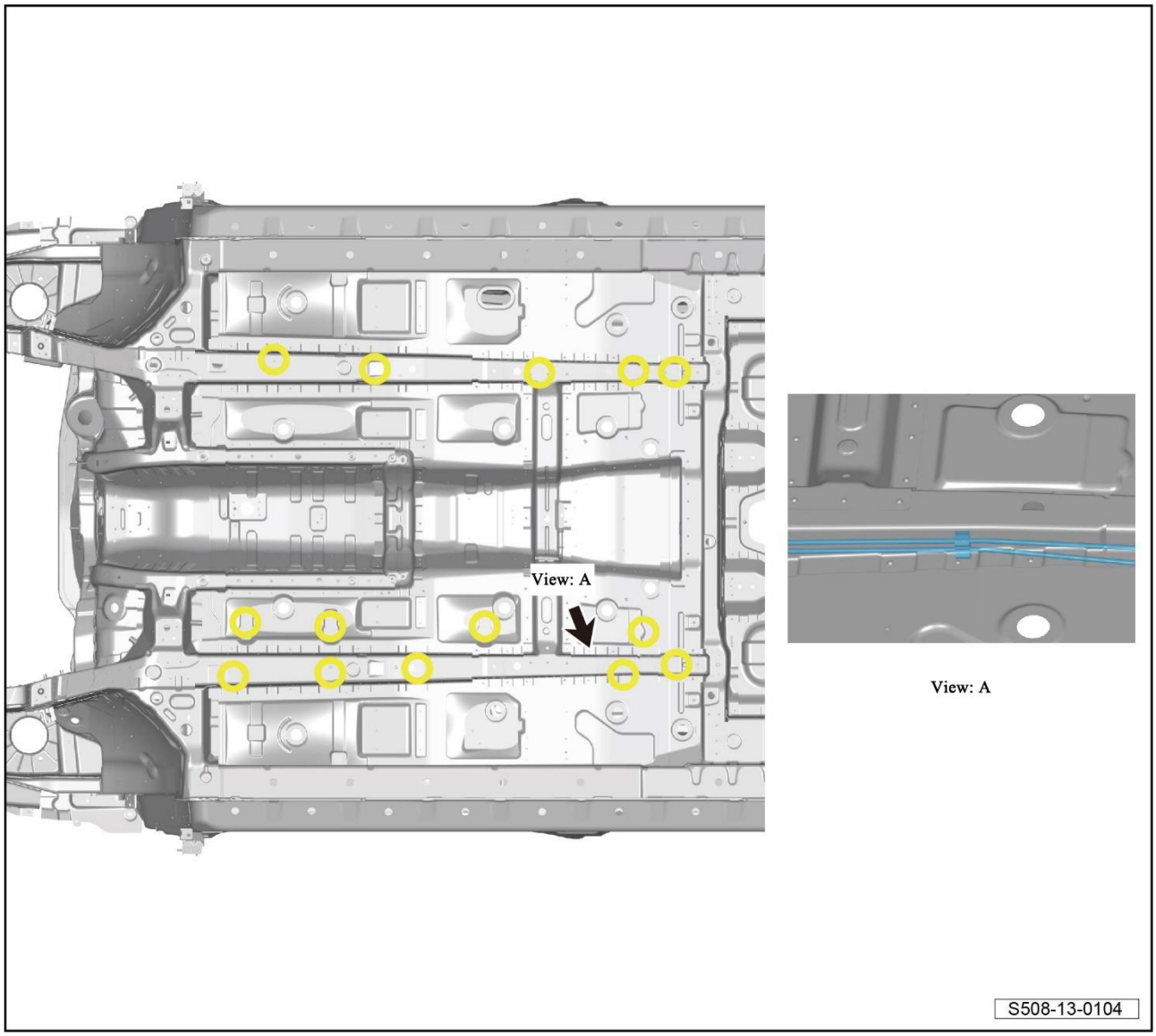
– The figure shows the prohibited spraying area, which shall be avoided when spraying.



S508-13-0072

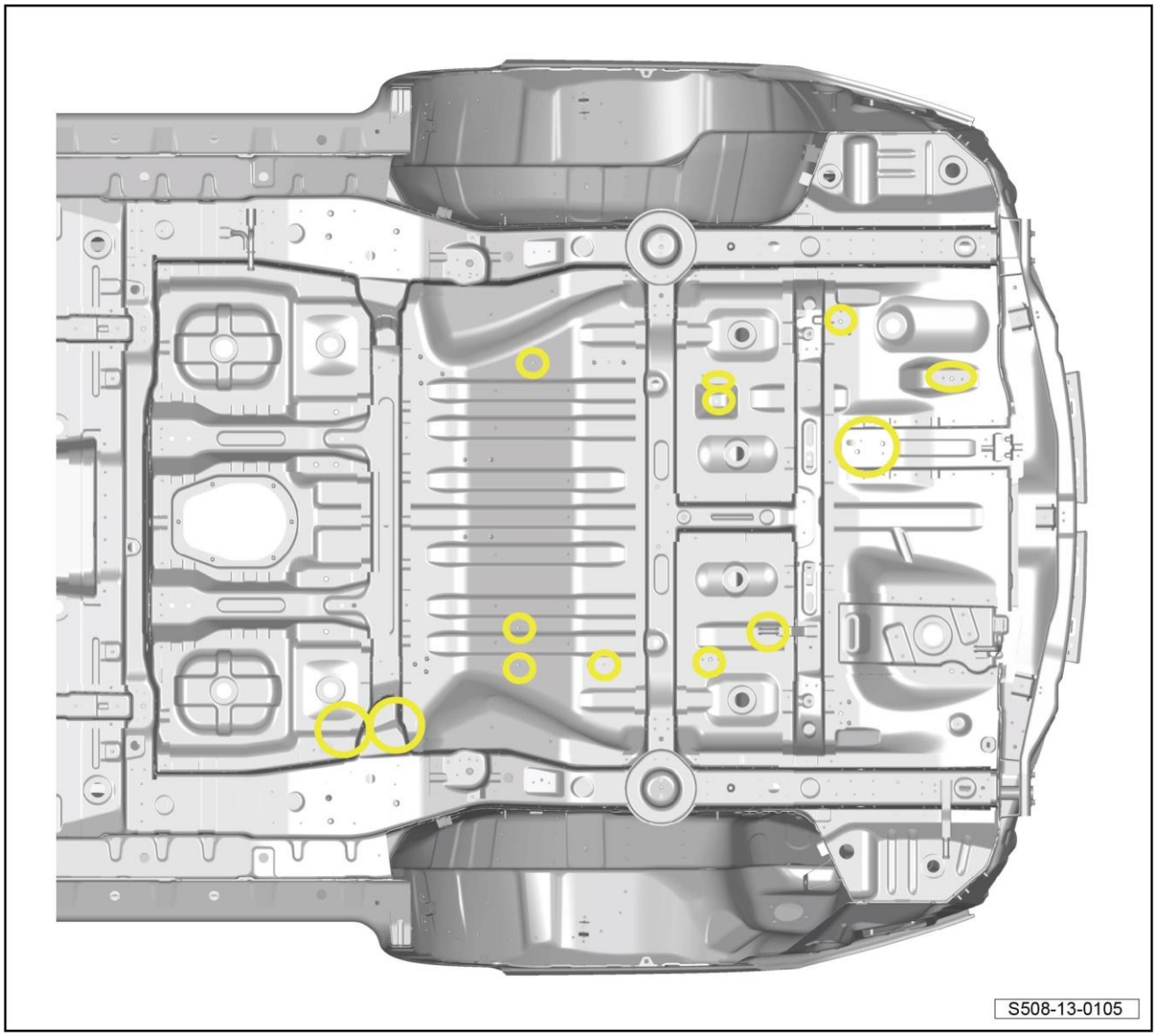
Rear right hub - painting requirements:

– The figure shows the prohibited spraying area, which shall be avoided when spraying.



Front floor - painting requirements:

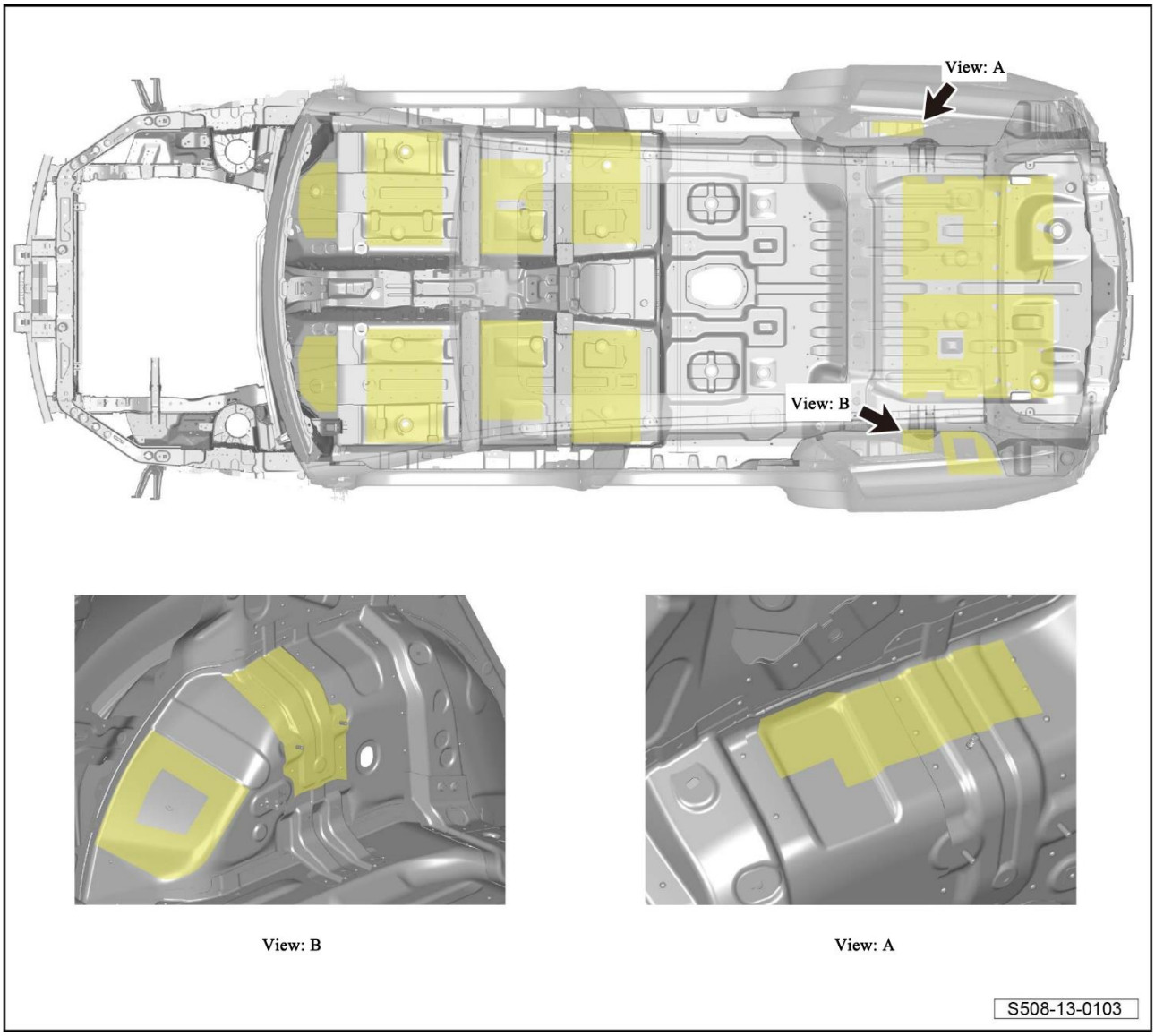
– The figure shows the prohibited spraying area, which shall be avoided when spraying.



Rear floor - painting requirements:

– The figure shows the prohibited spraying area, which shall be avoided when spraying.

10.2.3.8 Installation of body damping pad



Installation requirements:

- There is no wrong or missing installation of damping pads.
- Pay attention to avoiding process holes when installing damping pads.
- After installation, the damping pad shall not come off or wrinkle.

10.2.4 Damage diagnosis

10.2.4.1 Damage diagnosis

Damage diagnosis

The following criteria must be used to diagnose the damage:

- Damaged position.
- Scope of affected areas.
- Damage extent.

These three aspects are directly related to the quality, efficiency and cost of damage repair and must be correctly determined. Determine various collision conditions:

- The size, shape, position and rigidity of other vehicles involved in the collision.
- The speed of two vehicles at the time of collision.
- Angle and direction of collision.
- The number and position of passengers in collision.
- Size, shape and hardness, etc. of the load in the vehicle.
- History of damaged parts, date of occurrence and scope of affected areas. Appearance

In the body maintenance work, be careful not to ignore the indirect damage. In order to avoid this situation, the mechanical and structural analysis of the body will be essential.

1. Observe the complete vehicle:

- Degree of impact damage.
- Twisting, bending and tilting of the complete vehicle.
- Damage amount and location: Check by checking the complete vehicle (e.g., cracked or stressed paint, cracked or broken glass, etc.).

2. Observe the vehicle in detail:

- Check whether there is any gap or dislocation on the panel weld, or whether there is any crack in the paint film, primer or sealing material.

3. Observe the fitting:

- Check the assembly of each part:
  - Check door alignment (damage to body and hinge parts).
  - Check the positioning of the engine compartment cover and trunk lid.
  - Check the opening and closing of doors, engine compartment cover and trunk lid.
  - Check whether the window glass lifting is smooth.

4. Check for mechanical damage:

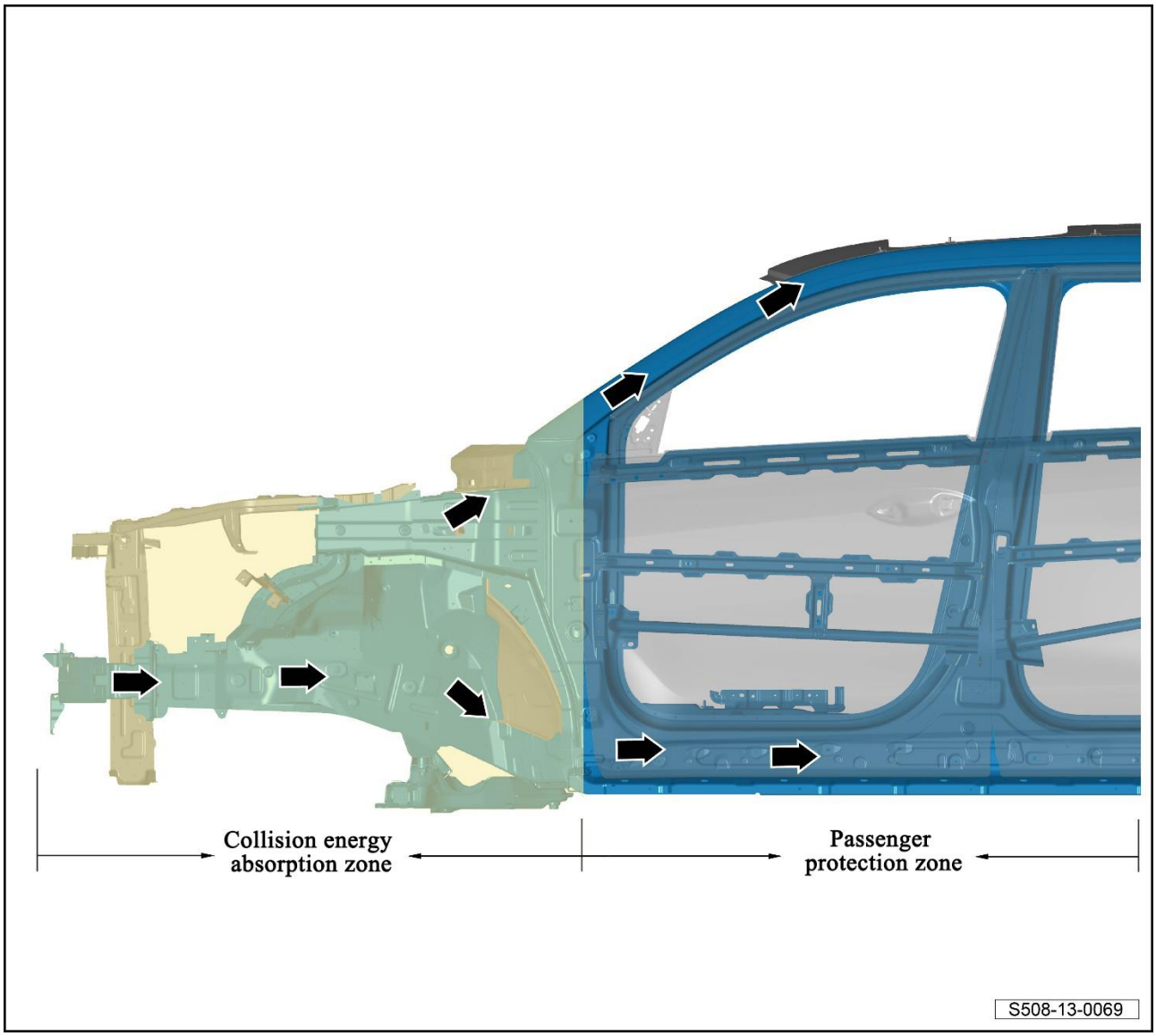
- Damage analysis also involves checking whether mechanical, steering and suspension components are damaged.
- When inspecting mechanical parts, please check for signs of damage (for example, bent or damaged parts, liquid leakage and unsmooth or noisy steering wheel rotation). Key points in selecting maintenance methods
- When repairing the panel, do not reduce the strength. Avoid excessive hammering, which may lead to stretching of the panel, and avoid heating for a long time.
- It is forbidden to unnecessarily increase the strength of the impact absorbing part. It is forbidden to repair these

parts.

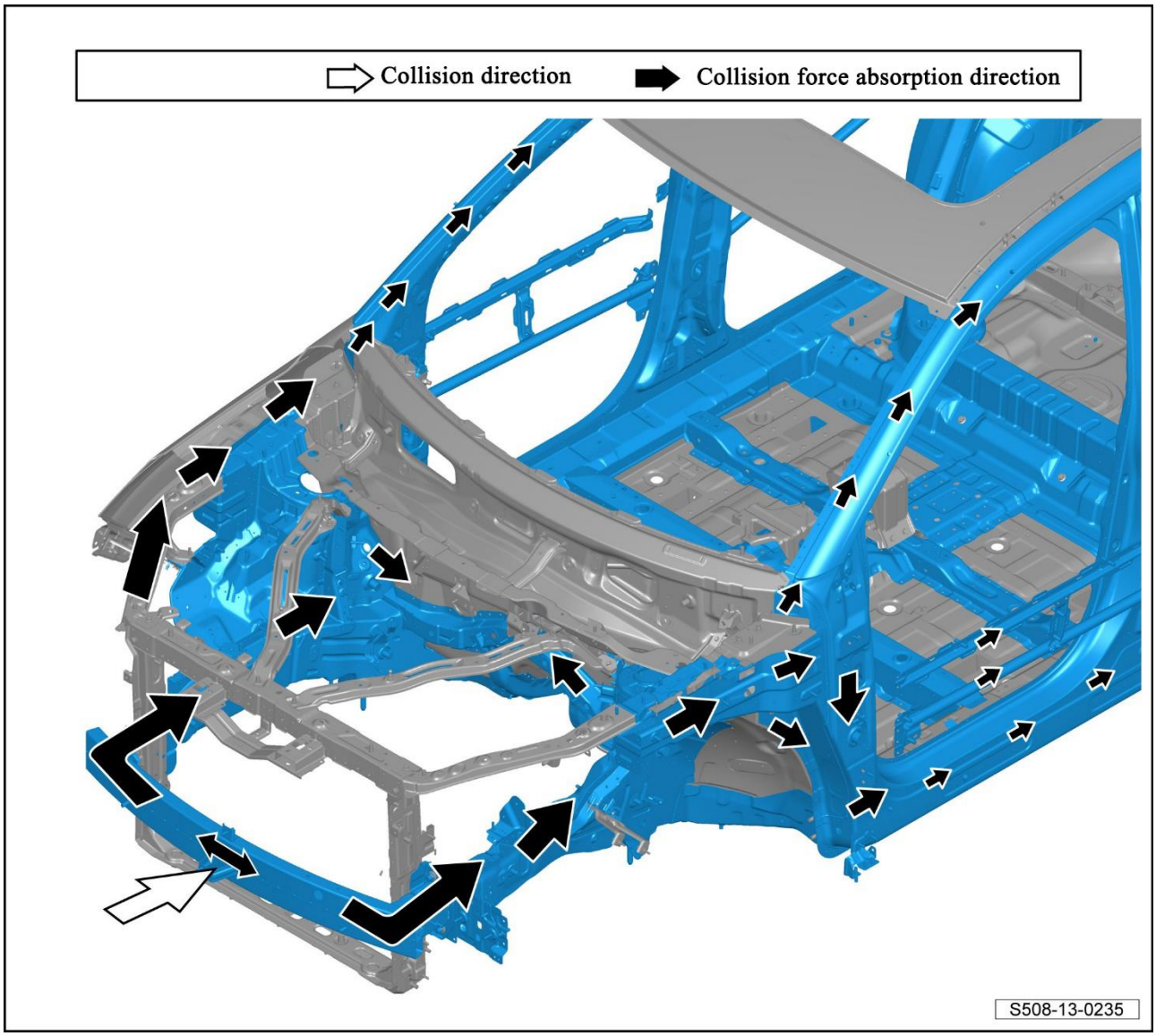
- Choose the correct method to measure the body.
- Carefully check how the previous collision damage was repaired. This is necessary to correctly determine the scope to be repaired. Parts to be replaced
- It is prohibited to repair high strength steel parts by heating, as this will result in a reduction in their strength.
- Do not repair the door side anti-collision beam. If it is damaged, be sure to replace the door assembly.

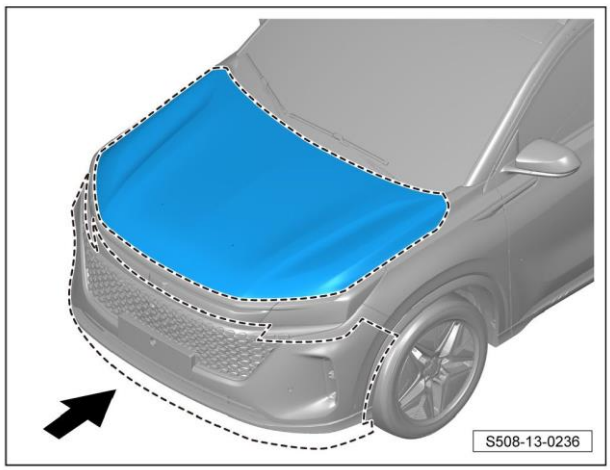
10.2.4.2 Transmission path of collision force

Transmission path of head-on collision force



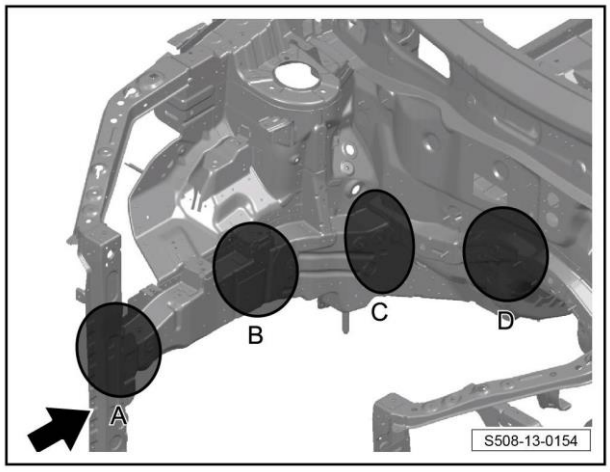
- In front collision, the front anti-collision beam and the front longitudinal beam form an axial collision energy absorption zone to absorb the amount of collapse;
- The rear section of the front longitudinal beam directs the collision energy to the sill beam and the front crossmember of the front wall, and the middle passage board and longitudinal beam arranged in the middle of the front floor absorb the collision energy at the front crossmember of the front wall to form a support area, thus reducing the intrusion into the passenger compartment.


Collision direction
Collision force absorption direction
S508-13-0235



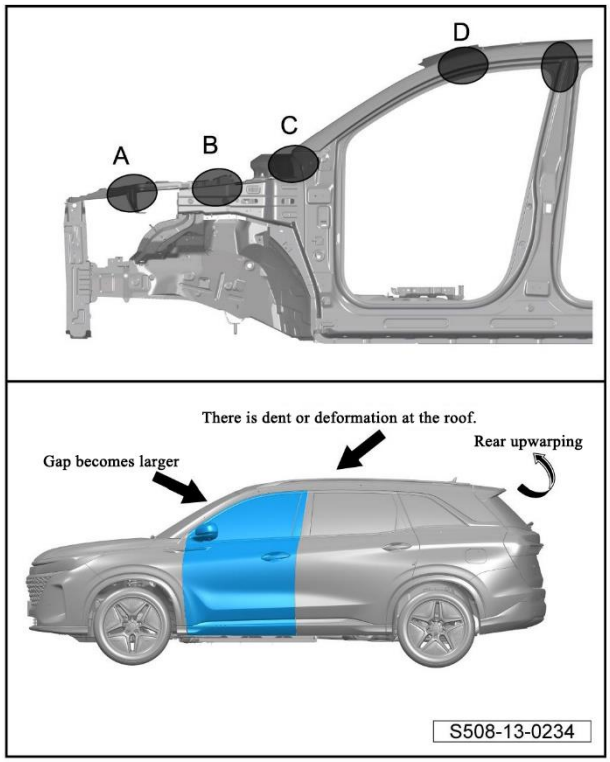
Front head-on collision (1)

- When the impact force is not very serious, the front bumper, radiator and condenser, etc. will usually move backwards, and the front engine hood will bulge and deform.
- During head-on collision, due to the energy absorption area in the inner layer of the front engine hood and the strong hinge, the front engine hood will bulge and deform, and usually will not be directly inserted into the cab, causing personal injury. If it is more serious, the front of the longitudinal beam will be damaged, and the front fender will be deformed and move backward, and will be squeezed together in the front door, which will make it difficult to open the door.



Front head-on collision (2)

- If the collision force is acting on the front end of the longitudinal beam, the front parts of the longitudinal beams on both sides are rigidly connected by the front anti-collision beam, and the impact energy is dispersed to the other side to form multi-point absorption to disperse the impact energy. With the transfer of energy, the stress points A, B and C of the longitudinal beam structure will also deform in turn and gradually absorb the impact energy. Finally, the energy reaches point D by changing the direction at point C, and the larger impact force will cause deformation and damage to the body floor.



Transmission path of side collision force

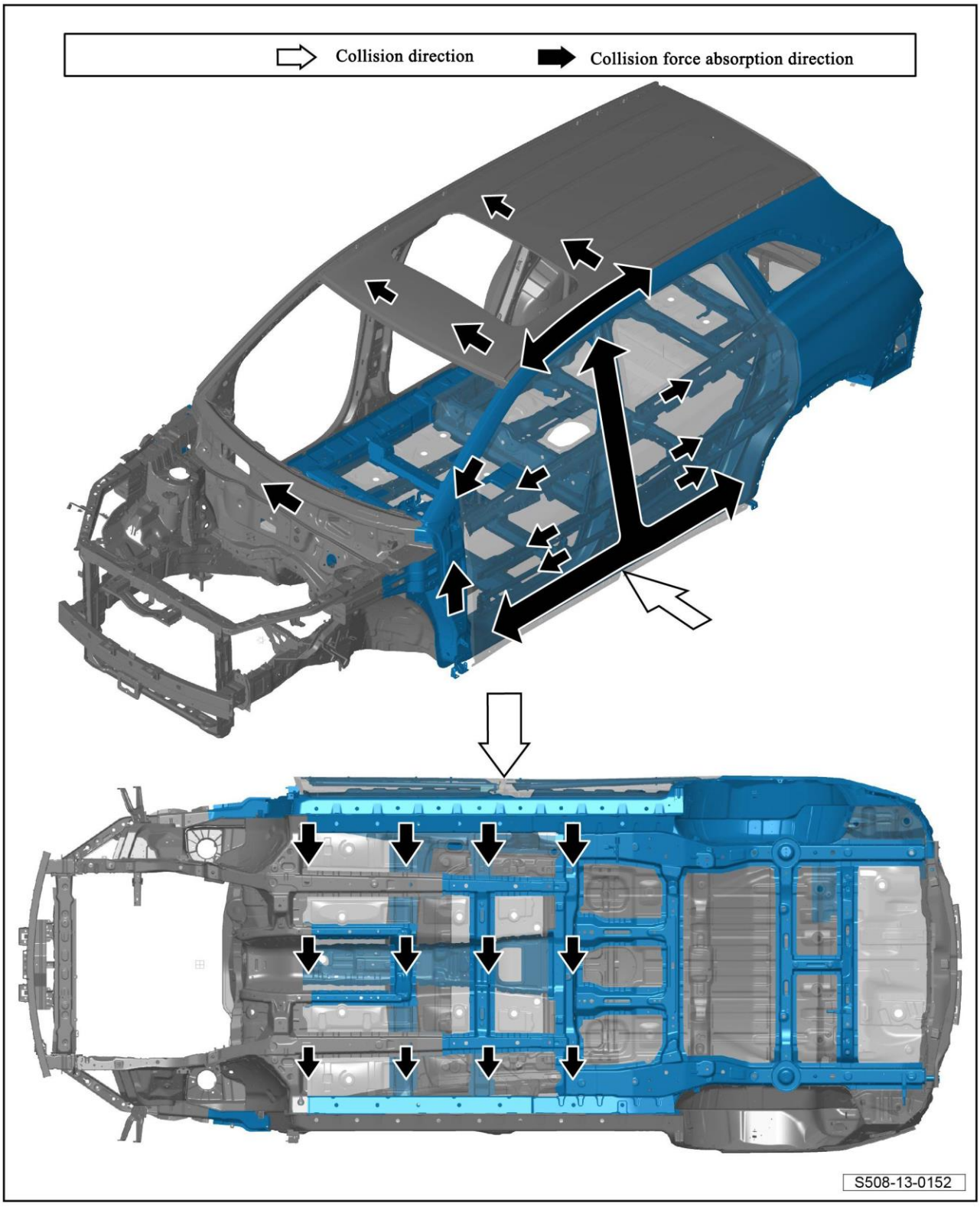
Front head-on collision (3)

- When the impact force acts on the front tower base at the higher part of the body, the impact energy is dispersed to the other side to form multi-point absorption to disperse the impact energy. Stress points A and B will cause damage and deformation and absorb some energy. After the impact energy is transmitted to point C, the damage of point D on the roof will be caused because of the moire effect. At the same time, the front tower base will move backward, and the front pillar will also tilt backward and deform, causing the front door to sink.
- The front windshield is glued, and the windshield and the body form a whole to disperse the impact force.
- If the impact force is very large, the D point will be deformed and damaged upwards, resulting in a large gap between this part and the door. At the same time, under the action of inertia force, the rear part of the body will be upturned and deformed, the center pillar will sink, and the roof area will be depressed and deformed.

Front body damage inspection

- The front body frame is composed of the front wall panel, the front longitudinal beam and the front tower base. In order to accurately determine the degree of damage, it is necessary to check not only the deformation and rupture of the parts, but also the deformation degree of the front wall panel and the front pillar thoroughly.
- Some important injuries will be ignored only by visual inspection. Therefore, it is recommended to use a professional high-precision measuring system to measure the three-dimensional coordinates of the accident vehicle. It is particularly important to use a measuring system to measure the positions of the front tower base and the left/right front longitudinal beam, as both greatly influence the wheel alignment. The measuring system must be based on the reference point of the undamaged component.
- It may be necessary to assemble the front fender and other plates for damage inspection, but pay attention to the following points:

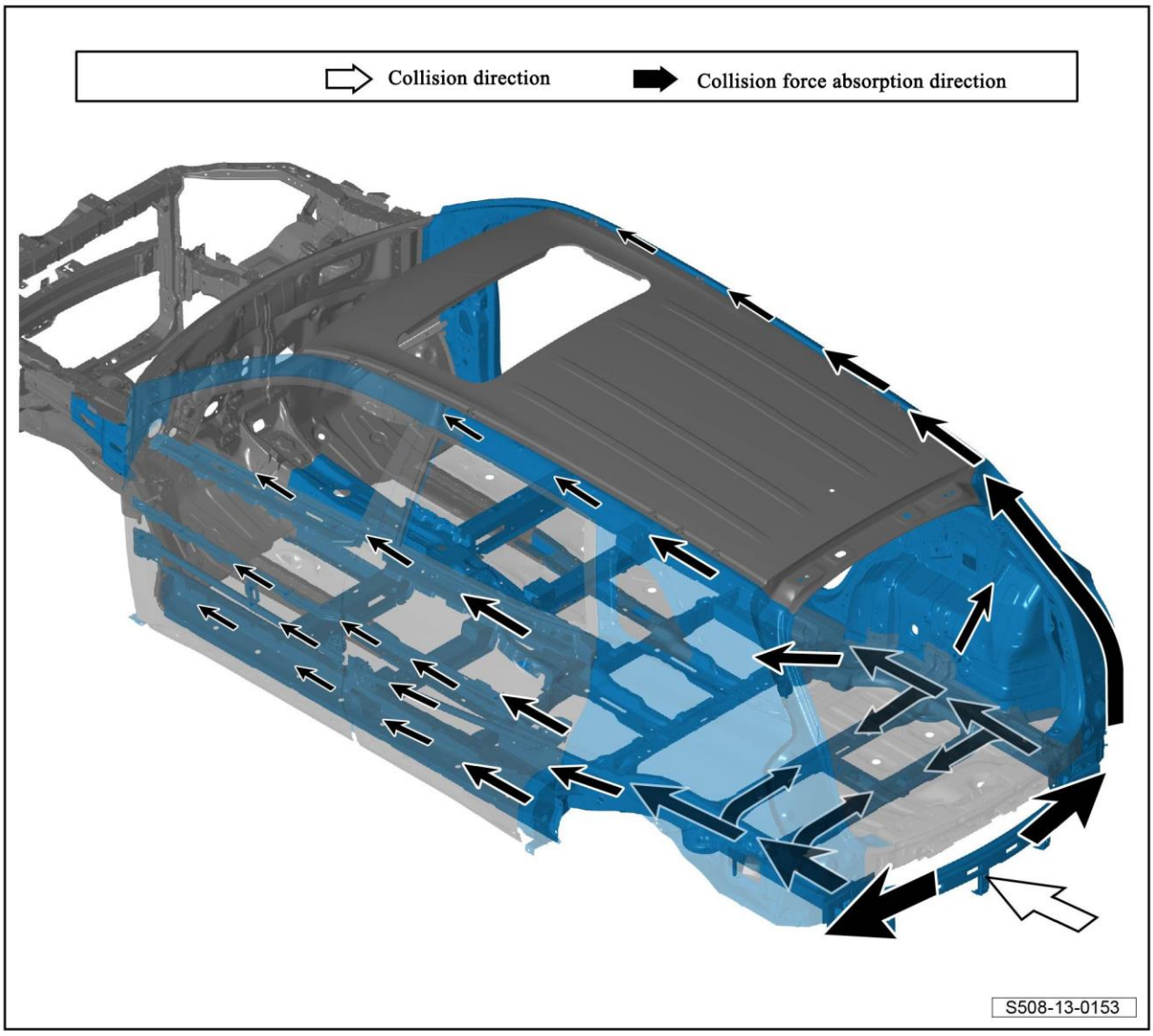
- Deformation of front wall panel
- Deformation of left/right front tower base
- Deformation of left/right front longitudinal beam



Side body damage inspection

- In addition to checking the appearance (such as the matching degree and completeness of the door), it is also necessary to measure the exact damage degree with the measuring system based on the undamaged parts:
  - The door sill reinforced panel of side wall deformed
  - Front/middle/rear pillar deformation
  - Deformation of roof panel crossmember

– Floor deformation



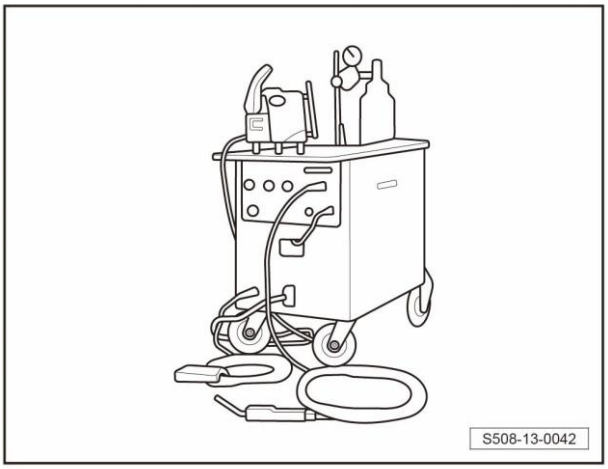
Rear body damage inspection

- In addition to checking the appearance (such as the matching degree and completeness of trunk lid and rear door), it is also necessary to check the deformation of the side, horizontal plane and vertical plane.
- Measure the exact damage degree with the measuring system based on the undamaged parts:
  - Matching degree and completeness of trunk lid and rear door
  - Deformation of rear pillar and rear side wall inner panel
  - Rear floor deformation

10.2.5 Body repair

10.2.5.1 Body component replacement - tools

Welding tools

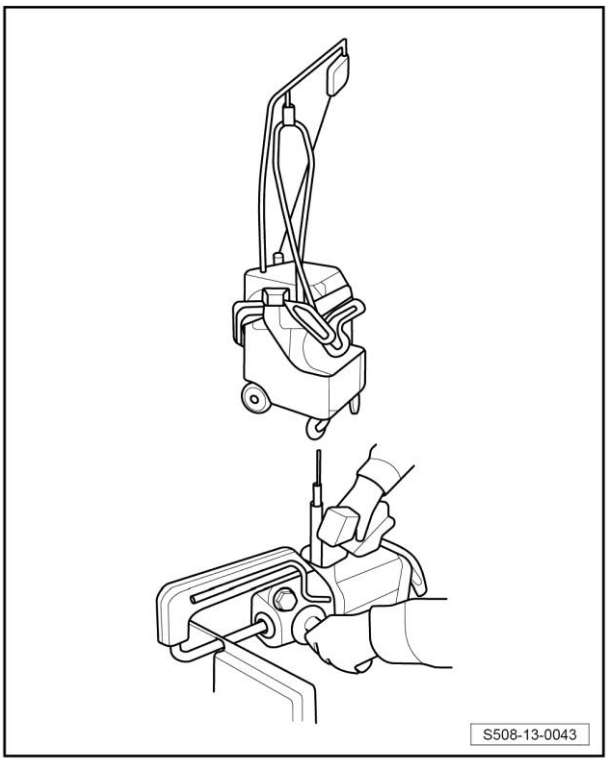


1 **MAG welding machine**

- It is used for MAG welding of steel plates.
- High quality welding can be achieved because the shielding gas prevents oxidation and nitridation and reduces distortion.
- It can only be welded from one side, so it has a wide range of applications.

Description

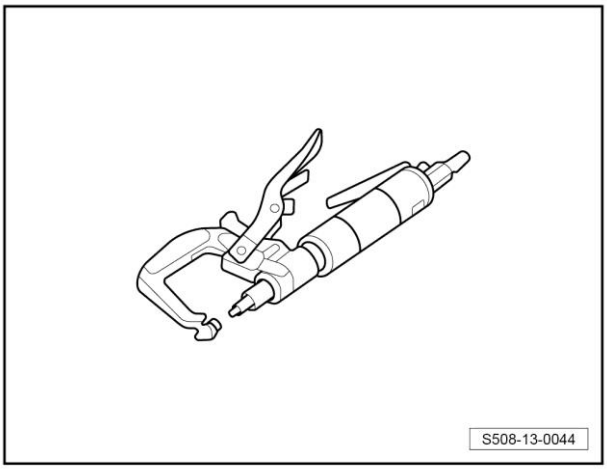
Depending on the type of welding or brazing, the shielding gas used is different.



2 Spot welding machine

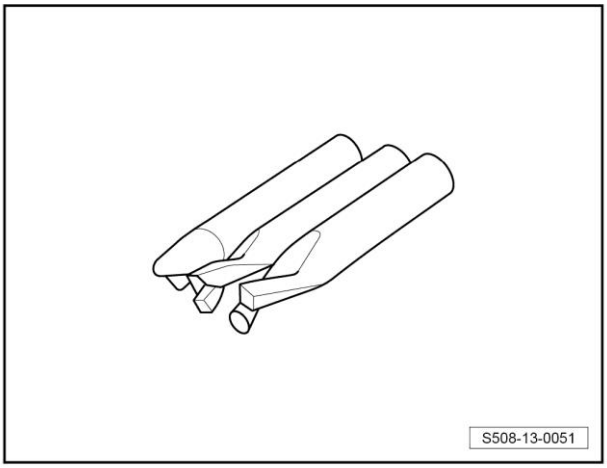
- It is used for clamping and welding steel plates.
- The welding time is very short, so the thermal application is limited, and the heat affected zone and deformation are minimal.

Spot welding cleaning tool



1 Spot welding drill

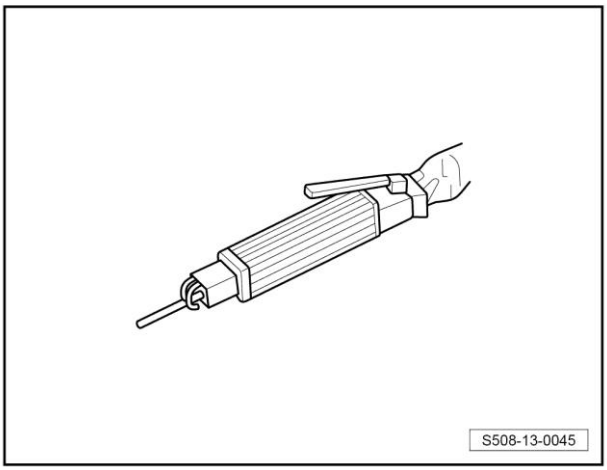
- A professional tool for removing spot welding.
- Some models are specially designed for cutting high-strength steel plates and spot welding ultra-high-strength steel plates.
- When cutting, keep the pressure and concentrate on the nugget.



2 Spot welding cutter (drill type)

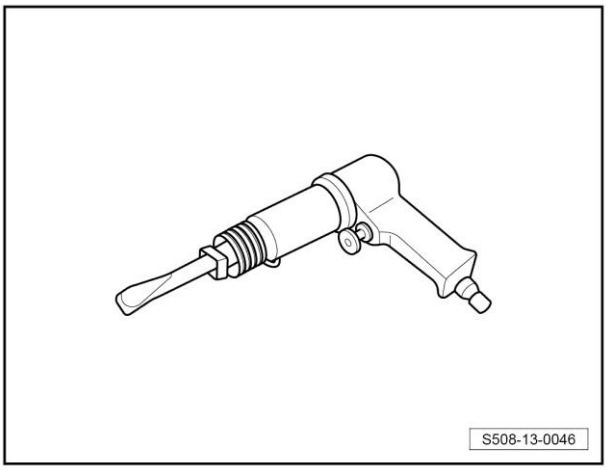
- It is used with air drill to remove spot welding.
- Its surface treatment is easy, because it won't leave nuggets on the raw materials.

Cutting tool



1 Air saw

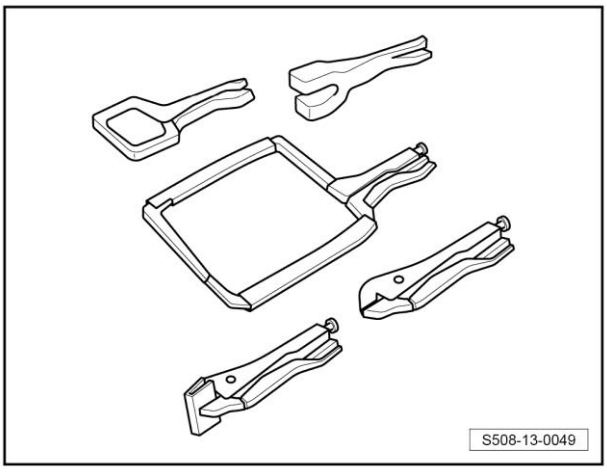
- It is used for cutting the outer plate.
- It can cut quickly and cleanly, but the noise and vibration are obvious.



2 Pneumatic chipping chisel

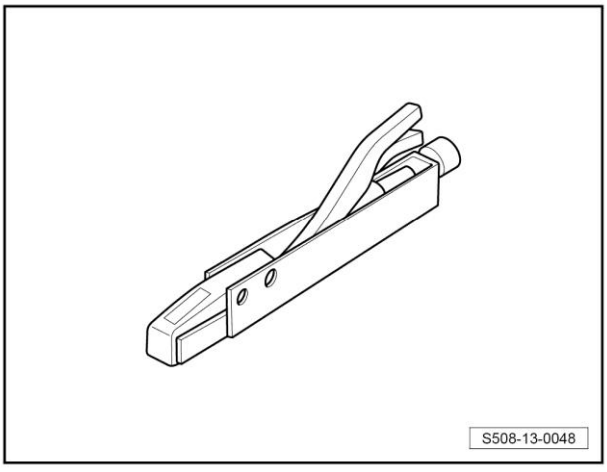
- It is used for rough cutting when removing damaged components.
- It is compact and light-weight, and can well hammer out the damaged parts and enter other components.
- It can cut straight and curved plates or cut along the punching line.
- There is no chip.
- Noise and vibration are obvious.

Positioning and fixing tools



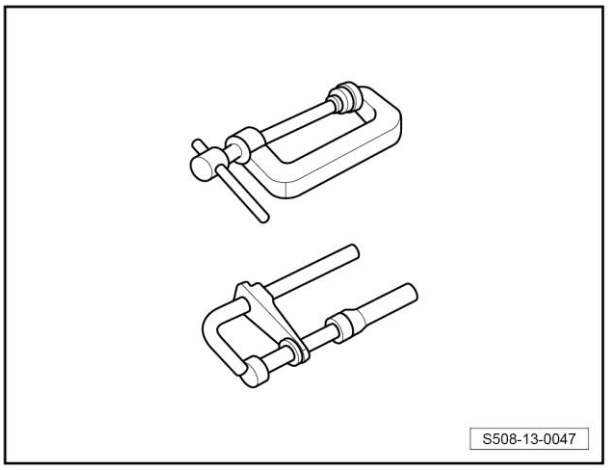
1 Vice clamp

- It is used to temporarily fix components during welding.
- It is easy to adjust the opening and clamping force.



2 **90° vice clamp**

- It is used to temporarily fix components during welding.
- It is easy to adjust the opening and clamping force.
- The 90° opening angle can confirm the assembly of the door and trunk lid.



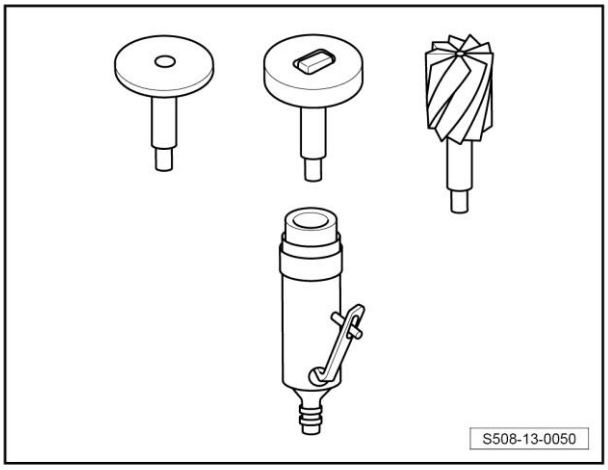
3 Screw clamp

– It is used for assembling plates and fixing components during welding.

– It is easy to adjust the spiral opening size and clamping force.

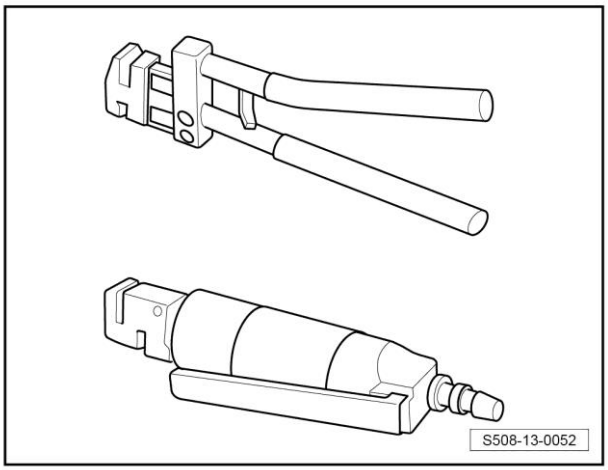
– Compared with vice clamp, it is less likely to scratch or leave marks on the plate.

Grinding tools



1 Air disc grinder

- Changing the head according to the job type, it is a very flexible tool.
- The grinding wheel can be used to remove the spot welding in the place where spot welding cleaning tool cannot be used because of the space limitation.
- Rotating wire brushes can be used to remove body sealant, coating and rust.
- Rotary cutting machine can be used to remove solder from aluminum alloy body.

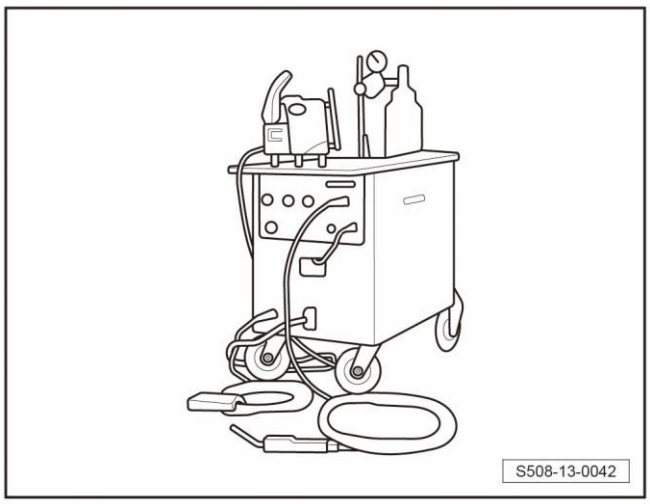


2 Steel puncher

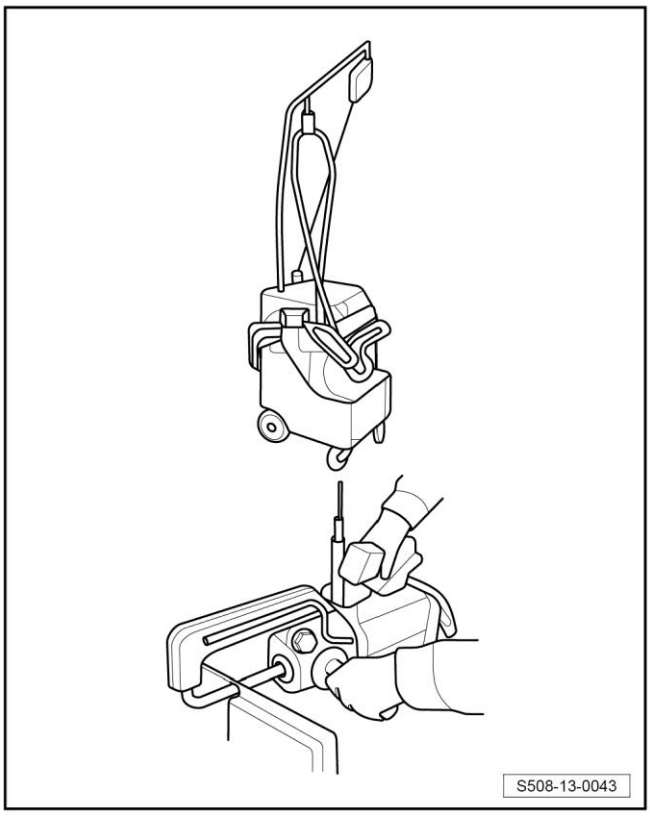
- For hole punching of MAG plug welding.
- Reduce the time required for hole punching (no drilling).
- No burr hole.
- There are two types: manual type and pneumatic type.
- It may be difficult to use on some higher strength steels.

10.2.5.2 Replacement of front engine compartment side reinforcement plate front section assembly

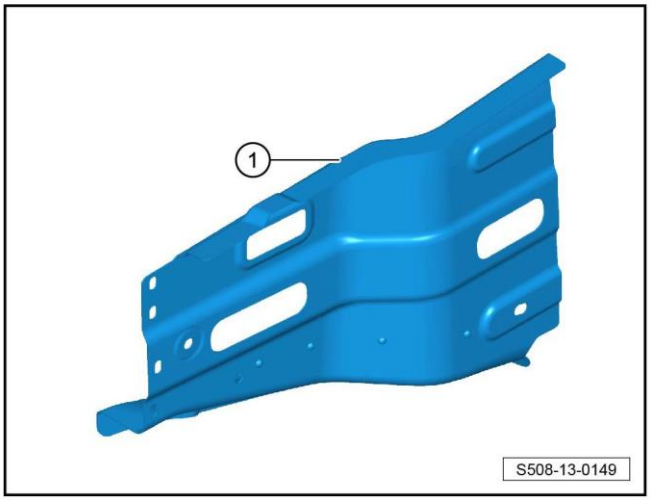
Tools and materials



Spot welding machine



MAG welder



Consult the spare parts catalog and prepare new spare parts:

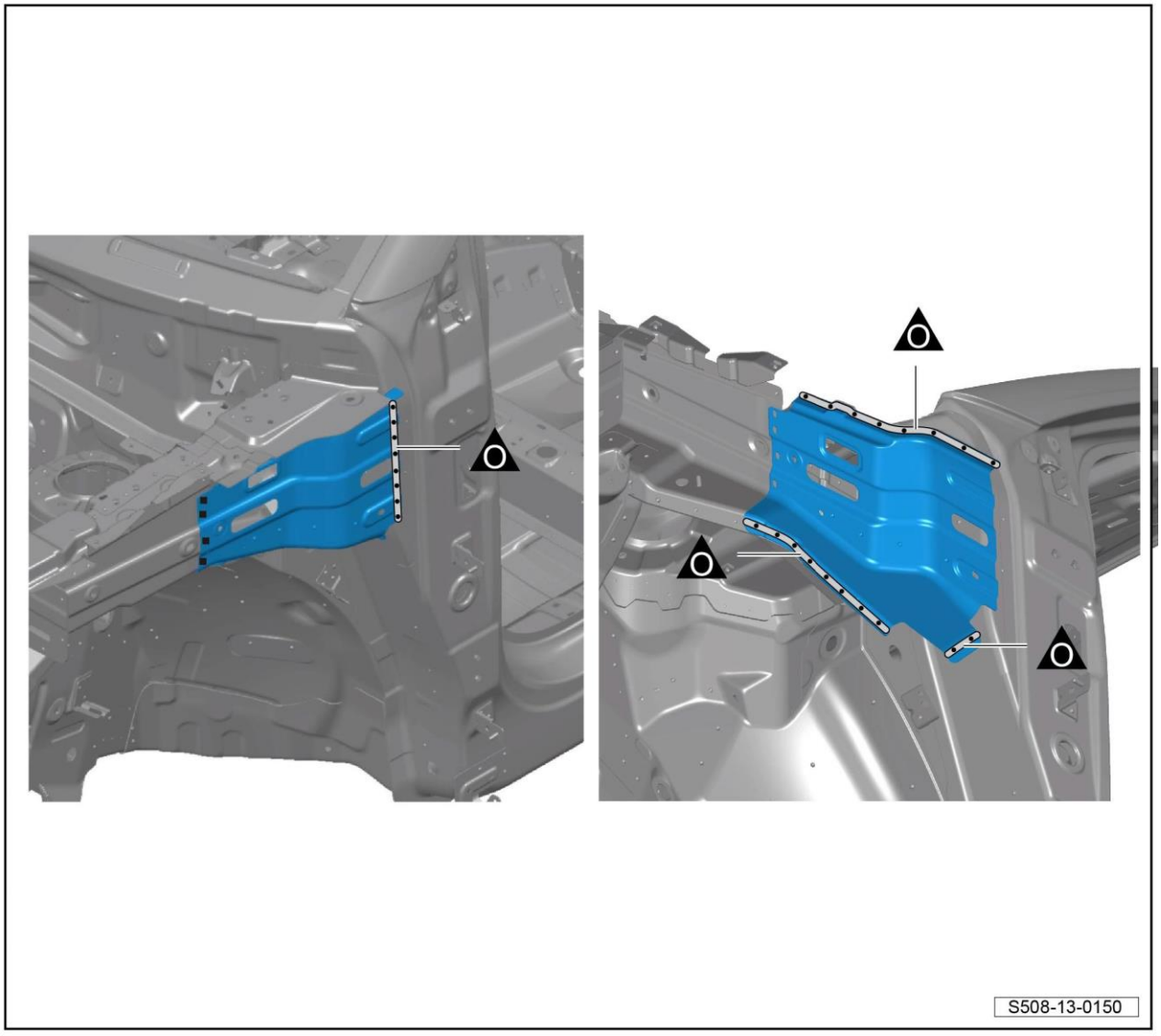
S/N	Part name
1	Front engine compartment side reinforcement plate front section assembly

Removing original parts

Mark meaning	
	Remove welding spots (the replaced panel is located on the outside)

Notes

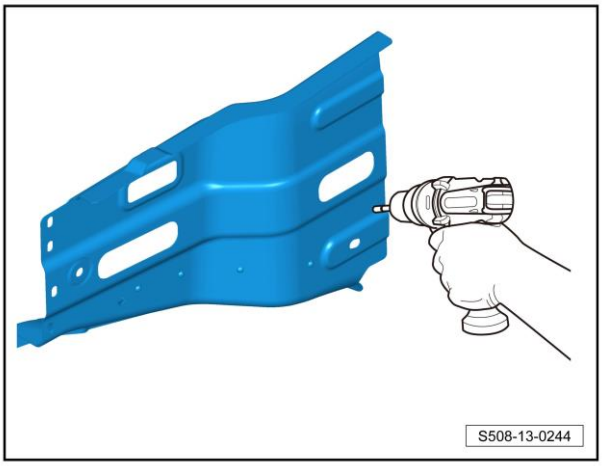
- Before starting the repair procedure, restore the body to its original size before the damage by referring to the body size drawing.



1 Drill off and grind all weld joints to separate the front engine compartment side reinforcing panel front section assembly from the body.

2 Correct the twisted and deformed hem after removing the plate.

Preparing new parts

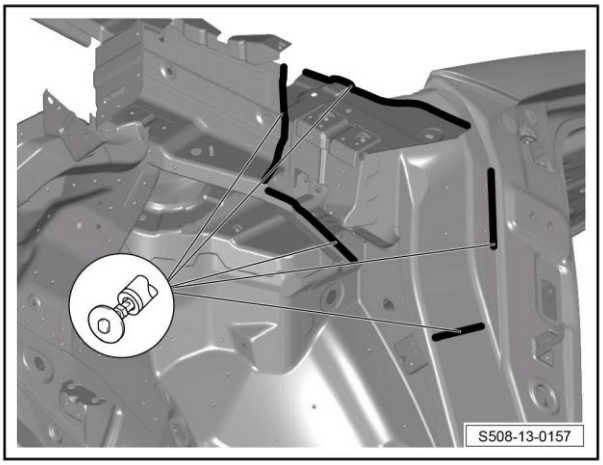


1 In order to plug weld, first drill a hole in the front engine compartment side reinforcement plate front section assembly.

Description

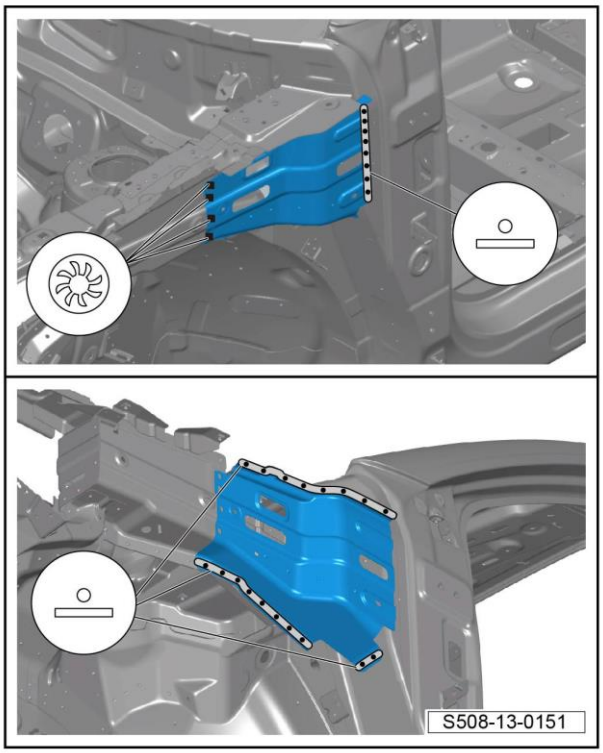
To ensure sufficient welding strength, the appropriate aperture must be selected according to the metal thickness.

Welding



1 Use a grinder to grind until the metallic luster is exposed. Clean the grinding area with cleaning agent.

Before welding, spray zinc powder spray to the bonding surface of the panel for corrosion protection, and stop the operation after the zinc powder spray completely covers the bare metal.

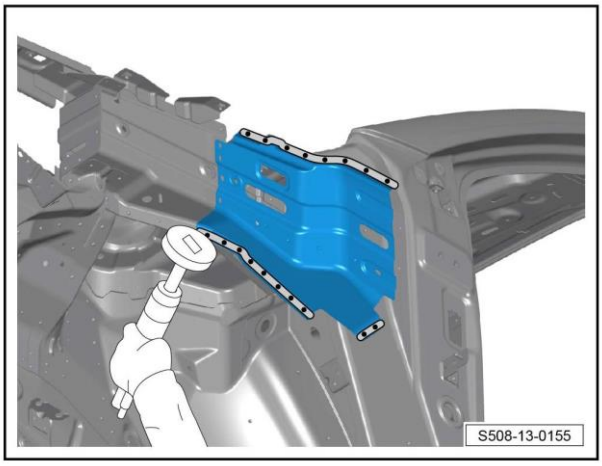


2 Install the front engine compartment side reinforcement plate front section assembly in place and clamp it with locking pliers. Plug weld with MAG welding machine.

Spot weld with a spot welding machine.

Description

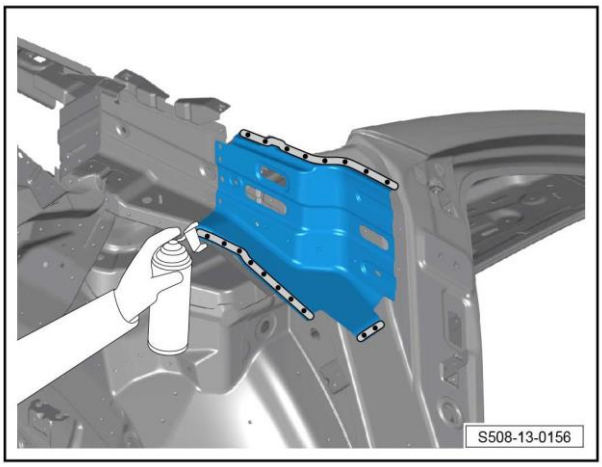
During spot welding, the number of welding spots shall be 1.3 times of that of the original factory.



3 Use a grinder to clean the welding area.

Notes

Do not excessively grind.



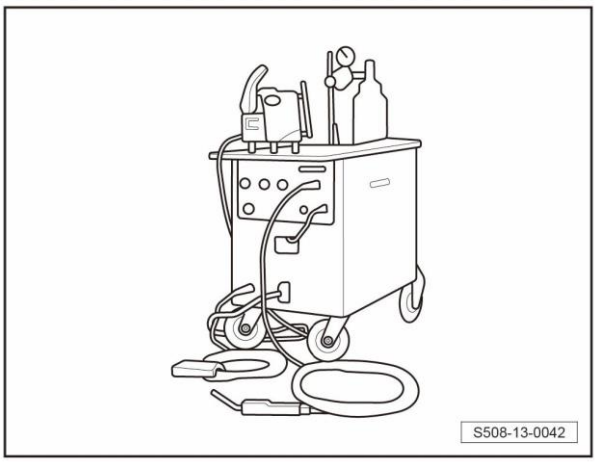
4 After welding and then grinding welding spots, the surface of the steel plate shall be sprayed with epoxy primer for corrosion protection.

Description

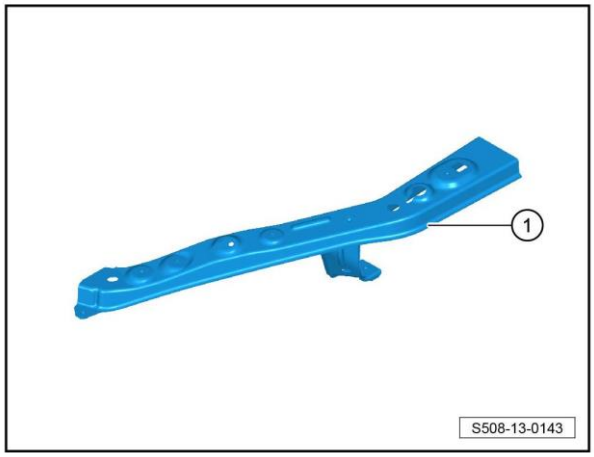
After the epoxy primer is dried, the body sealant can be applied.

10.2.5.3 Replacement of upper crossmember assembly on water tank

Tools and materials



Spot welding machine



Removing original parts

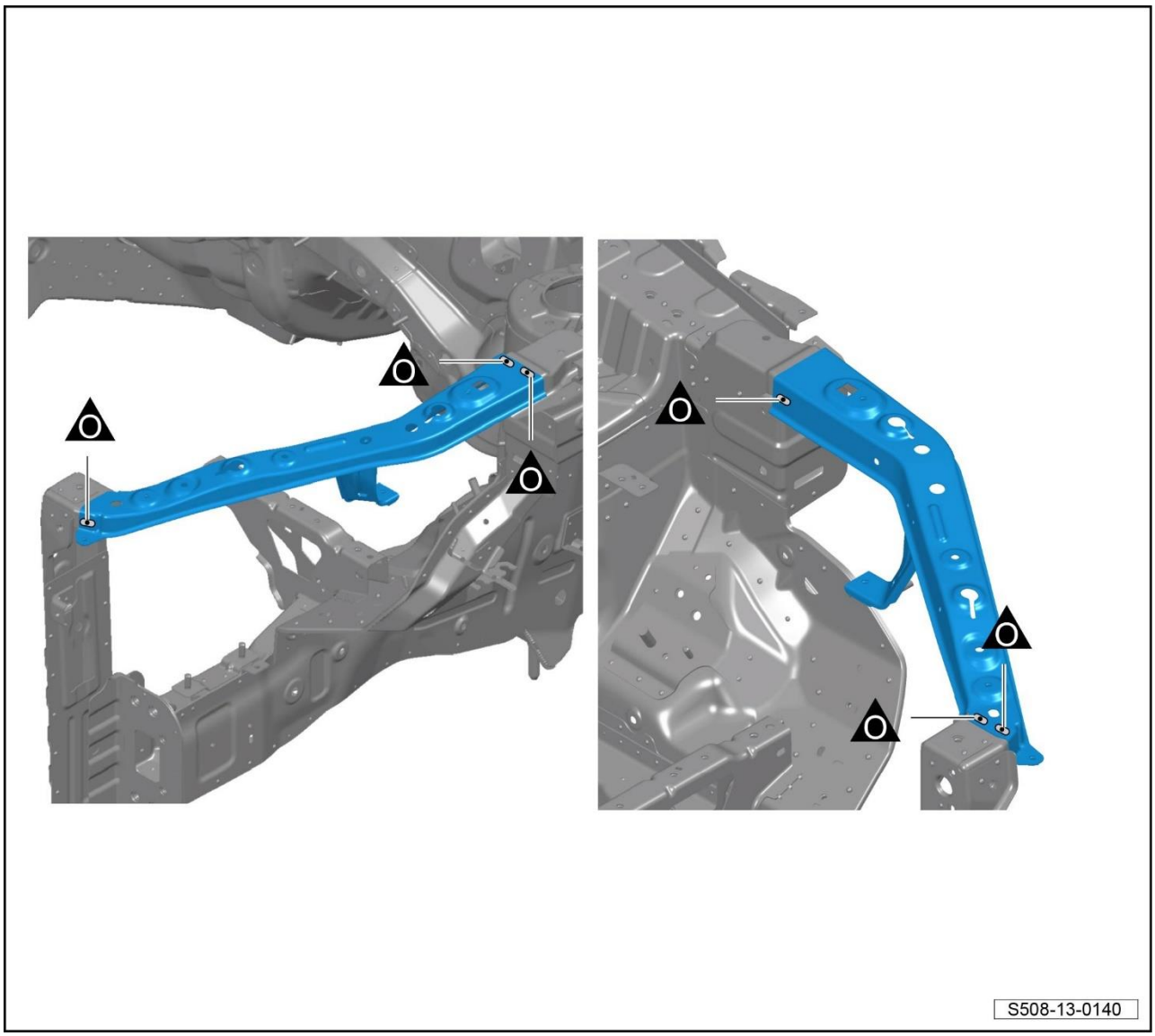
Consult the spare parts catalog and prepare new spare parts:

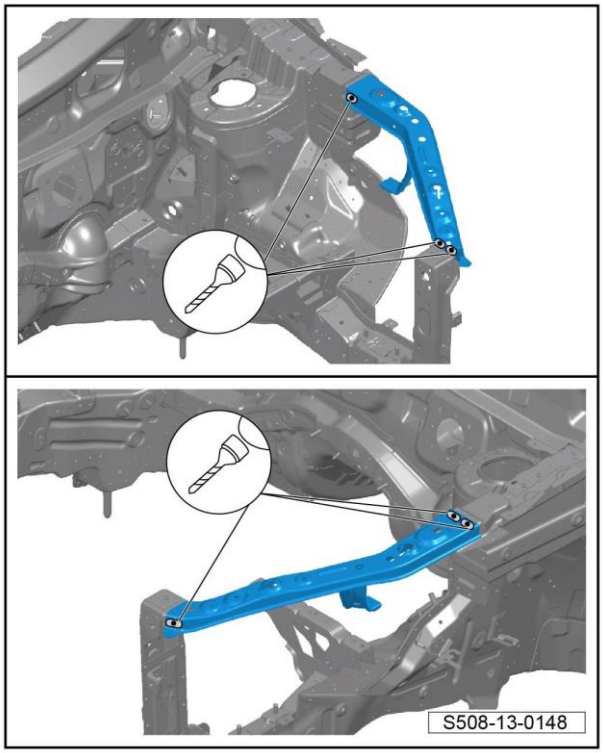
S/N	Part name
1	Upper crossmember assembly on water tank

Mark meaning	
A	Remove welding spots (the replaced panel is located on the outside)

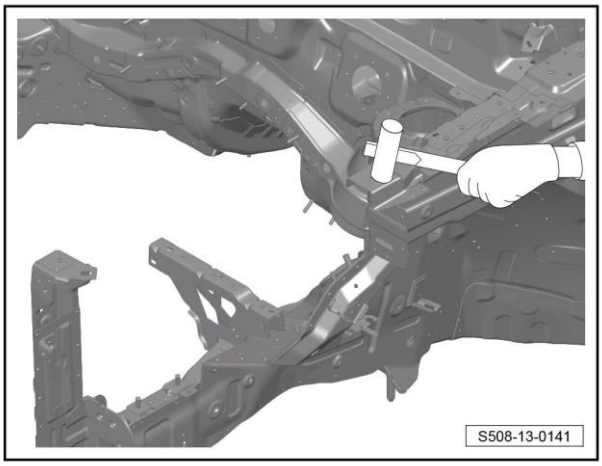
Notes

-Before starting the repair procedure, restore the body to its original size before the damage by referring to the body size drawing.



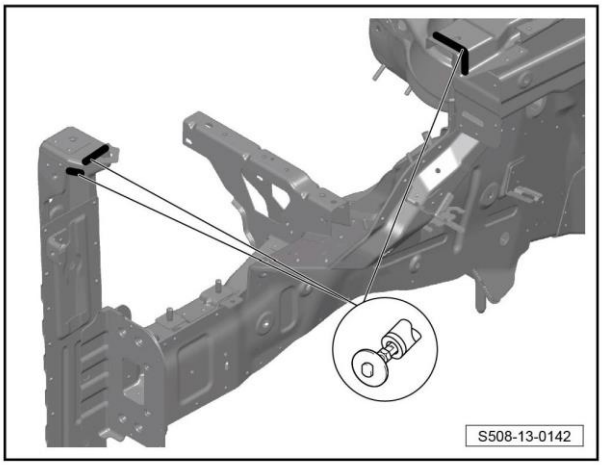


1 Drill off and grind all welding spots to separate the upper crossmember assembly on the water tank from the body.



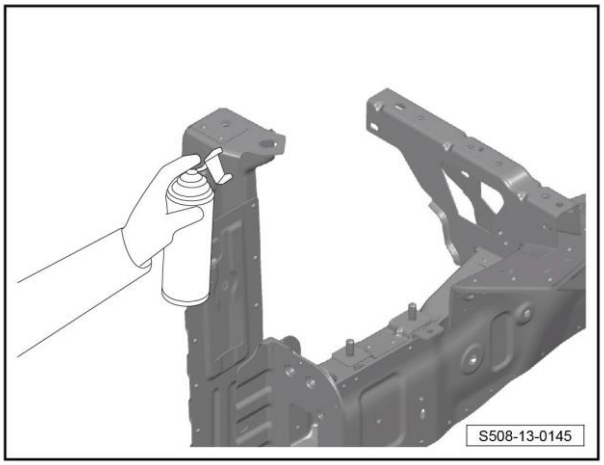
2 Correct the twisted and deformed hem after removing the plate.

Welding

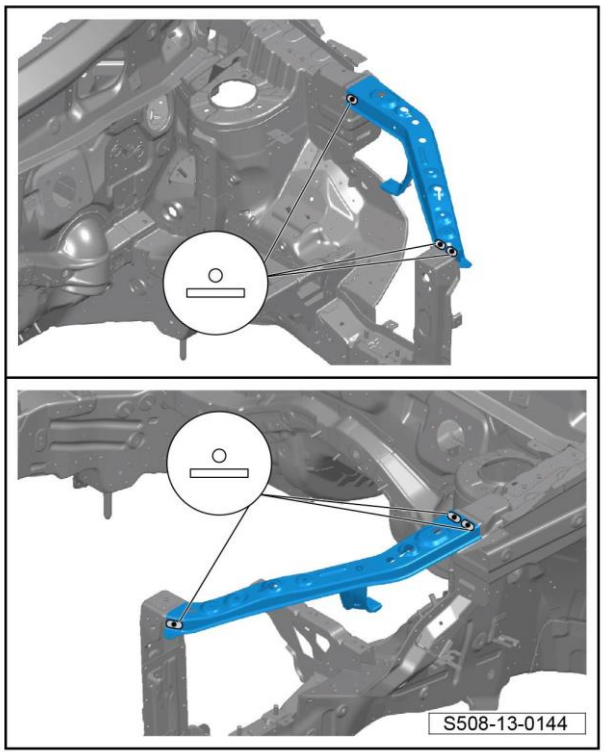


1 Use a grinder to grind until the metallic luster is exposed.

Clean the grinding area with cleaning agent.



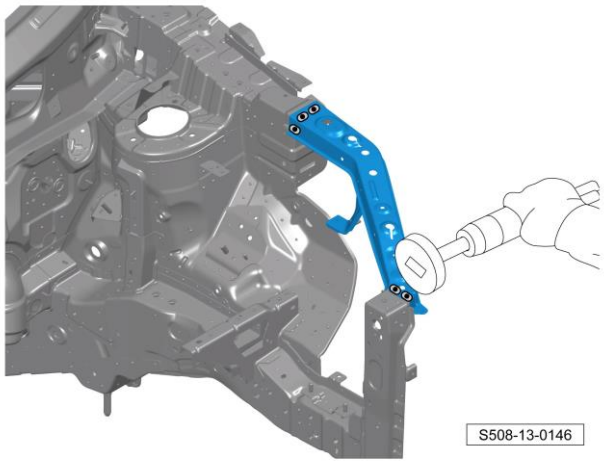
2 Before welding, spray zinc powder spray to the bonding surface of the panel for corrosion protection, and stop the operation after the zinc powder spray completely covers the bare metal.



3 Install the upper crossmember assembly on the water tank in place, and clamp it with locking pliers. Spot weld with a spot welding machine.

Description

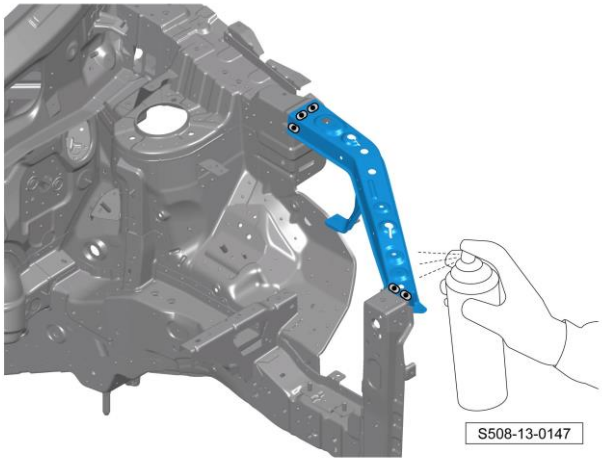
During spot welding, the number of welding spots shall be 1.3 times of that of the original factory.



4 Use a grinder to clean the welding area.

Notes

Do not excessively grind.

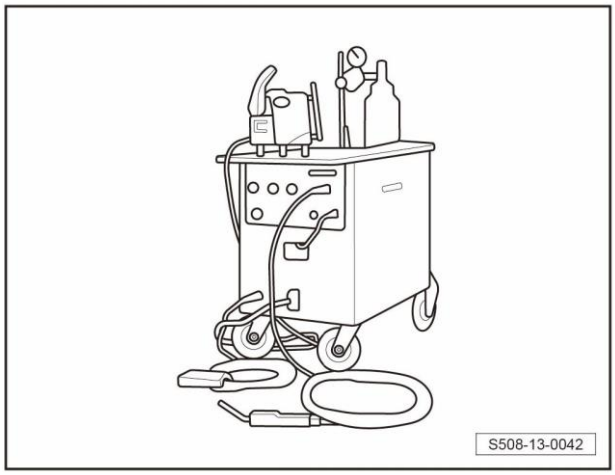


5 After welding and then grinding welding spots, the surface of the steel plate shall be sprayed with epoxy primer for corrosion protection.

Description

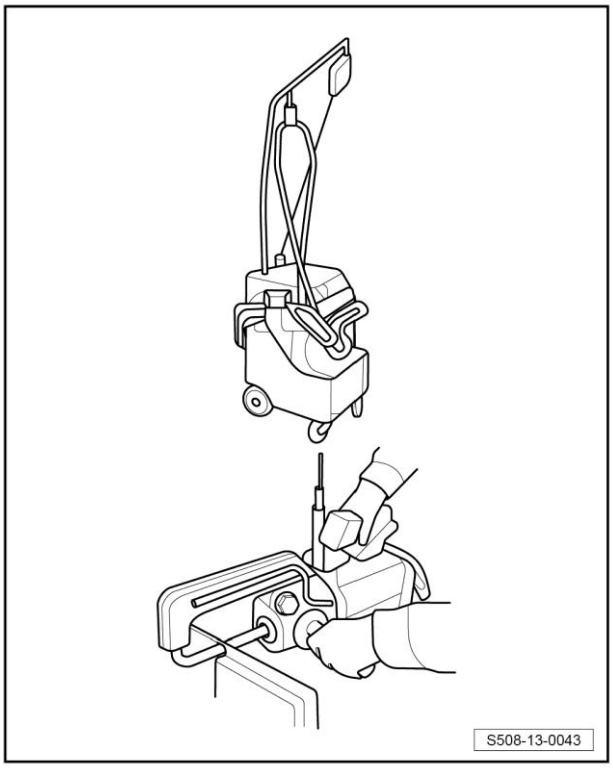
After the epoxy primer is dried, the body sealant can be applied.

Tools and materials



10.2.5.4 Replacement of A-pillar side wall outer plate

Spot welding machine



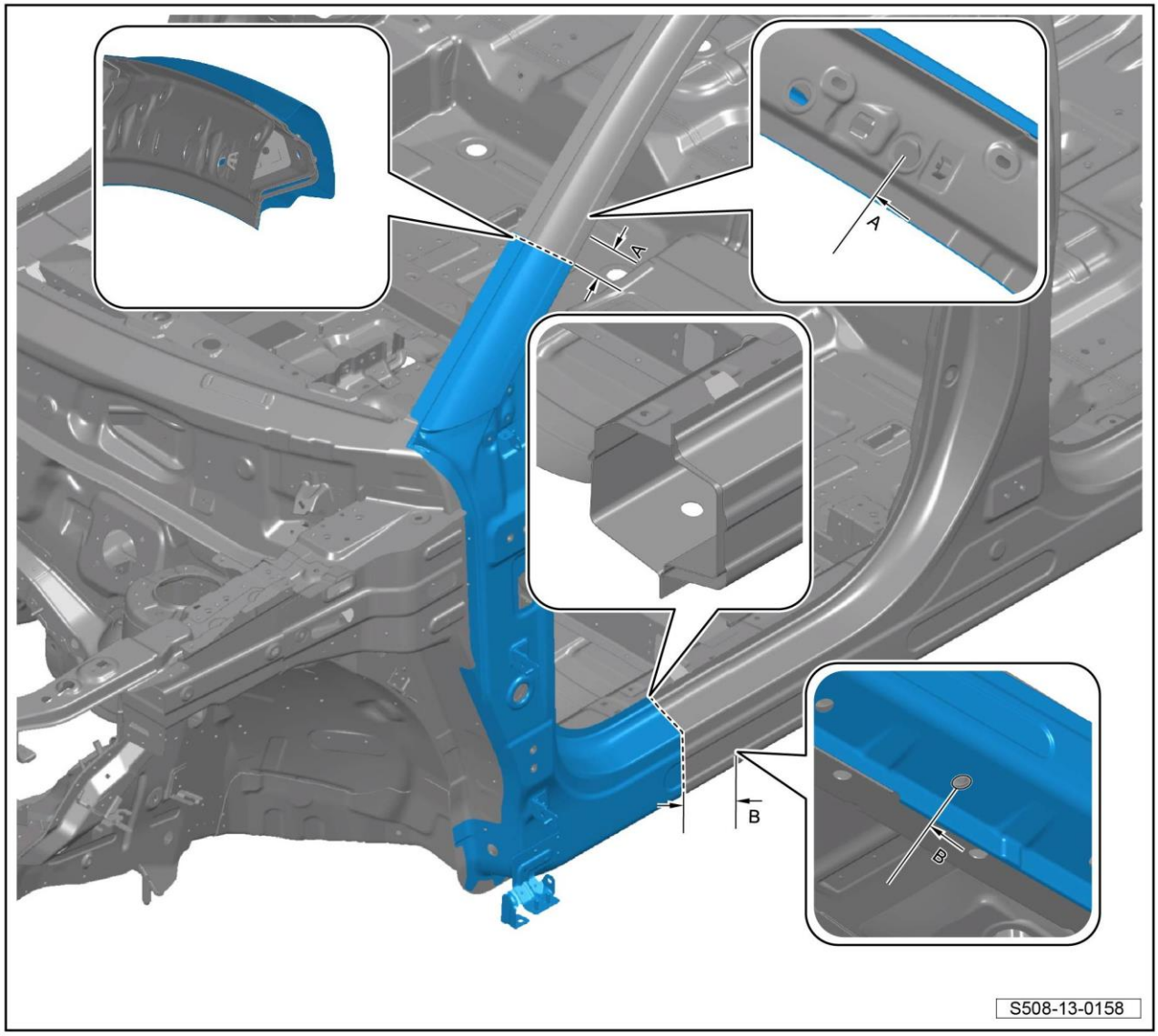
MAG welder

Consult the spare parts catalog and prepare new spare parts.

Removing original parts

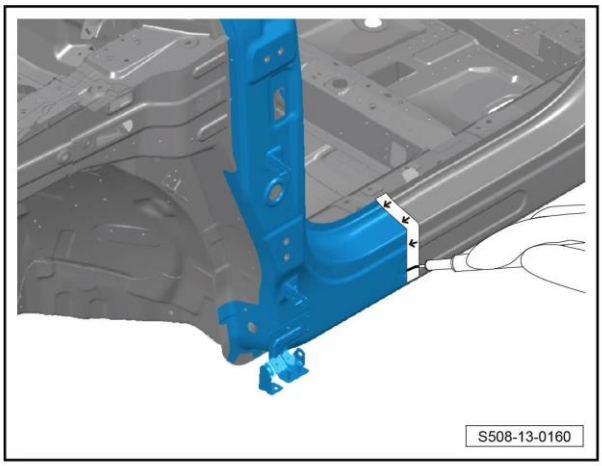
Notes

- Before starting the repair procedure, restore the body to its original size before the damage by referring to the body size drawing.

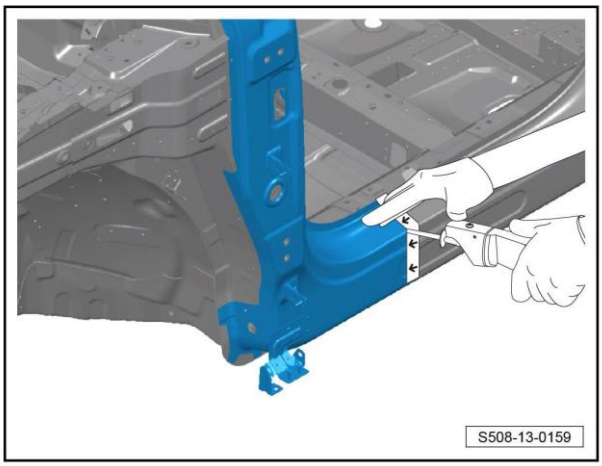


1 Measure and mark the distance of the cutting line.

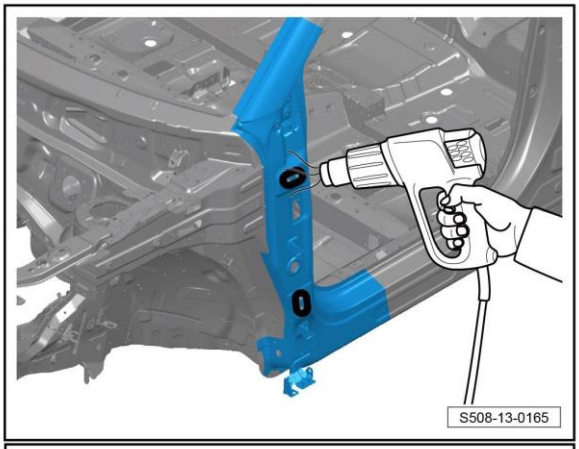
Cut line from mounting hole (A) of A-pillar inner trim panel to A-pillar outer panel	86mm
Cut line from mounting hole (B) of side skirt to A-pillar outer panel	185mm

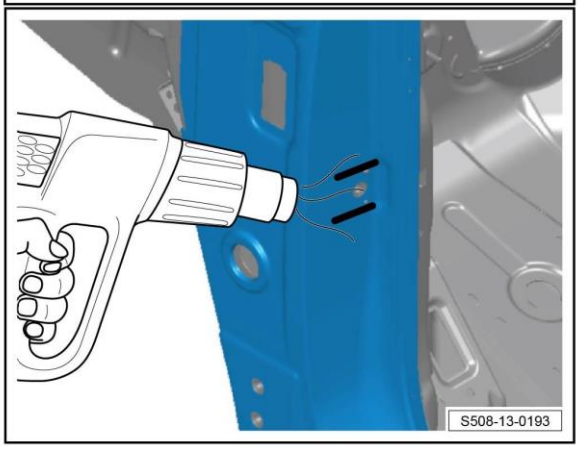


2 Determine the cutting position, use paper adhesive tape to locate the cutting line, and mark it with a pen.

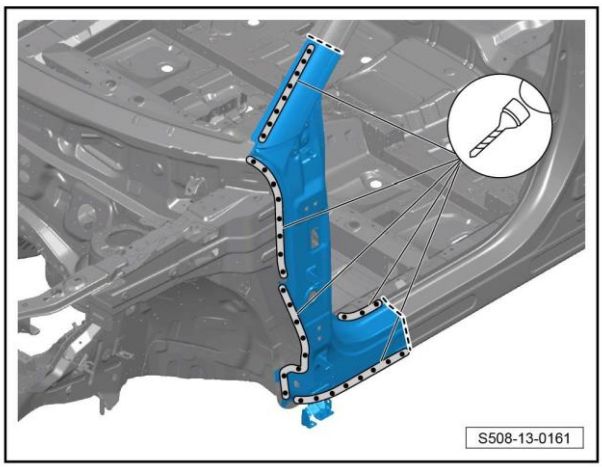


3 Before cutting the A-pillar outer panel, make a preliminary cut to ensure that only the A-pillar outer panel is cut.

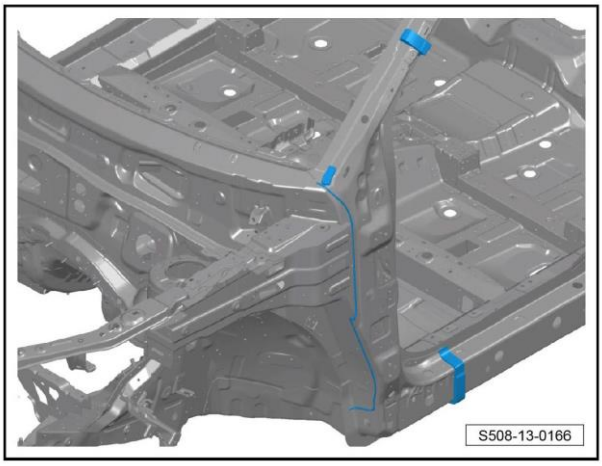




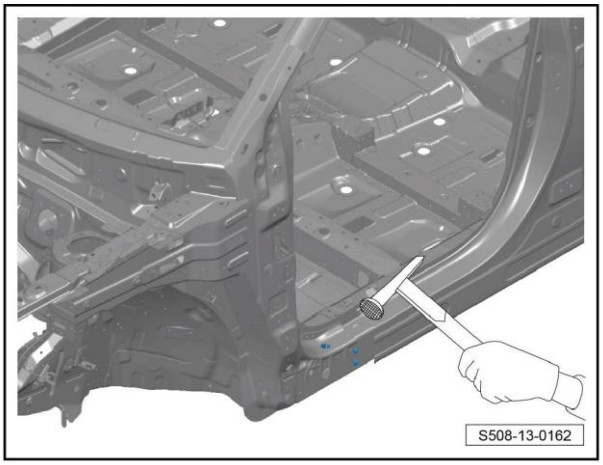
4 Heat the structural adhesive at the welding position between the A-pillar outer panel and the A-pillar reinforcement plate to make it invalid.



5 Drill out all welding spots to separate the A-pillar outer panel from the body.



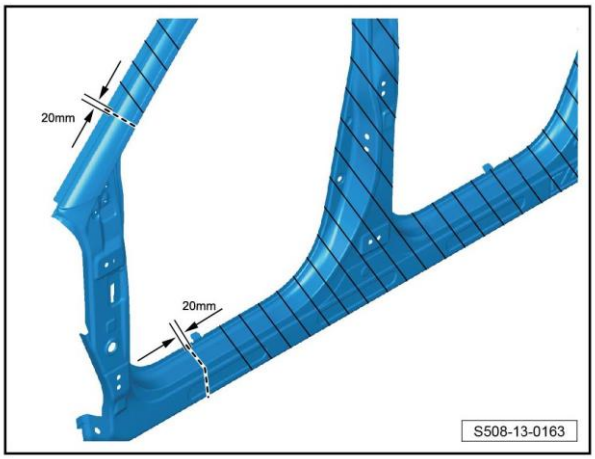
6 Remove the residual foam from the vehicle.



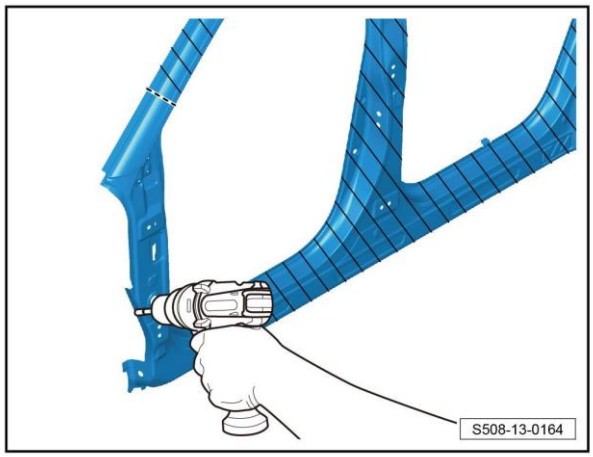
7 Correct the twisted and deformed hem after removing the plate.

Preparing new parts

1 Mark the cutting line to the new A-pillar outer panel, add 20 mm lap at the lap end, and cut along the marking line.

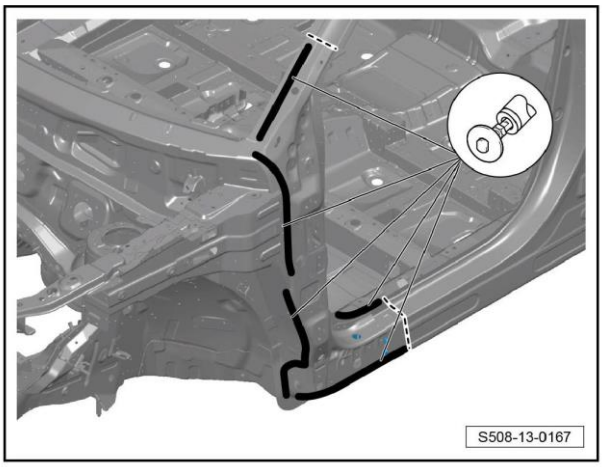


2 In order to perform plug welding, a hole shall first be drilled in the A-pillar outer panel.



Plug hole diameter	
Description	A-pillar outer panel
Hole diameter (Φ)	5.0mm

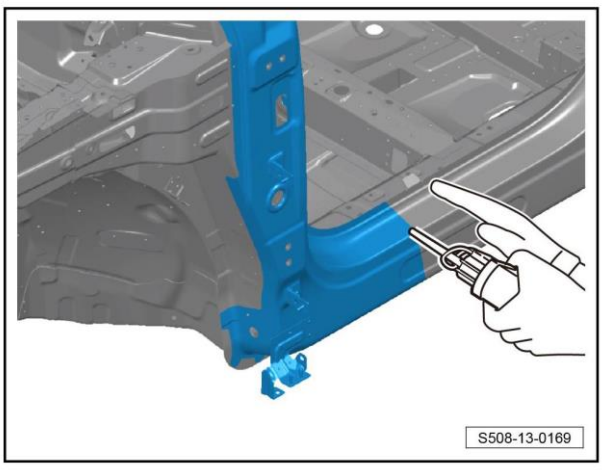
Welding



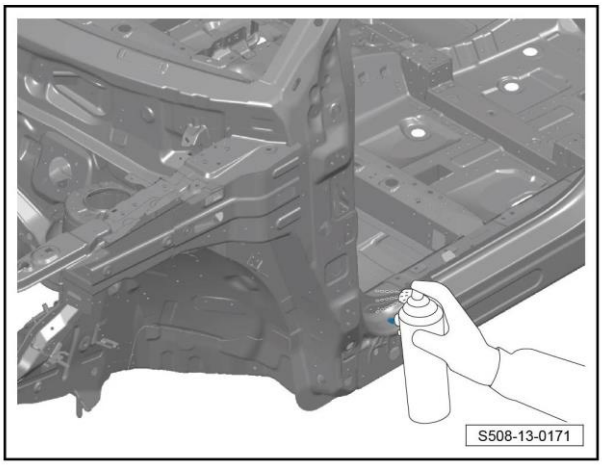
1 Use a grinder to grind until the metallic luster is exposed, and do not damage other panels. Clean the grinding area with cleaning agent.

2 Clamp the A-pillar outer panel in place by using the locking pliers, align the panel and match the front door hinge mounting hole.

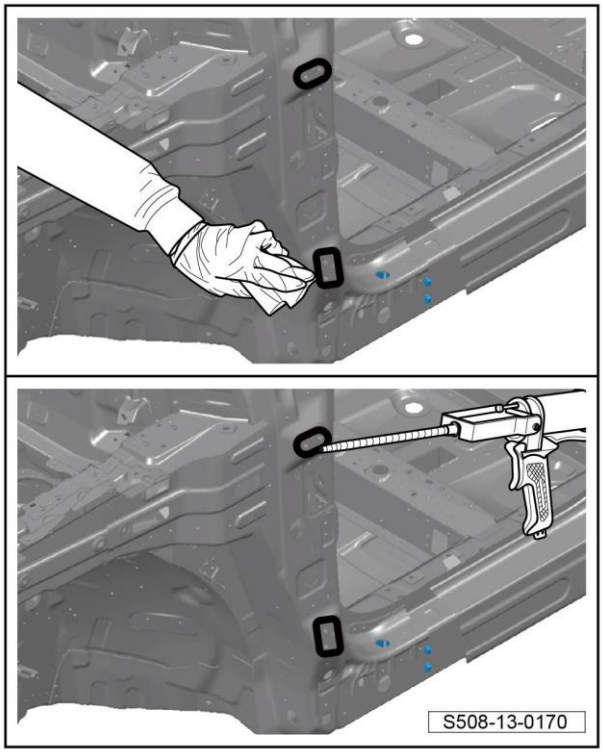
Temporarily weld the A-pillar outer panel, temporarily install the front door, and close the door to check whether the gaps are normal.



3 Accurately cut the A-pillar outer panel cutting piece.

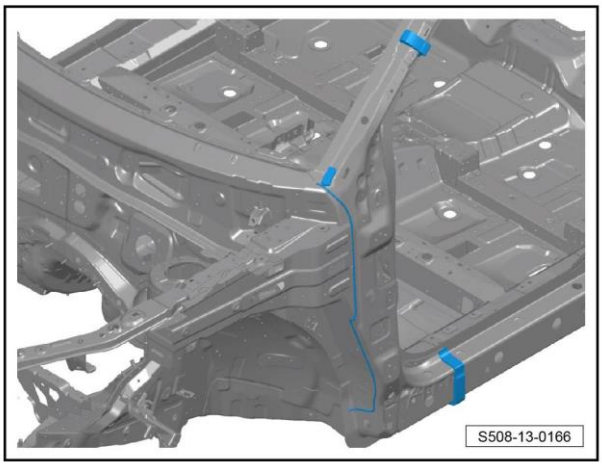


4 Before welding, spray zinc powder spray to the bonding surface of the panel for corrosion protection, and stop the operation after the zinc powder spray completely covers the bare metal.

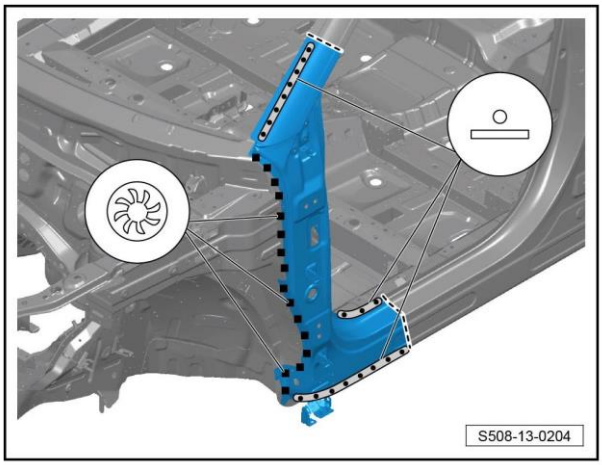


5 Clean with cleaning agent.

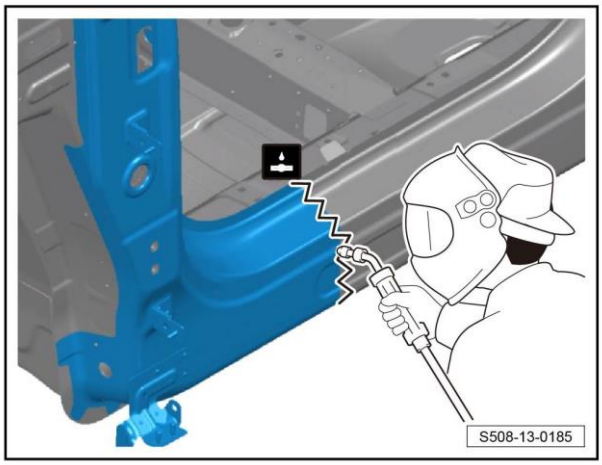
Apply two-component structural adhesive to the joint of the door hinge mounting hole, the checkstrap mounting hole and the side wall outer panel.



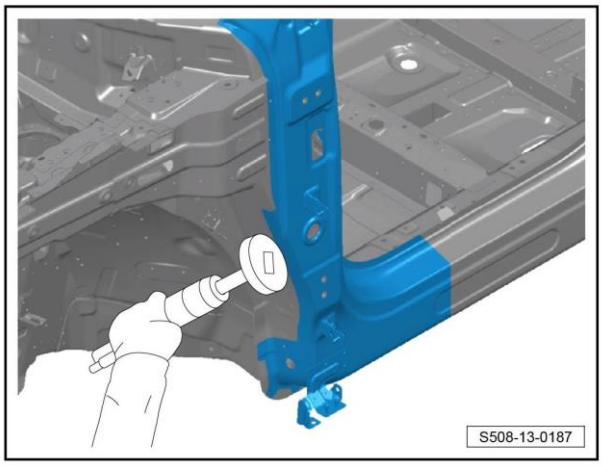
6 Spray styrofoam on the body, fix the new A-pillar outer panel, and gently press the styrofoam area to make the new A-pillar outer panel in place and seal it.



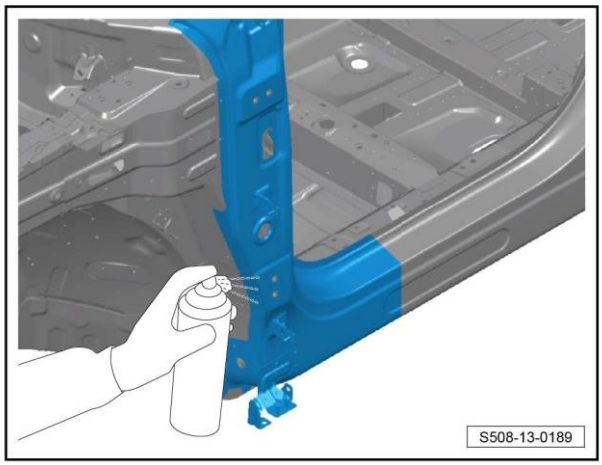
7 Plug weld with MAG welding machine. Spot weld with a spot welding machine.



8 Butt weld with MAG welding machine.



9 Use a grinder to grind the welding area.



10 Clean the grinding area with cleaning agent.

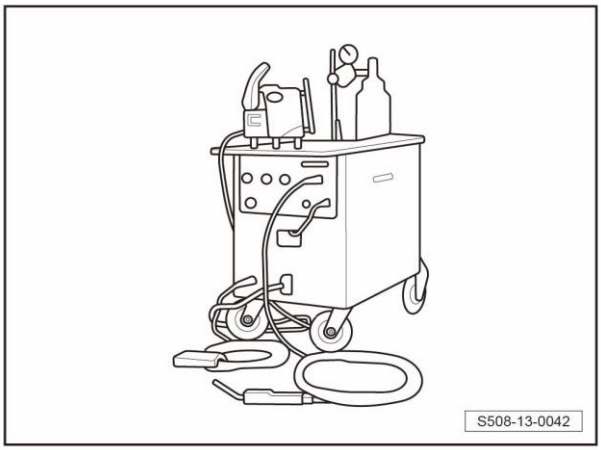
After grinding, the surface of the panel shall be sprayed with epoxy primer for corrosion protection. After the epoxy primer is dried, the body sealant can be applied.

Apply sealant at each joint.

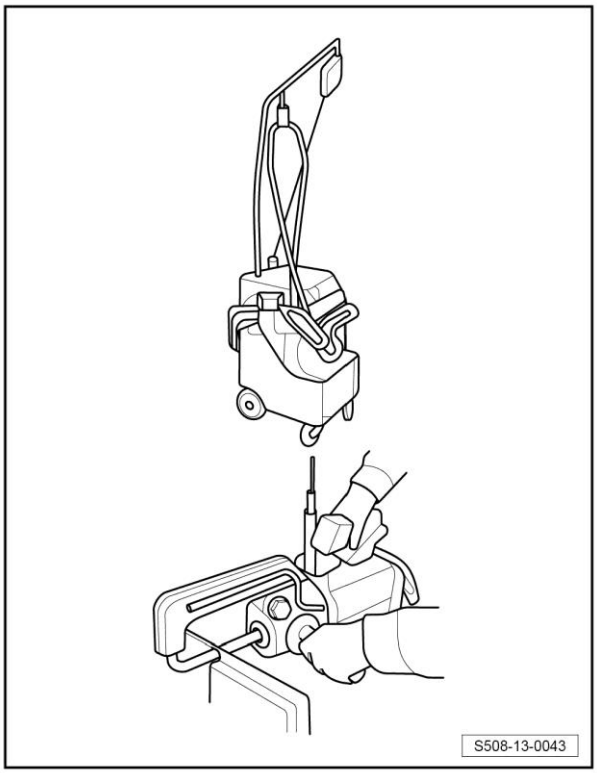
Only after the sealant is dry can the repair be completed by spraying the paint coating.

10.2.5.5 Replacement of B-pillar side wall outer plate

Tools and materials



Spot welding machine



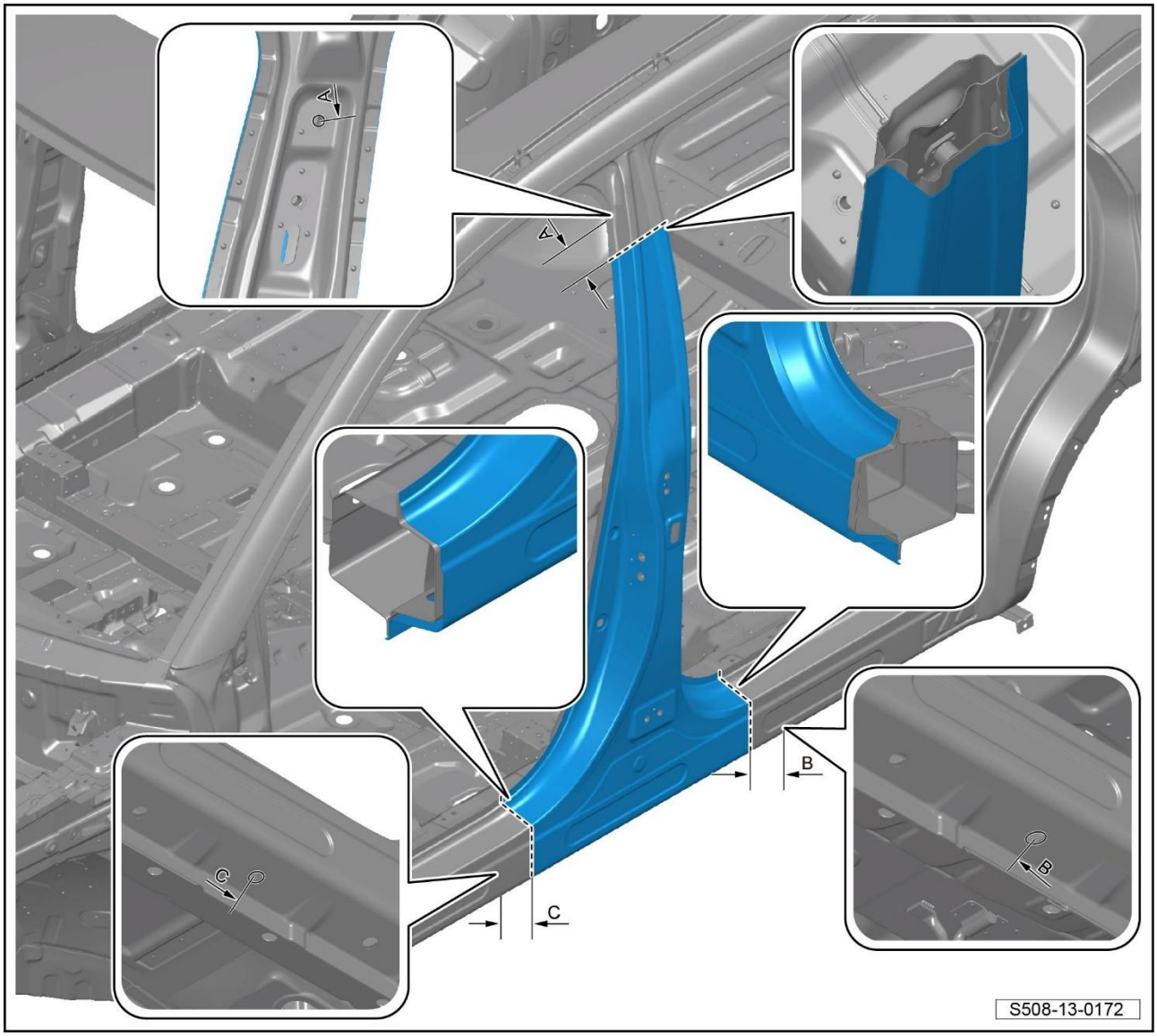
MAG welder

Consult the spare parts catalog and prepare new spare parts.

Removing original parts

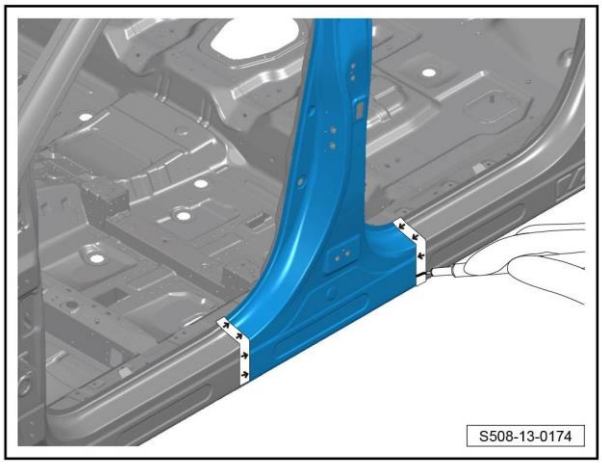
Notes

- Before starting the repair procedure, restore the body to its original size before the damage by referring to the body size drawing.

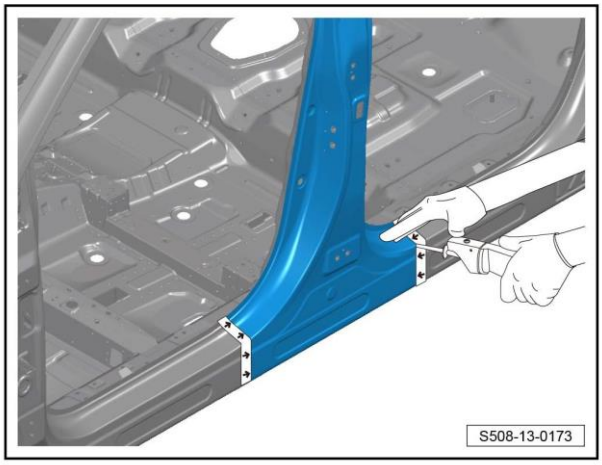


1 Measure and mark the distance of the cutting line.

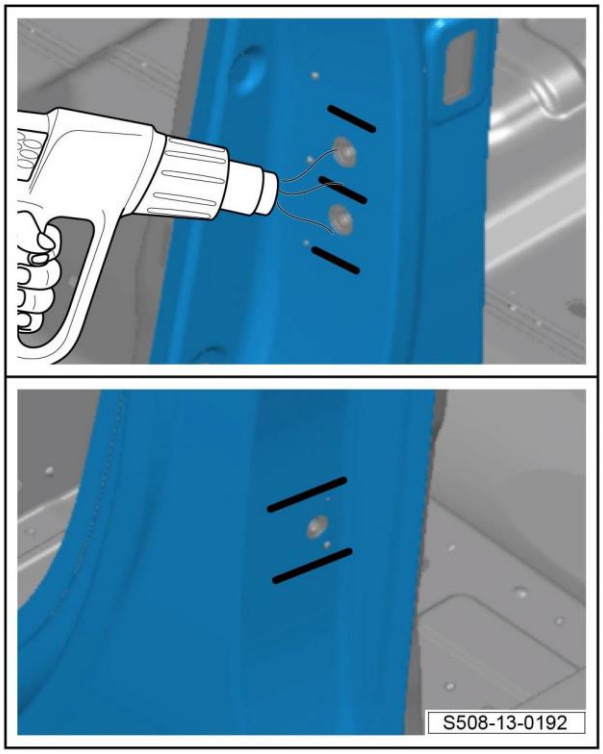
Cut line from seat belt height adjuster mounting hole (A) to B-pillar outer panel	53mm
Cut line from side skirt mounting hole (B) to B-pillar outer panel	235mm
Cut line from side skirt mounting hole (C) to B-pillar outer panel	150mm



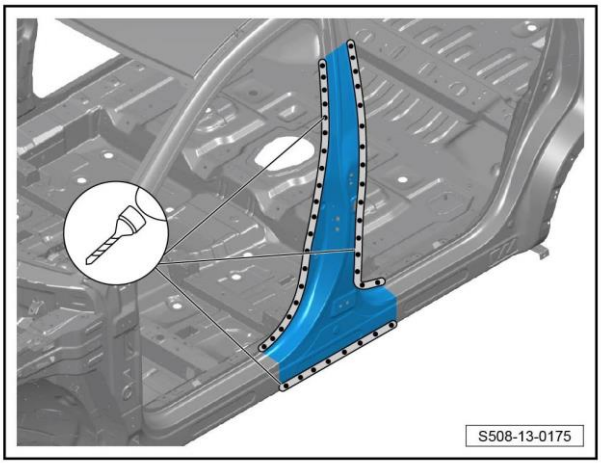
2 Use paper adhesive tape to locate the cutting line, and mark it with a pen.



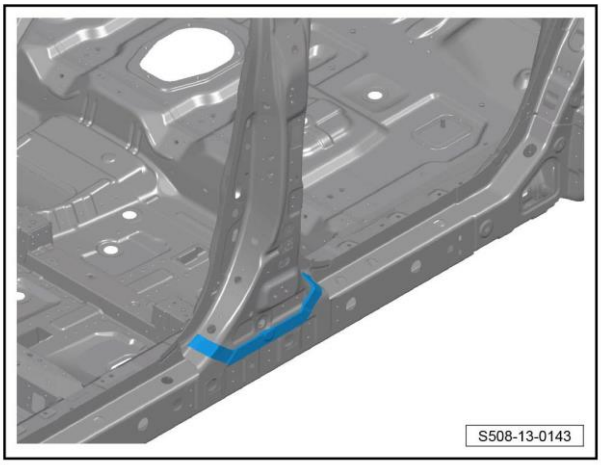
3 Before cutting the B-pillar outer panel, make a preliminary cut to ensure that only the B-pillar outer panel is cut.



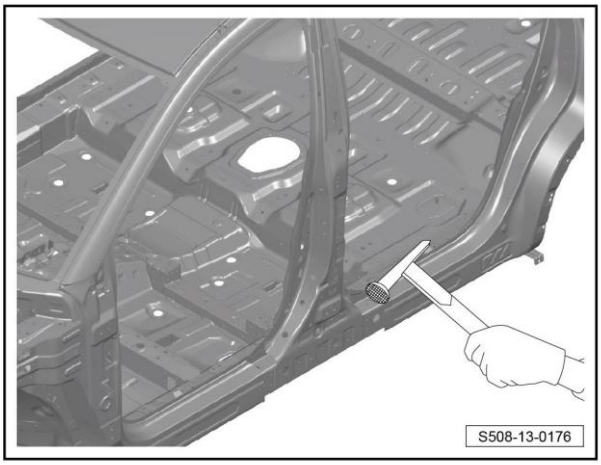
4 Heat the structural adhesive in the welding area between the B-pillar outer panel and the B-pillar reinforcement plate (the installation position of the front door lock catch and the rear door checkstrap) to make it invalid.



5 Drill out all welding spots to separate the B-pillar outer panel from the body.

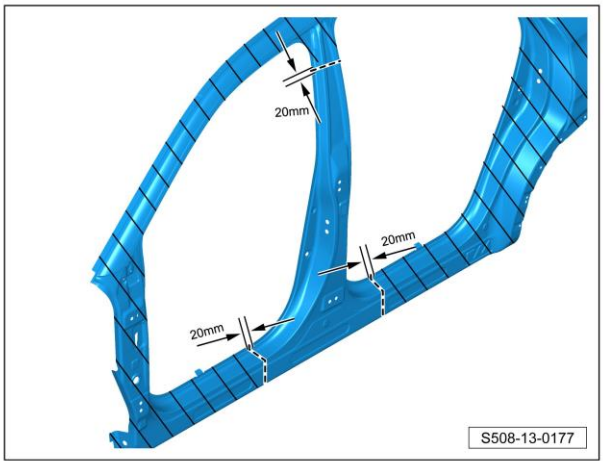


6 Remove the residual foam from the vehicle.

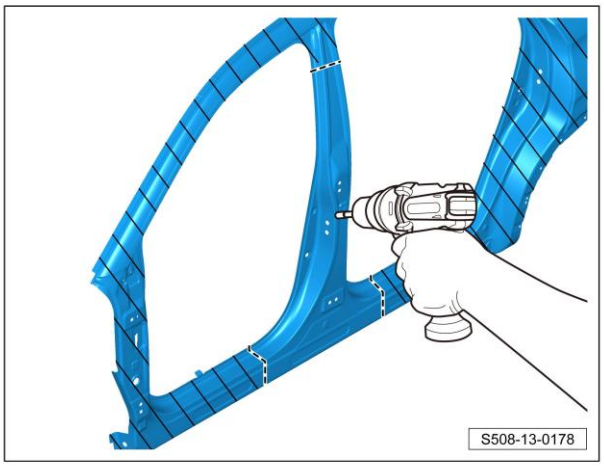


7 Correct the twisted and deformed hem after removing the plate.

Preparing new parts

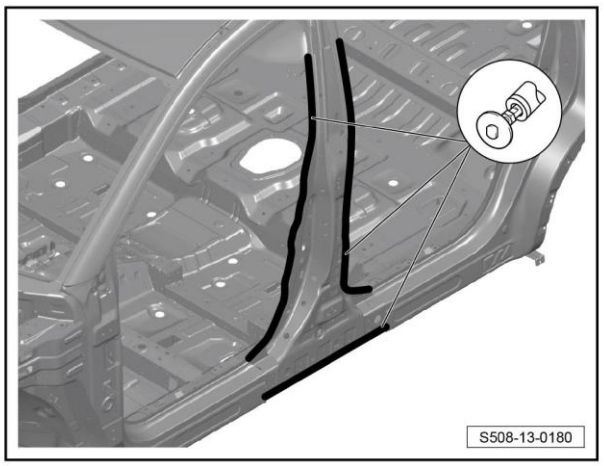


1 Mark the cutting line to the new B-pillar outer panel cutting piece, add 20 mm lap at the lap end, and cut along the marking line.

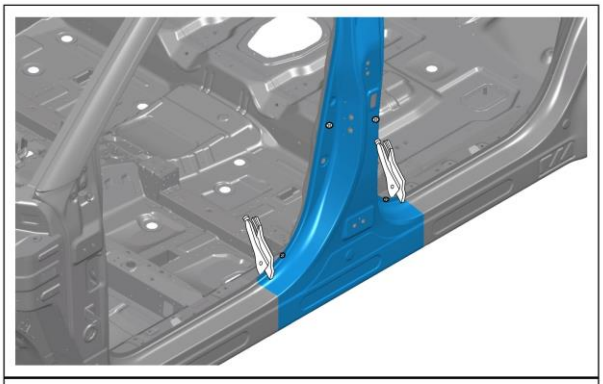


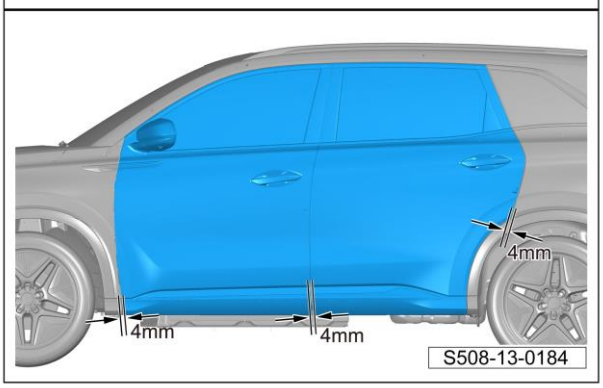
2 In order to perform plug welding, a hole shall first be drilled in the B-pillar outer panel.

Welding



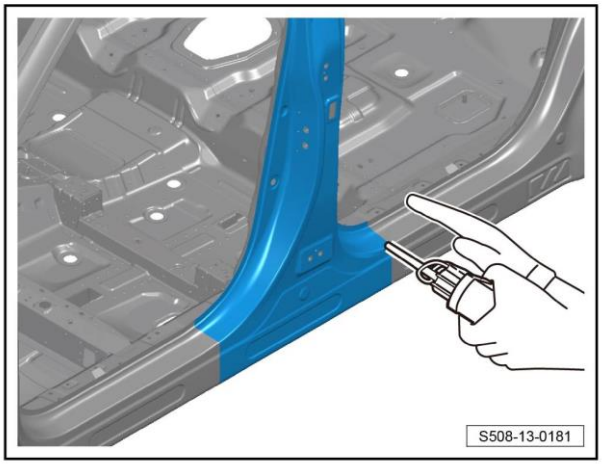
1 Use a grinder to grind until the metallic luster is exposed. Clean the grinding area with cleaning agent.



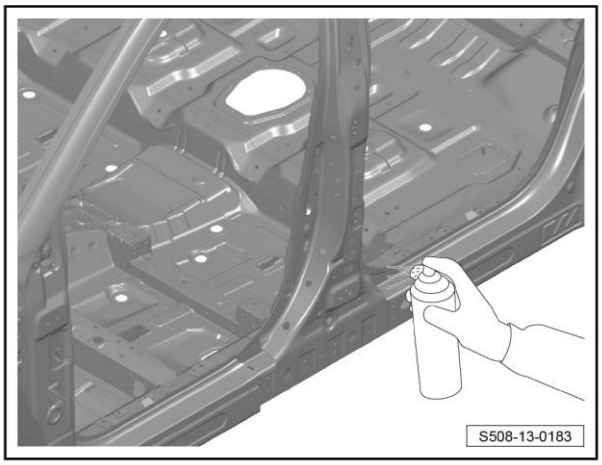


2 Clamp with the locking pliers, install the B-pillar outer panel in position, align the plate and match the rear door hinge mounting holes. Drill holes on the B-pillar outer panel with Φ3.2 mm drill bit, and use 4 mm self-tapping screws for temporary fixing.

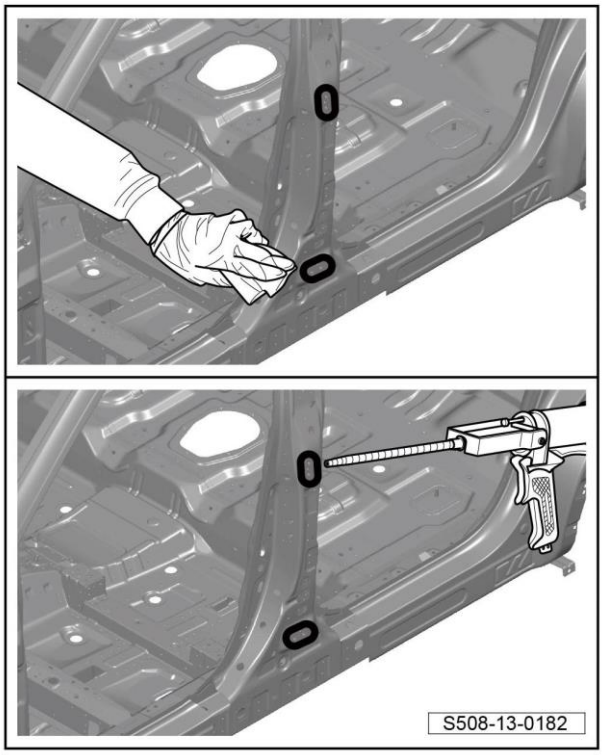
Temporarily install the front and rear doors, close the doors and check whether the gaps are normal.



3 Accurately cut the B-pillar outer panel cutting piece.

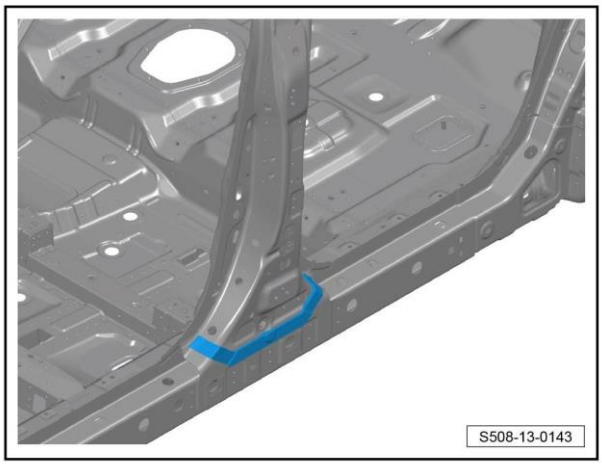


4 Before welding, spray zinc powder spray to the bonding surface of the panel for corrosion protection, and stop the operation after the zinc powder spray completely covers the bare metal.

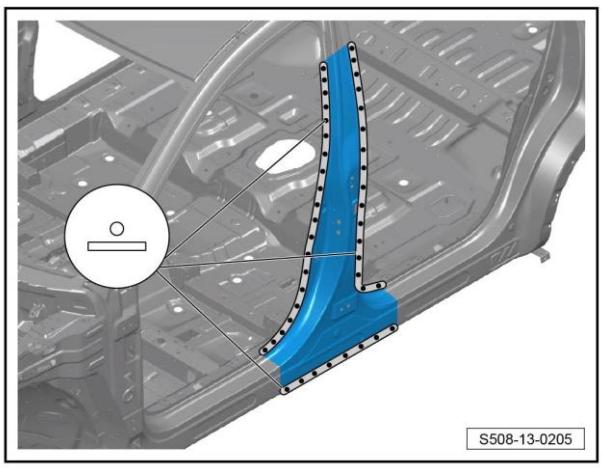


5 Clean the construction area with cleaning agent.

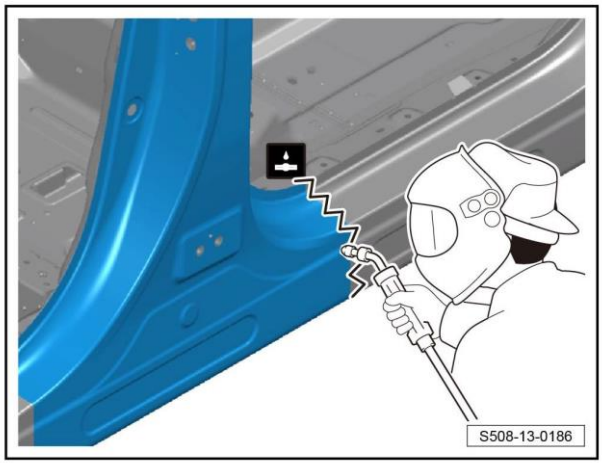
Apply two-component structural adhesive to the joint of the door hinge mounting hole, the checkstrap mounting hole, the door lock catch mounting hole and the side wall outer panel.



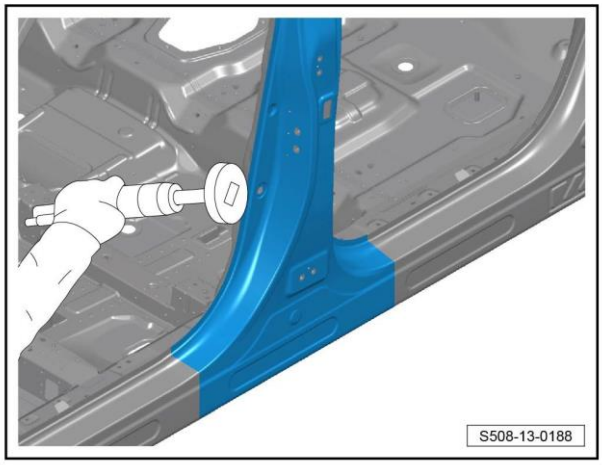
6 Spray styrofoam on the body, fix the new B-pillar outer panel, and gently press the styrofoam area to make the new B-pillar outer panel in place and seal it.



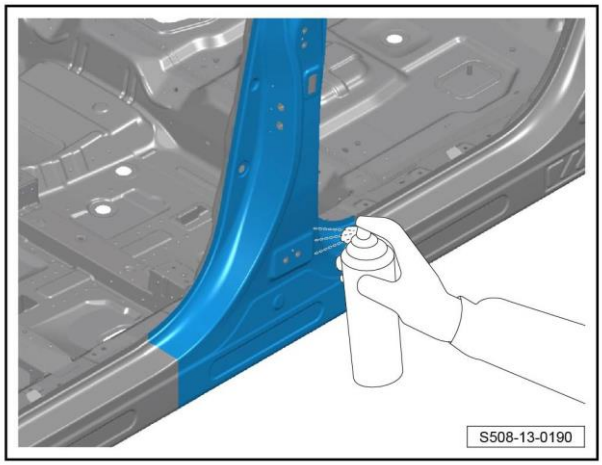
7 Spot weld with a spot welding machine.



8 Butt weld with MAG welding machine.



9 Use a grinder to grind the welding area.



10 Clean the grinding area with cleaning agent.

After grinding, the surface of the panel shall be sprayed with epoxy primer for corrosion protection.

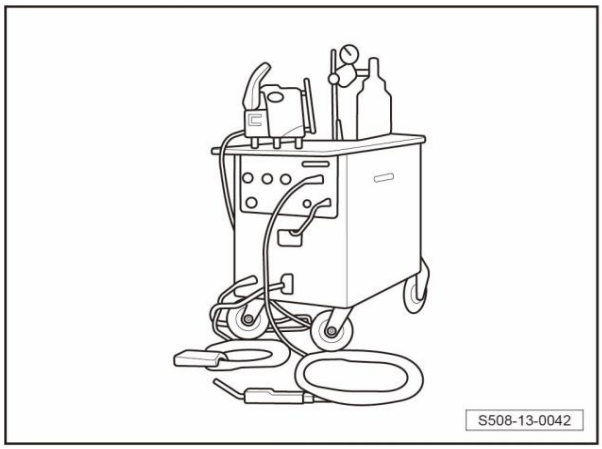
After the epoxy primer is dried, the body sealant can be applied.

Apply sealant at each joint.

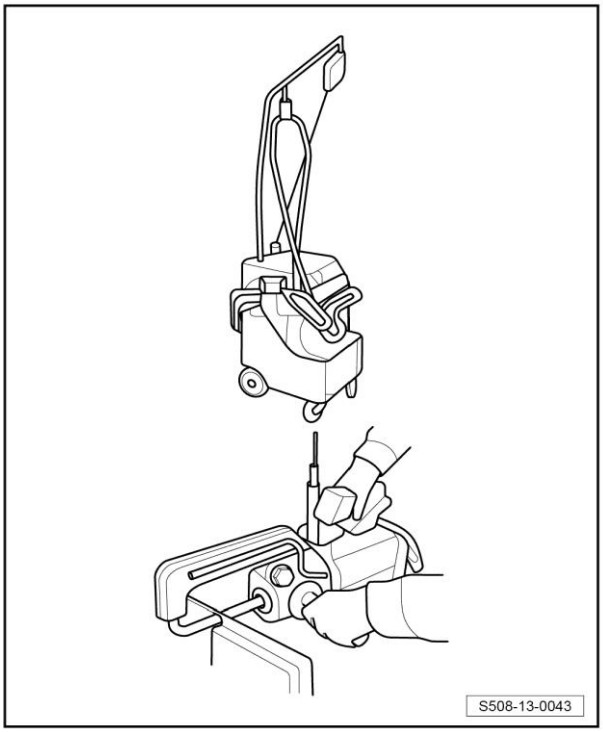
Only after the sealant is dry can the repair be completed by spraying the paint coating.

10.2.5.6 Replacement of rear fender

Tools and materials



Spot welding machine



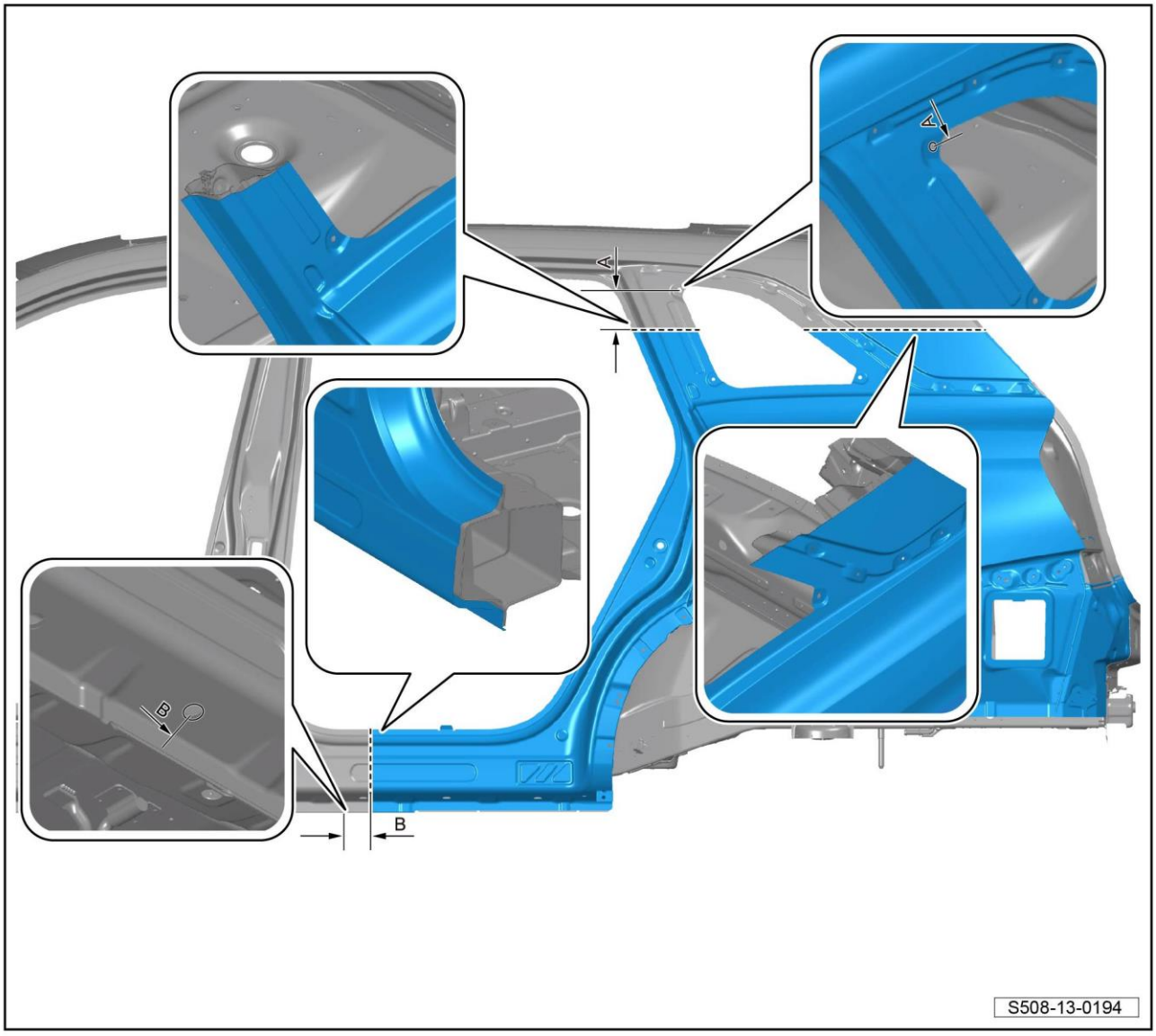
MAG welder

Consult the spare parts catalog and prepare new spare parts.

Removing original parts

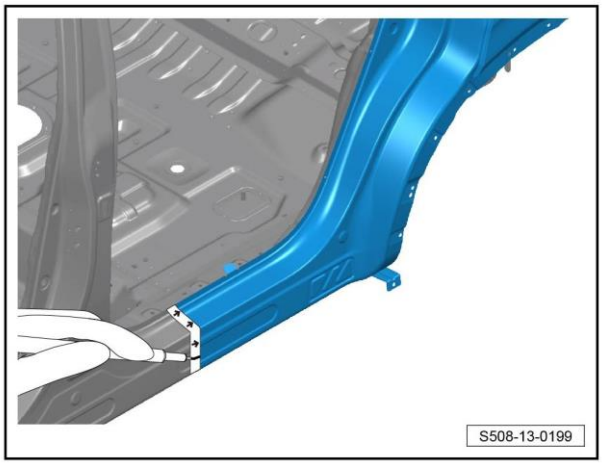
Notes

- Before starting the repair procedure, restore the body to its original size before the damage by referring to the body size drawing.

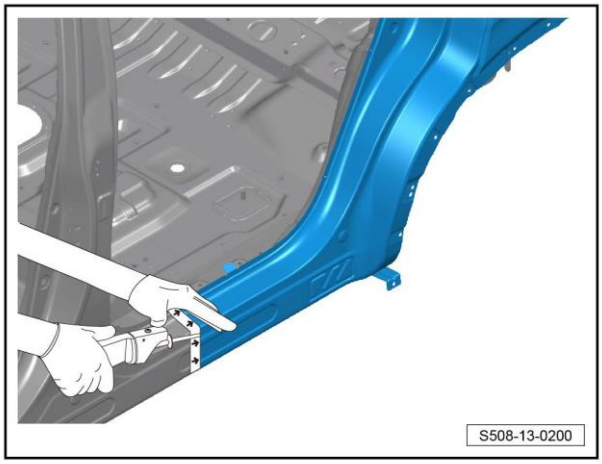


1 Measure and mark the distance of the cutting line.

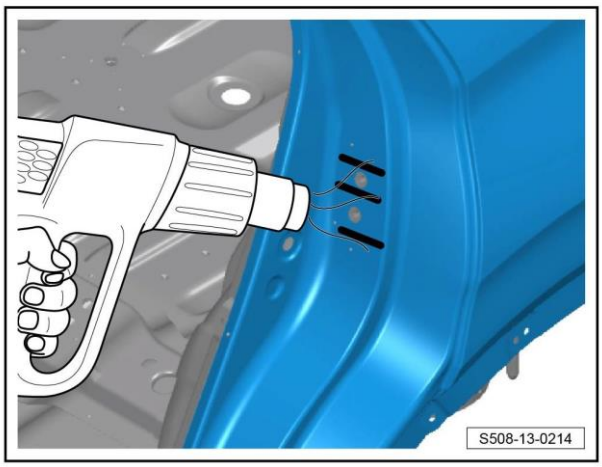
Cut line from side wall quarter window mounting hole (A) to rear fender	108.5mm
Cut line from side skirt mounting hole (B) to rear fender	235mm



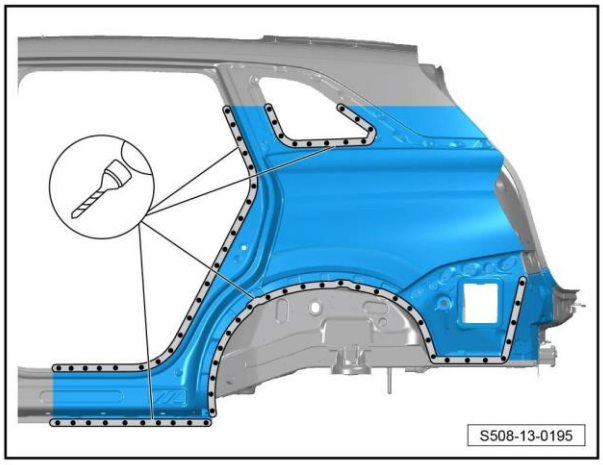
2 Use paper adhesive tape to locate the cutting line, and mark it with a pen.



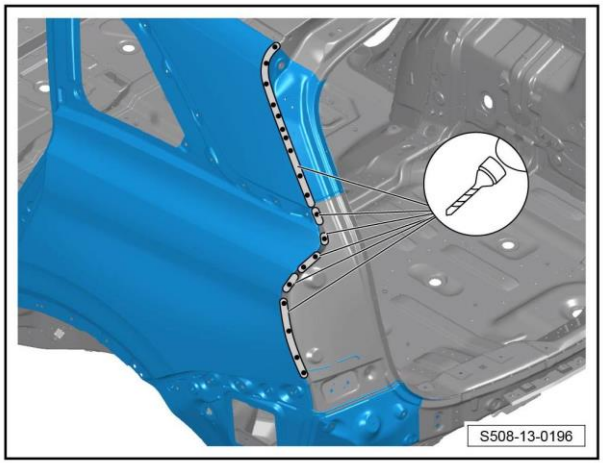
3 Before cutting the rear fender, make a preliminary cut to ensure that only the rear fender is cut without cutting into the sill reinforcement plate.

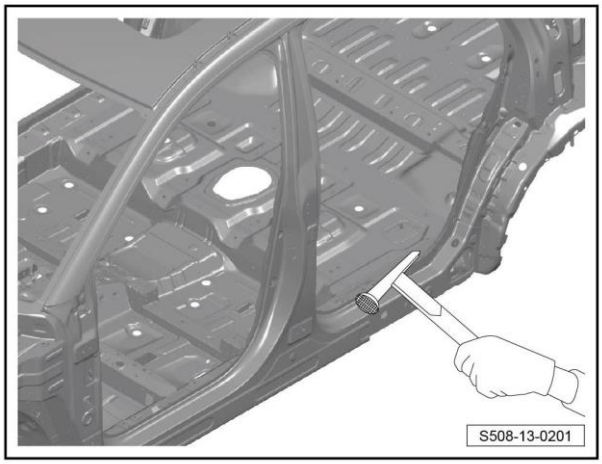


4 Heat the structural adhesive in the welding area between the rear fender and the rear door lock catch to make it invalid.



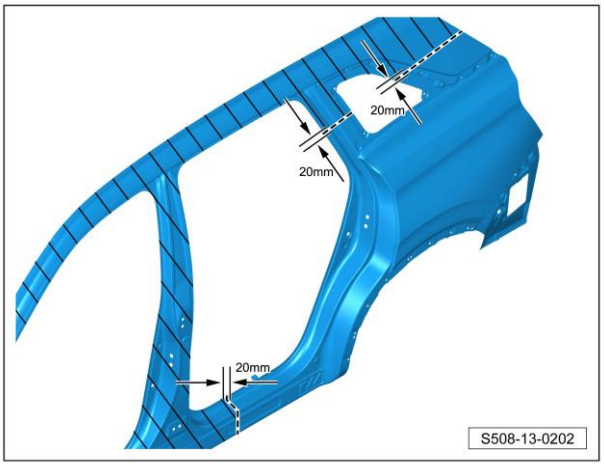
5 Drill out and polish all welding spots.



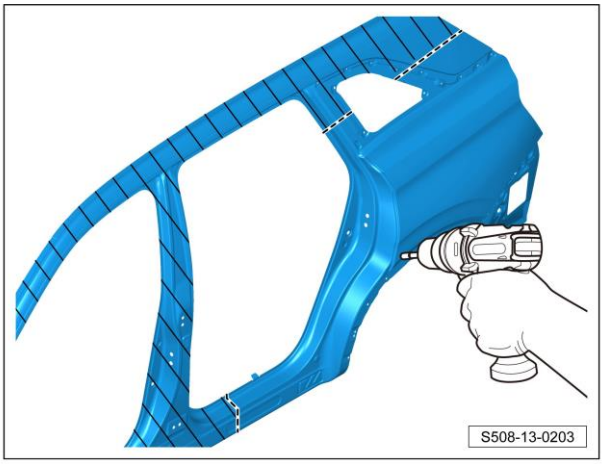


6 Correct the twisted and deformed hem after removing the plate.

Preparing new parts

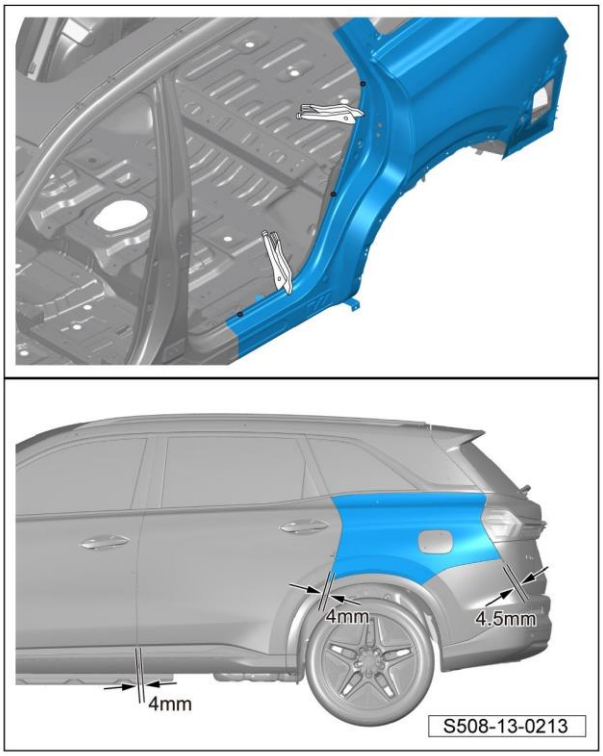


1 Mark the cutting line to the new rear fender, add 20 mm lap at the lap end, and cut along the marking line.



2 In order to perform plug welding, a hole shall first be drilled in the rear fender.

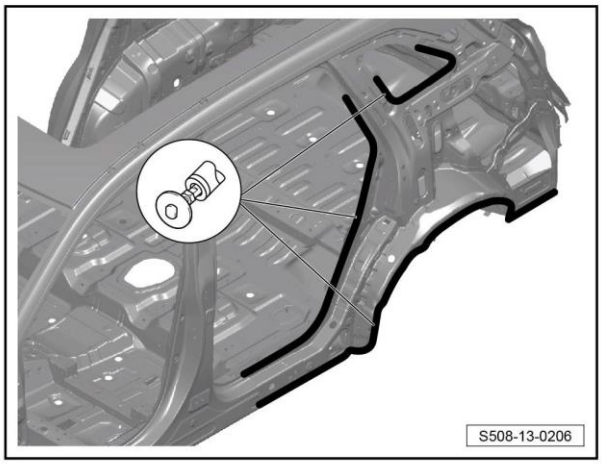
Welding



1 Install the rear fender in place, align the panels with the lap side seams so that they are aligned with each mounting hole, and clamp them using the vise.

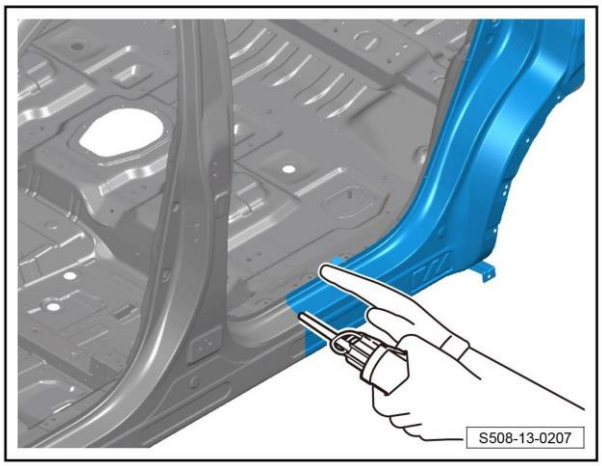
Drill holes in the rear fender with a Φ3.2 mm drill bit and temporarily fix them with 4 mm self-tapping screws.

Temporarily install the rear doors, close the doors and check whether the gaps meet the standards.

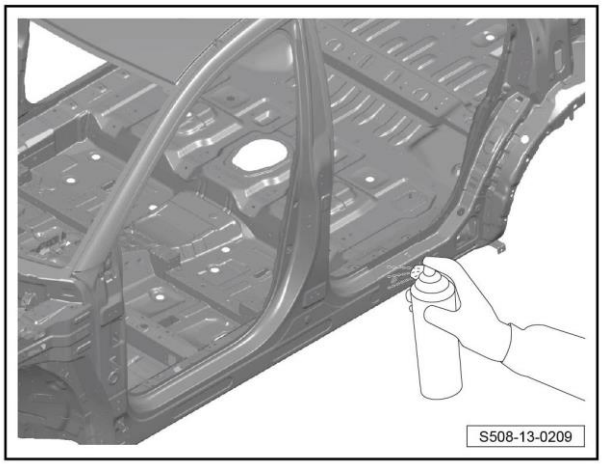


2 Use a grinder to grind until the metallic luster is exposed.

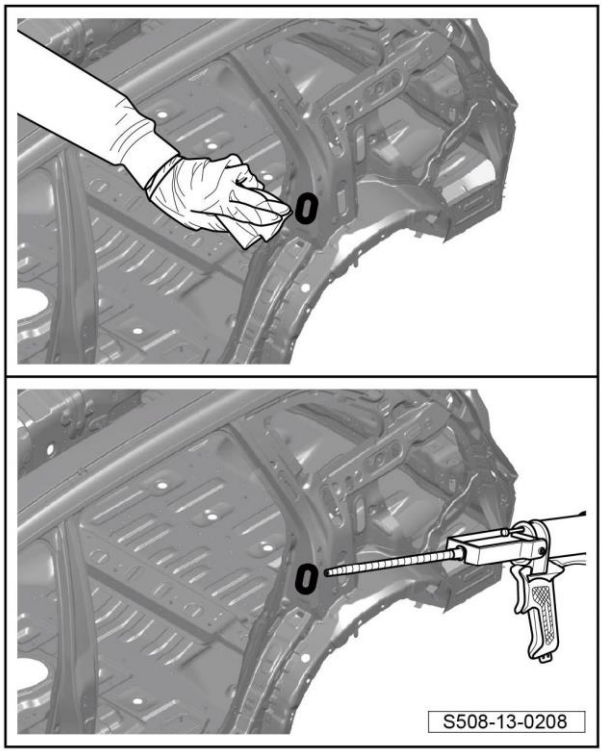
Clean the grinding area with cleaning agent.



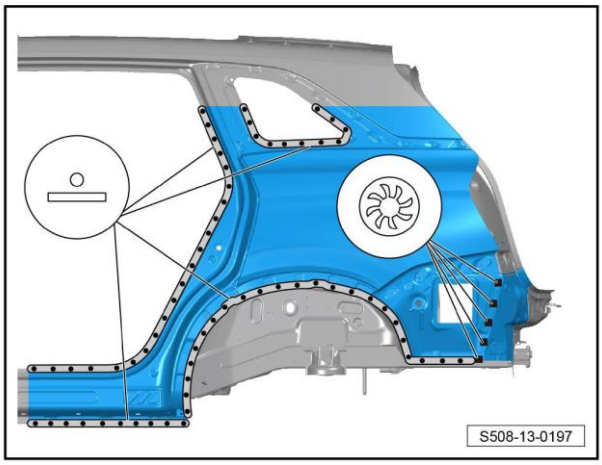
3 Accurately cut the rear fender cutting piece.



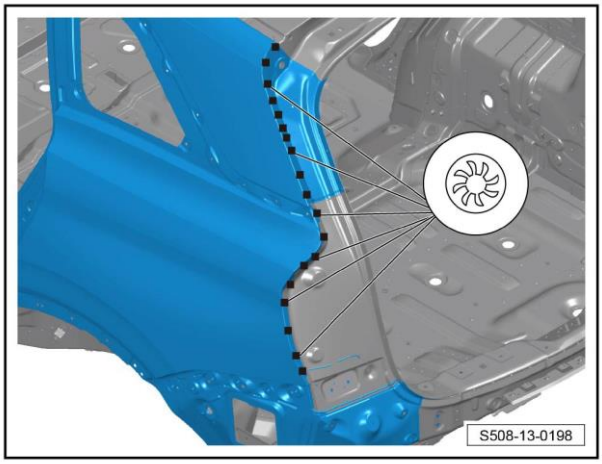
4 Before welding, spray zinc powder spray to the bonding surface of the panel for corrosion protection, and stop the operation after the zinc powder spray completely covers the bare metal.



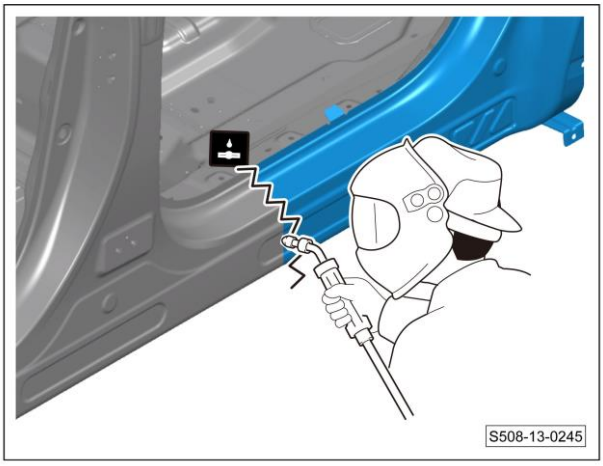
5 Apply two-component structural adhesive to the rear wheel cover and door lock catch.

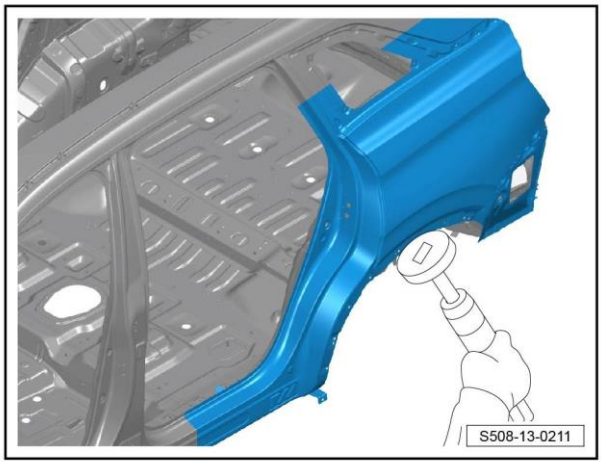


6 Plug weld with MAG welding machine.
Spot weld with a spot welding machine.

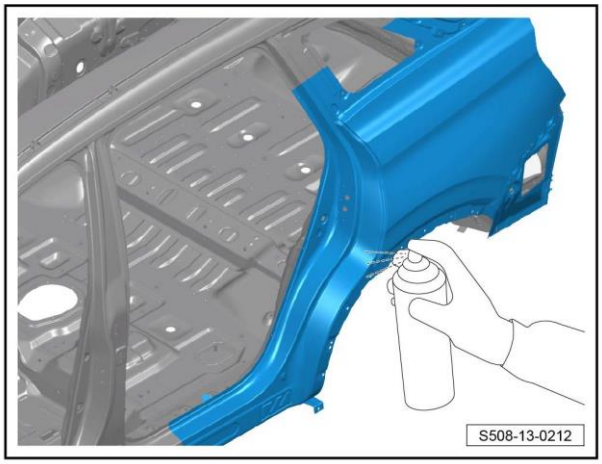


7 Butt weld with MAG welding machine.





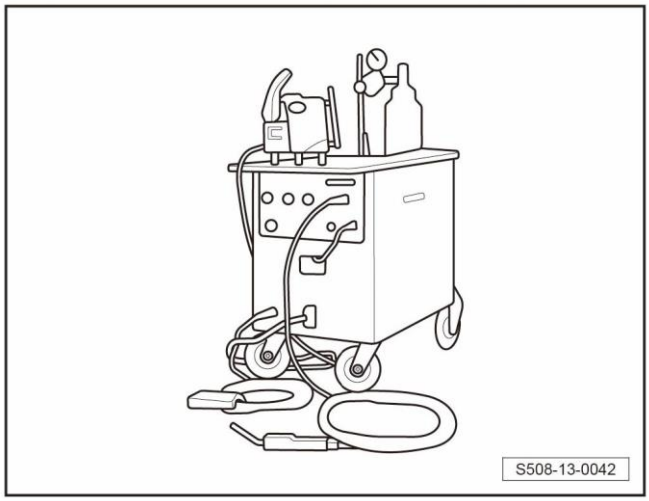
8 Use a grinder to grind the welding area.
Clean the grinding area with cleaning agent.



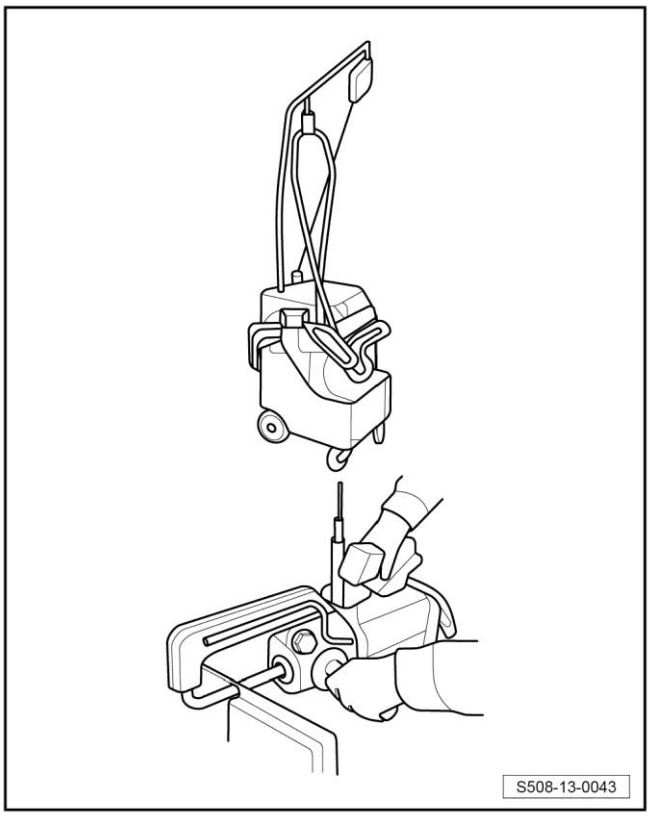
9 After grinding, the surface of the panel shall be sprayed with epoxy primer for corrosion protection.
After the epoxy primer is dried, the body sealant can be applied.
Apply sealant at each joint to complete the repair.
Only after the sealant is dry can the paint coating be sprayed.

10.2.5.7 Replacement of rear wall assembly

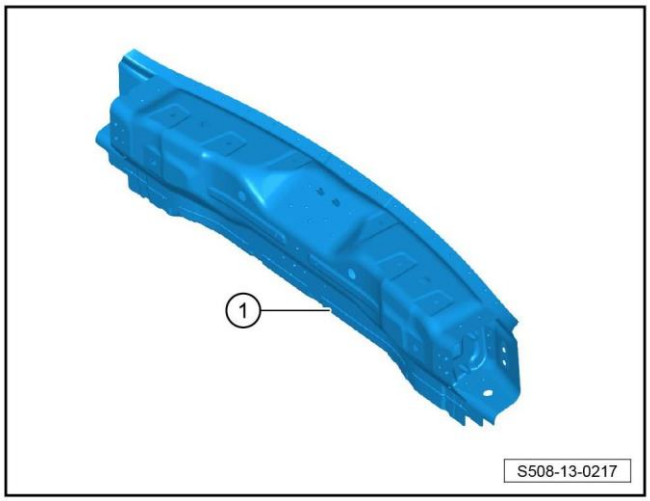
Tools and materials



Spot welding machine



MAG welder



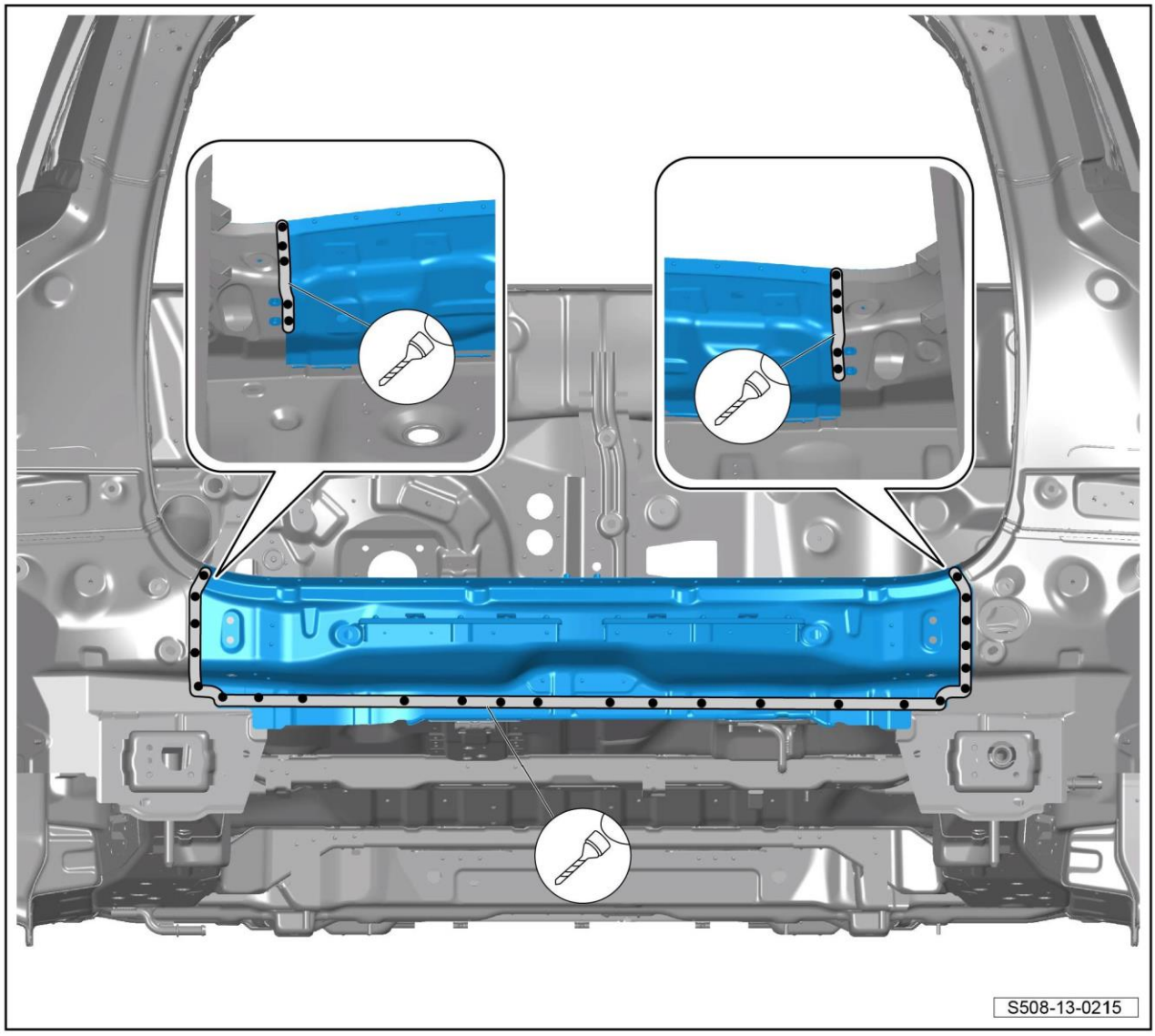
Consult the spare parts catalog and prepare new spare parts:

S/N	Part name
1	Rear wall panel assembly

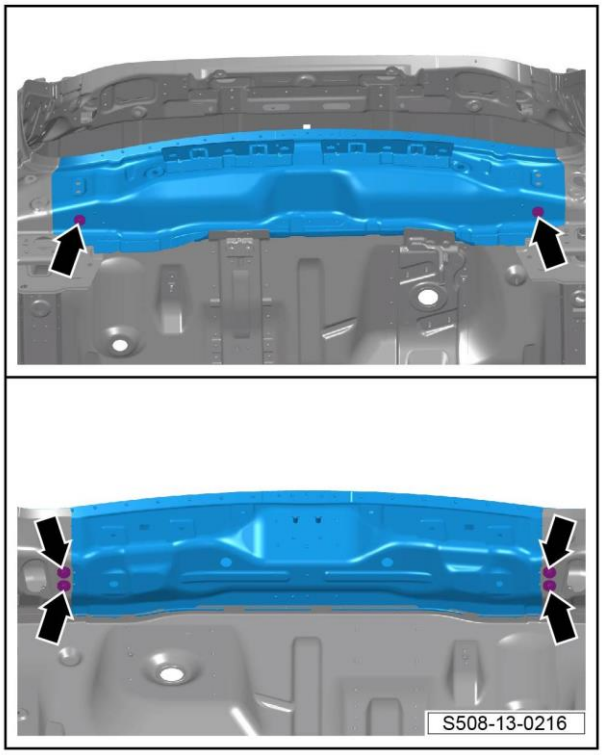
Removing original parts

Notes

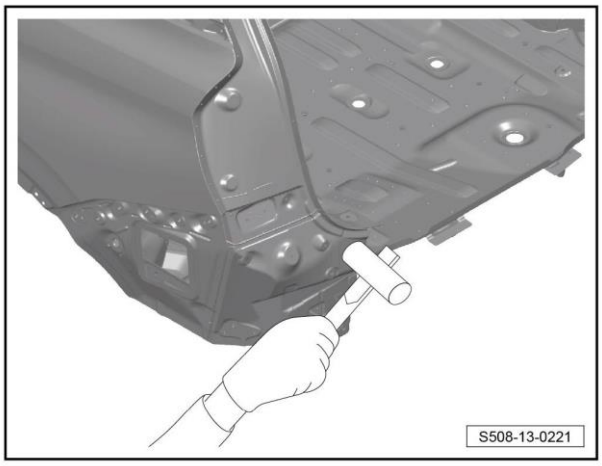
- Before starting the repair procedure, restore the body to its original size before the damage by referring to the body size drawing.



1 Drill out and grind all welding spots to separate the rear wall from the body.

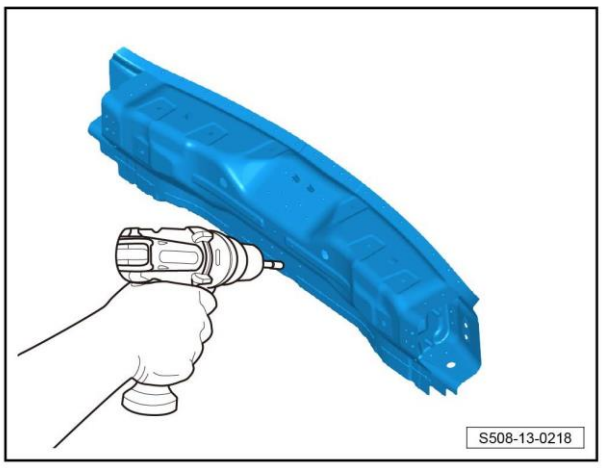


2 Unscrew the fixing bolt (see the arrow).

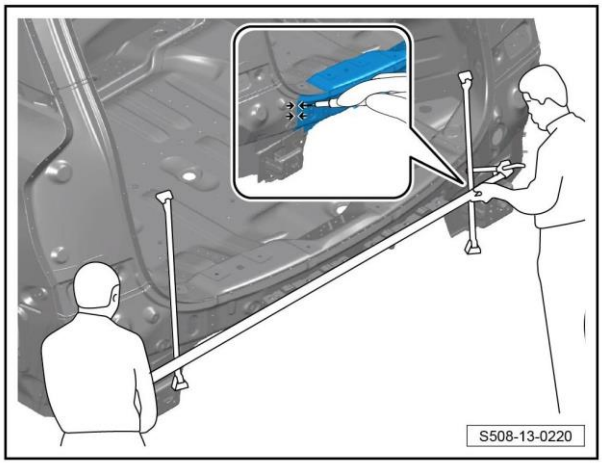


3 Correct the twisted and deformed hem after removing the plate.

Preparing new parts

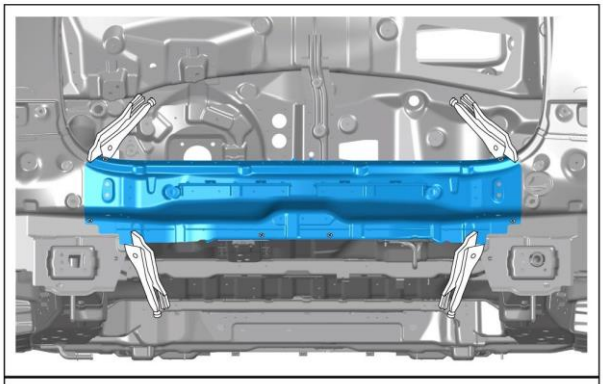


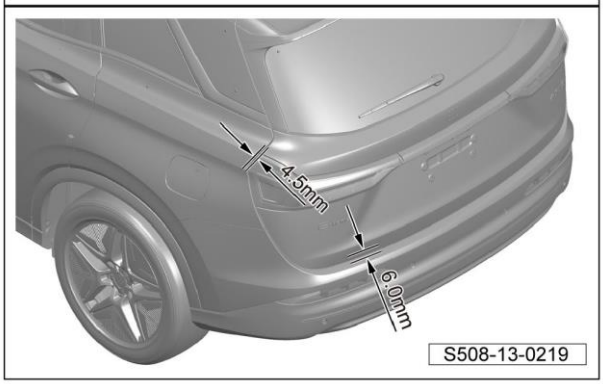
1 In order to perform plug welding, a hole shall first be drilled in the rear wall.



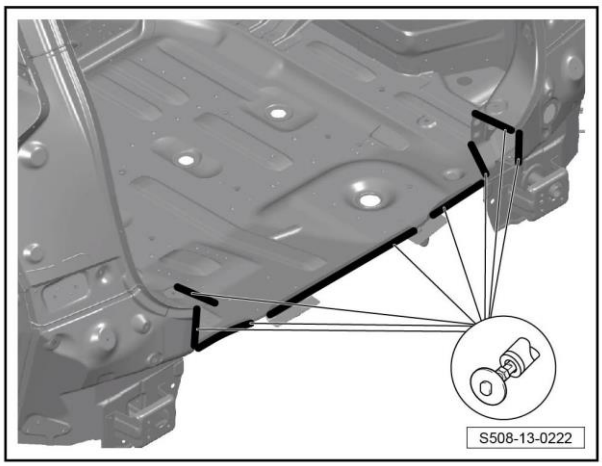
2 Install the rear wall in place and clamp it with locking pliers.

Temporarily weld the rear wall panel, measure whether the size of the rear anti-collision beam meets the standard and adjust it accordingly in time.



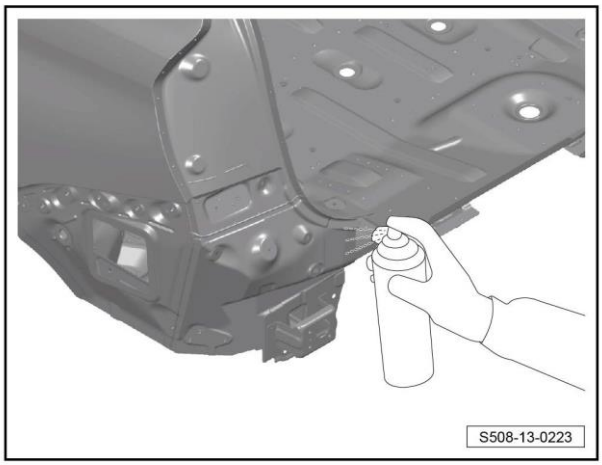


3 Temporarily install the trunk lid, close the trunk lid to check whether the clearance meets the standard and adjust it accordingly in time.

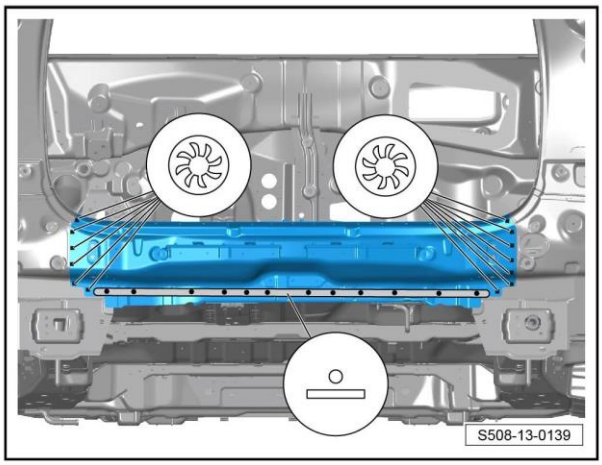


4 Use a grinder to grind until the metallic luster is exposed.

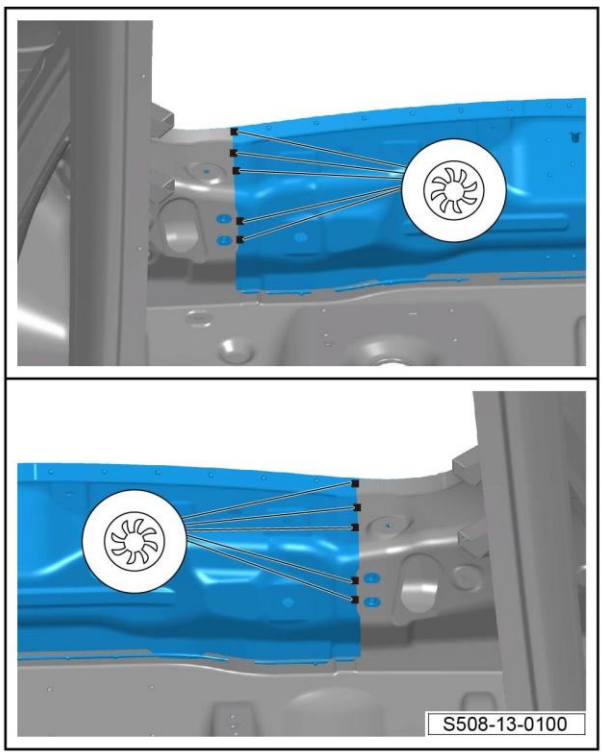
Clean the grinding area with cleaning agent.

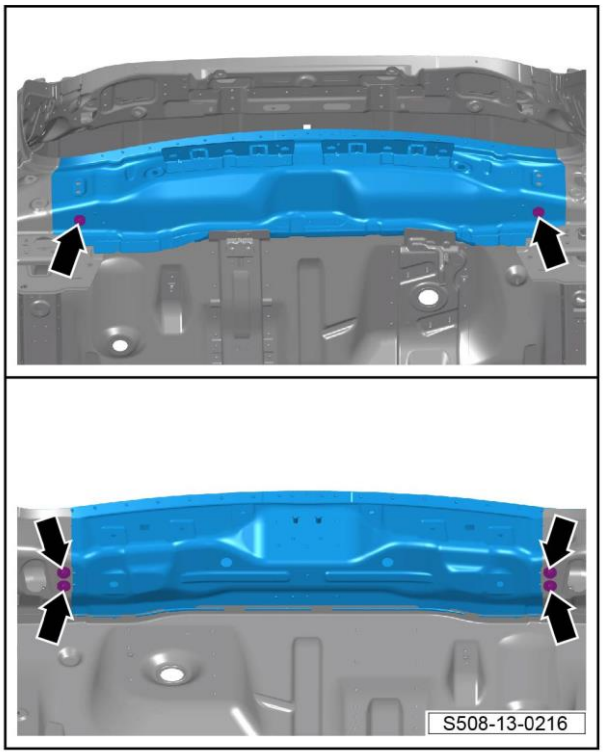


5 Before welding, spray zinc powder spray to the bonding surface of the panel for corrosion protection, and stop the operation after the zinc powder spray completely covers the bare metal.

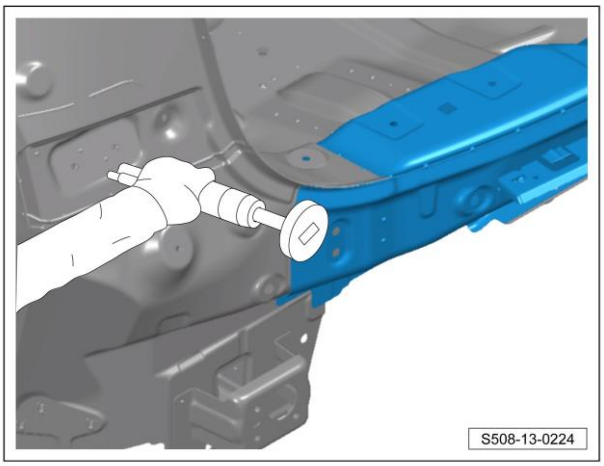


6 Plug weld with MAG welding machine.
Spot weld with a spot welding machine.

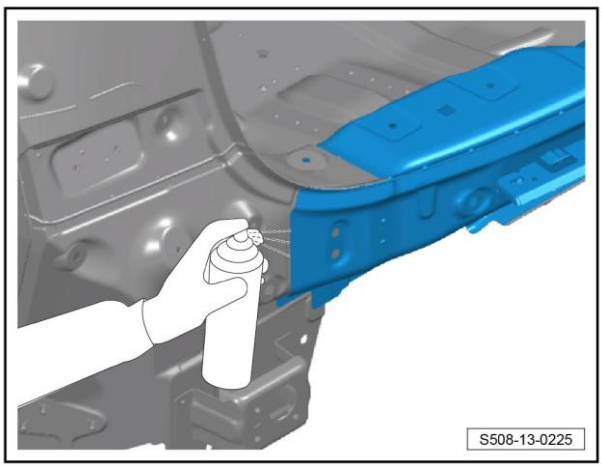




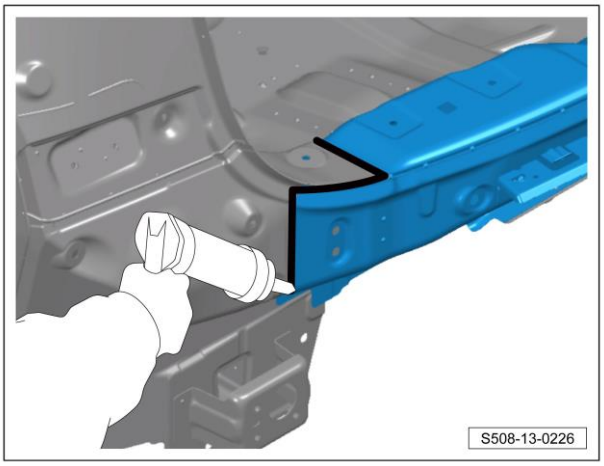
7 Install the fixing bolt (see the arrow).



8 Use a grinder to grind the welding area.



9 After grinding, the surface of the panel shall be sprayed with epoxy primer for corrosion protection.
Clean the grinding area with cleaning agent.
After the epoxy primer is dried, the body sealant can be applied.



10 Apply sealant at each joint to complete the repair. Only after the sealant is dry can the paint coating be sprayed.

10.3 Paint coating

10.3.1 Technical specifications

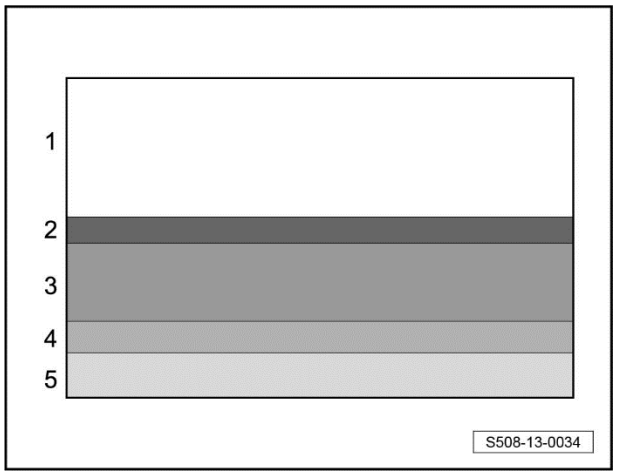
10.3.1.1 Specification

Refer to the technical specifications provided by the material supplier.

10.3.2 Safety notes

10.3.2.1 Description of paint coating

Paint is a kind of mixed liquid, which can be applied on many kinds of base materials. After the paint is dried, a solid film will be formed to protect the base material and beautify the appearance. The following four layers of paint have been sprayed for favorable corrosion resistance and gloss before leaving the factory.



1 Celluloid paint (transparent outer coating)

2 Paint

3 Intermediate coat

4 Electrophoretic primer

5 Body sheet-metal

Main functions of electrophoretic primer:

1 Rust prevention

2 Improve adhesion

3 Improve the limited filling ability

Main functions of intermediate coat:

1 Filling ability

2 Isolation/tightness

3 Set off the colored paint

Main functions of colored paint:

1 Add color

2 Keep gloss

Spray the paint to recover the appearance of the damaged position. The paint spaying process specified by the manufacturer must be strictly obeyed during repair. Please refer to the paint spraying process for rigid surfaces.

10.3.2.2 Daily maintenance of automobile top coat

Please observe the following principles during daily maintenance of automobile top coat:

1 During repair and service of the vehicle, touching the coatings of the body with the hands with oil stains or wiping the coatings with oil stained rags is not allowed. Placing the tools with oil stains or the wiping rag containing organic solvents on the body is also prohibited. If any of the above is identified, it shall be timely cleaned up.

2 In case of severe scratches, pits or peel-off on the coatings, they shall be repaired in time.

3 Some highly corrosive traces (such as asphalt, bird droppings and insects) shall be removed in time.

4 Before and after the vehicle is used, the dust on the body shall be removed in time to minimize the adsorption of dust on the body by static electricity.

5 Rinse the vehicle as soon as possible after it rains. After the rain, the rain stains on the body will gradually decrease, and the concentration of acidic substances in the rain will gradually increase. If the rain stains are not washed with clear water as soon as possible, the coatings will be damaged over time.

6 The body can only be washed after being cooled, and washing under a scorching sun or high temperature shall be avoided.

7 Irregularly wax the paint surface for protection and regularly maintain it (once a quarter) to restore the brightness and glossiness of the vehicle body paint surface in time.

10.3.2.3 Warnings and notes during paint mixing and spraying operation

Warning!

The following points should be noted for paint mixing:

1 Be sure to use the supporting products of brand manufacturers, and do not mix different brands of

Main functions of varnish:

Varnish is applied on the most outside of the whole paint finish. Its main functions are:

1 Contain anti-ultraviolet materials, which can resist ultraviolet rays in sunlight.

2 Resist the corrosion of environmental dust (acid rain) on the top coat.

3 Make the top coat have friction resistance.

4 Give the top coat a better luster.

products.

2 The color masterbatch must be stored and mixed in plastic containers that do not contain release agents.

3 The prepared color masterbatch should be thoroughly stirred before use.

4 Pigments must be judged by spraying test plates for color comparison.

5 The test plate for spraying must be aluminum plate or iron plate sprayed with primer and completely wrapped.

6 Pay attention to keeping the electronic scale clean and avoid placing it in a place prone to vibration or interference by airflow.

Notes

Use of the paint systems or alternative products from different manufacturers is prohibited. Mixing incompatible products will cause the following phenomena:

1 Peel-off of primer coatings.

2 Poor bonding among coatings.

3 Incomplete curing.

4 Gloss lowering.

5 Poor color precision.

6 Damaged coatings (pits, bubbles, orangenhaut and color loss).

10.3.2.4 Notes for service and maintenance of transparent paint

Notes

1. Avoid washing the vehicle in direct sunlight.

2. Removing snow or ice from the body with a brush or a broom shall be avoided.

3. Use of strong soaps or chemical detergents containing acids and alkalis shall be avoided.

4. Be sure to wipe off the remaining rinse water immediately after thorough cleaning, and do not dry it on the surface. It is recommended to use a soft towel for drying.

5. The vehicle can only be polished when it is confirmed that the defects on the surface of the transparent paint can be eliminated by polishing. If such defects are not serious, the polishing range shall be narrowed as much as possible. Removing too much transparent paint shall be avoided; otherwise, the transparent paint will be damaged prematurely.

6. The electric polishing equipment shall be used in strict accordance with the requirements recommended by the polishing equipment manufacturer. Covering the vortex marks with wax or silicone products is prohibited on the ground that the marks will reappear soon, making users unsatisfied.

10.3.2.5 Notes for anti-corrosion treatment

Notes

1. When applying anti-corrosion materials, take measures to prevent such materials from entering the opening components of relevant parts (such as door locks, window channels and window regulator switches) and any moving or rotating parts, especially parking brake cables. After the application, be sure that the drain holes of relevant parts are not blocked or contain any residual anti-corrosive materials.

2. While this procedure is performed, special goggles, gloves and safety shoes shall be worn.

3. During delivery of the vehicle, the sheet metal parts have been subjected to electrophoretic coating primer treatment. After repair and/or replacement of parts, all exposed metal surfaces of the sheet metal parts must be sprayed with anti-rust primer for anti-corrosion treatment.

4. In the process of welding, if the original electrophoretic coatings or anti-corrosive materials of the sheet metal parts are damaged, they need to be cleaned up and re-treated.

5. Metal will be exposed during collision repair, and these surfaces must be repainted with special anti-corrosion materials.

6. In addition to prevention of water and dust entry, the sealant can also provide corrosion prevention. If any original seal joint is damaged during repair, re-seal it for correction. The joint of the newly replaced plate should be resealed. Sealant used must remain flexible after curing and painting. Open joints sealed with sealant should be filled with high consistency filler. Follow the instructions for the selected material.

10.3.3 Common defects in top coat and treatment methods

10.3.3.1 Examples and treatment methods for common defects of automobile coatings

Description	Cause	Handling methods
Pulverization	A The paint film is badly eroded. For example, by strong UV. B The paint mixing ratio adopted during construction is incorrect. C The light resistance and weather resistance of the coat are poor. D Vehicle is not washed often or thoroughly. E The cleaning agent adopted is not proper or the polishing wax is too rough.	A Polishing treatment.☐ B Normal grinding and polishing treatment.☐ C Deep grinding, polishing and refurbishment treatment.☐ D Partial paint-make up.■
Paint removal of plastic parts	A The adhesive force between the coat and base material is poor, or the upper coat is harder than the lower coat. B The paint film is too thick, and is corroded by the moisture, acidic matters or alkaline matters in the air. C The recoatability of the lower coat is poor, or the treatment is bad; there is needle hole or base exposition defect on upper coat.	A Polishing treatment.☐ B Normal grinding and polishing treatment.☐ C Deep grinding, polishing and refurbishment treatment.☐ D Partial paint-make up.■
Fracturing	A The primer is not mixed thoroughly before spraying. B The finish is too thick. C The intermediate coat is too thick.	A Polishing treatment.☐ B Normal grinding and polishing treatment.☐ C Deep grinding, polishing and refurbishment treatment.☐ D Partial paint-make up.■
Bird manure erosion	A The guano drops on the coat.	A Polishing (slight erosion).■ B Normal grinding and polishing (medium erosion).■ C Deep grinding, polishing and refurbishment treatment.☐ D Partial paint repair (severe erosion).■
Scratch marks	A The hardness of the paint film is low. B The coat is scratched by hard material.	A Polishing (slight scratches).■ B Normal grinding and polishing (for coarse scratch).■ C Deep grinding, polishing and refurbishment treatment.☐ D Partial paint repair (for scratch).■
Corrosion	A The paint film at the edge is thin. B The corrosion is caused by scratch or bump. C Corroded by acidic or alkaline substances.	A Polishing treatment.☐ B Normal grinding and polishing treatment.☐ C Deep grinding, polishing and refurbishment treatment.☐ D Local paint repair (for those with severe rust, repair of the sheet metal is required first).■
Paint removal	A The adhesive force between the middle coat and base material is poor, or the upper coat is harder than the lower coat. B The middle film is too thick, and is corroded by the moisture, acidic matters or alkaline matters in the air. C The recoatability of the lower coat is poor, or the treatment is bad. D There is needle hole or base exposition defect on upper coat.	A Polishing treatment.☐ B Normal grinding and polishing treatment.☐ C Deep grinding, polishing and refurbishment treatment.☐ D Local paint repair (for those with severe rust, repair of the sheet metal is required first).■
Acid rain erosion	A Acid rain erosion	A Polishing (slight erosion).■ B Normal grinding and polishing

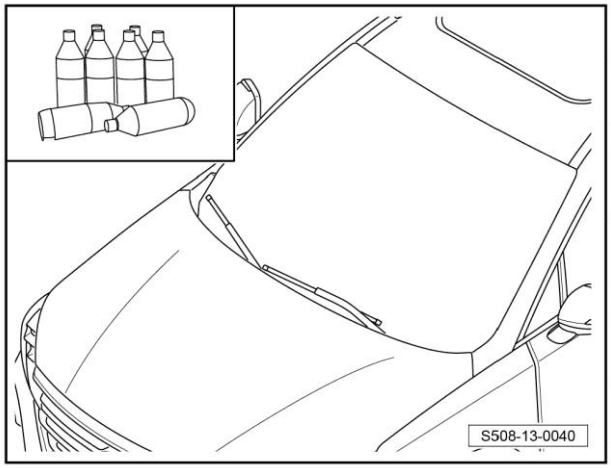
Description	Cause	Handling methods
		(medium erosion).■ C Deep grinding, polishing and refurbishment treatment.□ D Partial paint-make up (severe erosion).■
Lose of gloss	A The paint film is strong corroded by acidic or alkaline matters, electric arc, sea water, salt fog, etc. B The vehicle is under severe operation conditions. The paint film maintenance method is incorrect. C The durability of the paint is poor. D The paint mix ration is incorrect, which cause the durability of the paint film becomes poor.	A Polishing treatment (light gloss loss).■ B Normal grinding and polishing treatment (medium gloss loss).■ C Deep grinding, polishing and refurbishment treatment.□ D Partial paint-make up treatment (severe gloss loss).■
Bubble	A The paint film is exposed in the humid environment for a long time. The steam permeates into the paint film. When the temperature becomes high, the blistering will form. B The base material is corroded by the permeated substance. C The paint film is corroded by gasoline, acidic or alkaline substances.	A Polishing treatment.□ B Normal grinding and polishing treatment.□ C Deep grinding, polishing and refurbishment treatment.□ D Partial paint-make up (as to bad rust, repair the metal panel firstly and then spray the paint).■

Notes

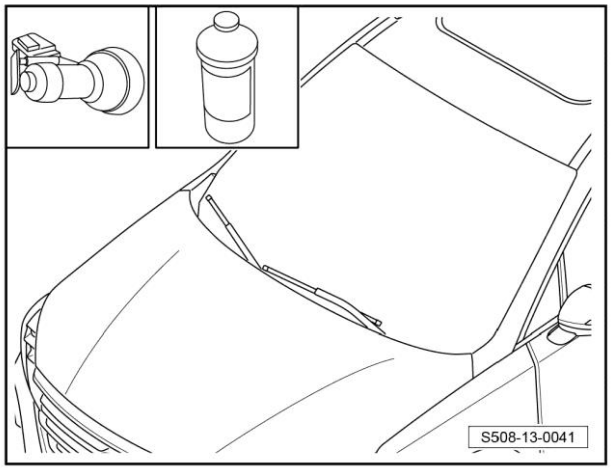
The point with solid black box in the table is the handling method for the defect.

10.3.4 Paint film repair

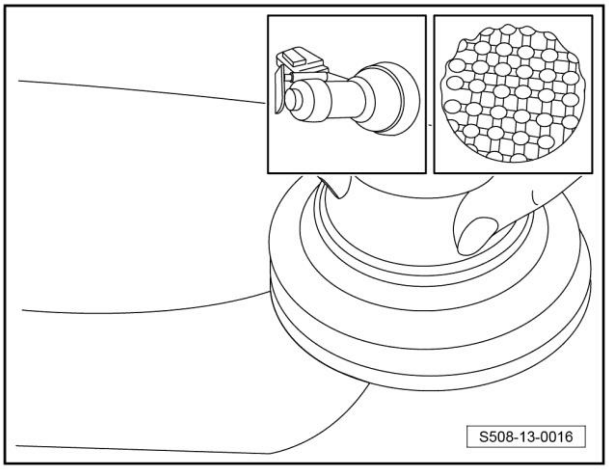
10.3.4.1 Examples of treatment process of common paint film defects



1 Clean the surface to be polished with degreasing materials before polishing.



2 First, fully wet the sponge polishing disc, squeeze out excess water, apply a small amount of wax polish on the top coat to be polished, and adjust the rotating speed of the polishing machine.



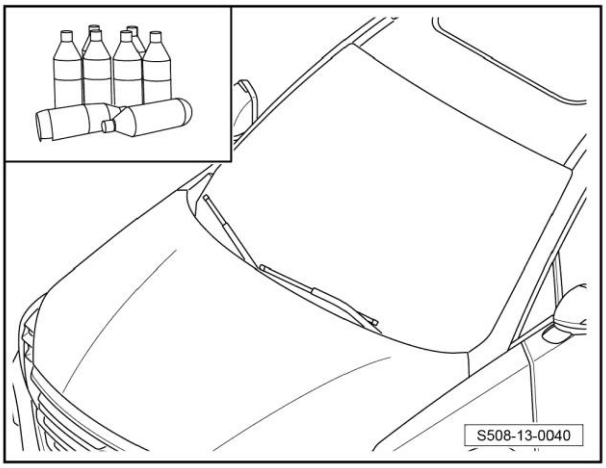
3 Attach the sponge polishing disk on the paint surface, and then start the polisher to run at 2,500~3,000 r/min. Then gently press for 3~5s for polishing treatment.

Notes

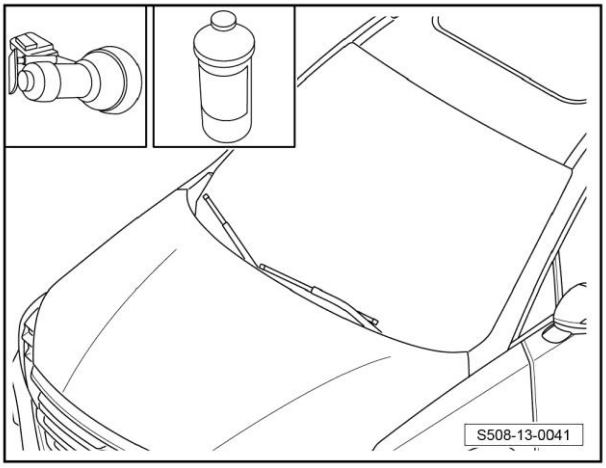
Gently and stably move the polisher; do not keep the polisher at one position for a long time, or the paint coat may be damaged due to overheat.

4 Wipe off the excess wax polish with a piece of car cleaning cloth.

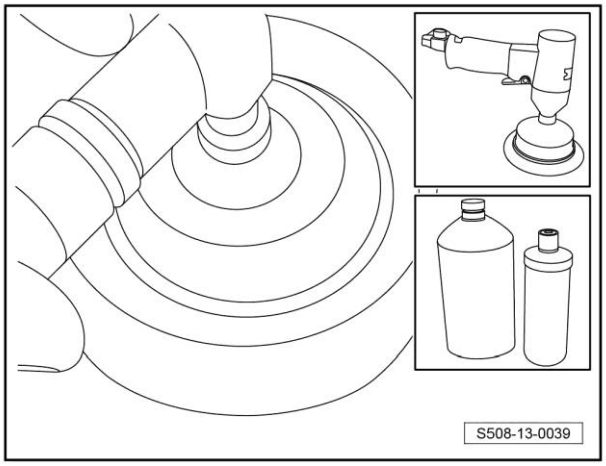
10.3.4.2 Examples of common process of grinding and polishing



1 Clean the surface to be polished with degreasing materials before polishing.



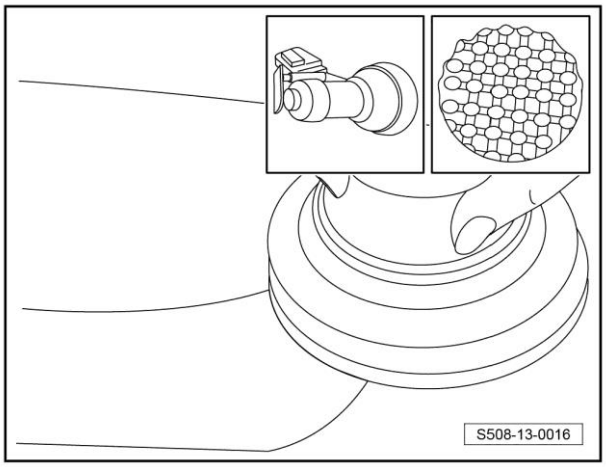
2 Apply a proper amount of polishing agent on the top coat to be polished, and adjust the rotating speed of the polishing machine.



3 Attach the wool polishing disc to the paint surface, and then start the polisher to run at 2500 ~ 3000 r/min.

Notes

Keep the machine moving smoothly and gently, avoid excessive grinding. The polishing time shall be as short as possible, and the polishing area as small as possible.



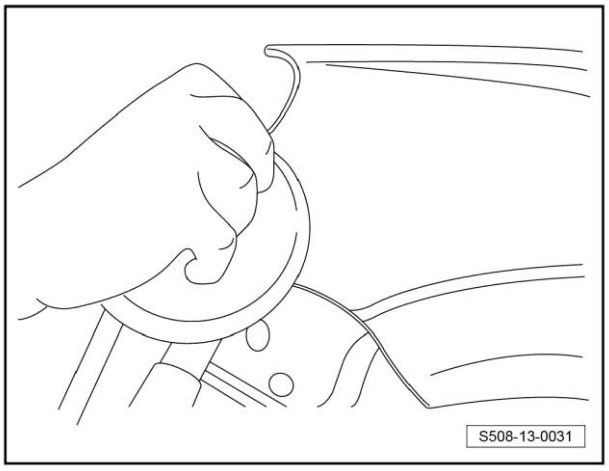
4 Fully wet the sponge polishing disc, and squeeze off the excessive moisture; take a small amount of polishing wax and apply it to the surface to be polished, and attach the sponge polishing disk on the paint surface, and then start the polisher to run at 2,500~3,000 r/min. Then gently press for 3~5s for polishing treatment.

Notes

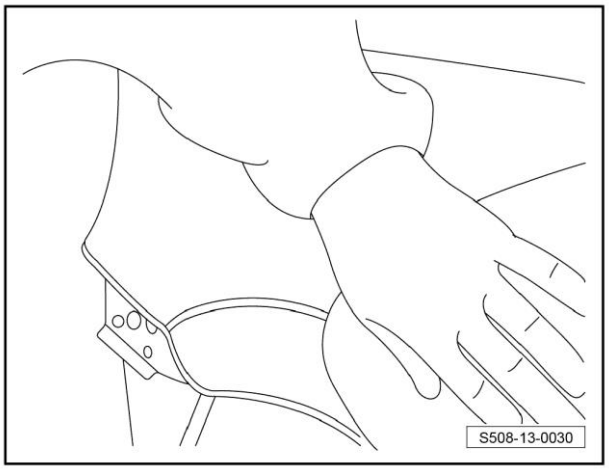
Gently and stably move the polisher; do not keep the polisher at one position for a long time, or the paint coat may be damaged due to overheat.

5 Wipe off the excess wax polish with a piece of car cleaning cloth.

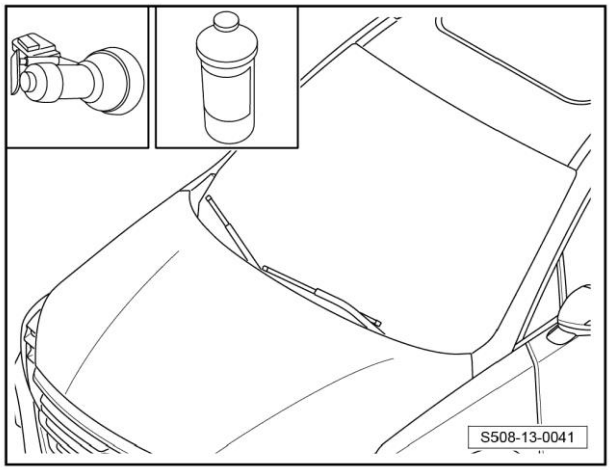
10.3.4.3 Examples of treatment process of deep grinding and polishing treatment



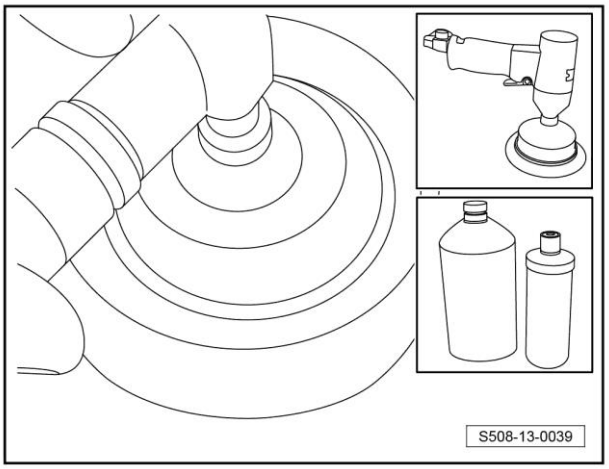
1 Grind the damaged paint surface with 2000# waterproof abrasive paper, parallel to and closely attached to the paint surface to be ground, and carry out circular grinding.



2 Remove grinding dust on the surface.



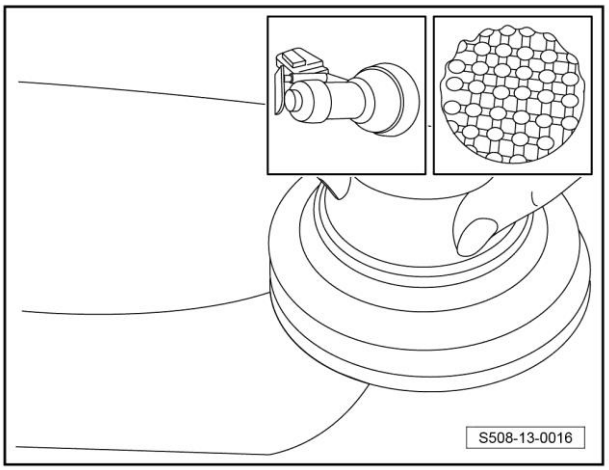
3 Apply a proper amount of polishing agent on the top coat to be polished, and adjust the rotating speed of the polishing machine.



4 Put the wool polishing disc on the top coat, and then start the polishing machine at a speed of 2,500~3,000 r/min.

Notes

Keep the machine moving smoothly and gently, avoid excessive grinding. Ensure the polishing time shall be as short as possible (3-5s), and the polishing area as small as possible.



5 Fully wet the sponge polishing disc, squeeze off the excessive moisture, apply a few polishing wax on the paint coat to be polished, attach the sponge on the paint coat, then start the polisher to run at 2,500~3,000 r/min. Then, press for 3 to 5s slightly for luster finish.

Notes

Gently and stably move the polisher; do not keep the polisher at one position for a long time, or the paint coat may be damaged due to overheat.

6 Wipe off the excess wax polish with a piece of car cleaning cloth.

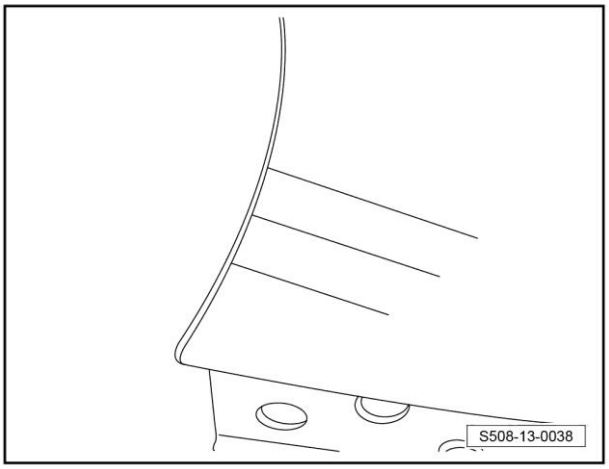
10.3.4.4 Paint spraying process for rigid surfaces

The fender is taken as an example to illustrate the partial paint-make up. (paint touch-up) procedure.

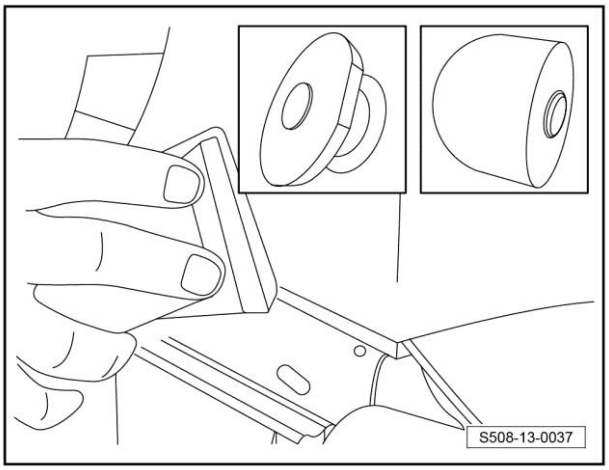
Notes

All paint repairs on rigid surfaces must conform to standards. Confirm the repair area and select the

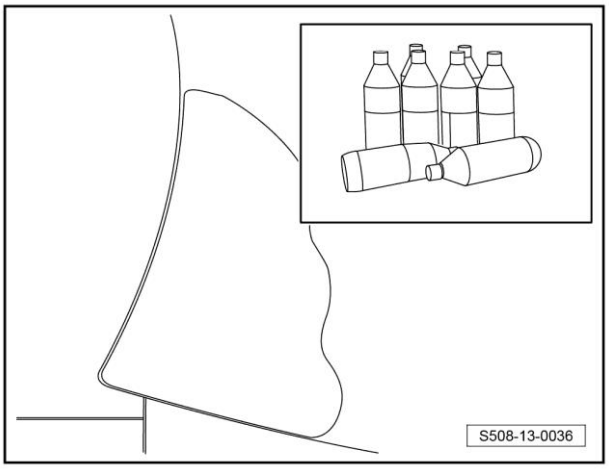
repair range, such as local repair, block repair and complete vehicle repair; In case of collision damage, perform the corresponding repair after the sheet metal repair according to the damage or spray paint after replacing the parts.



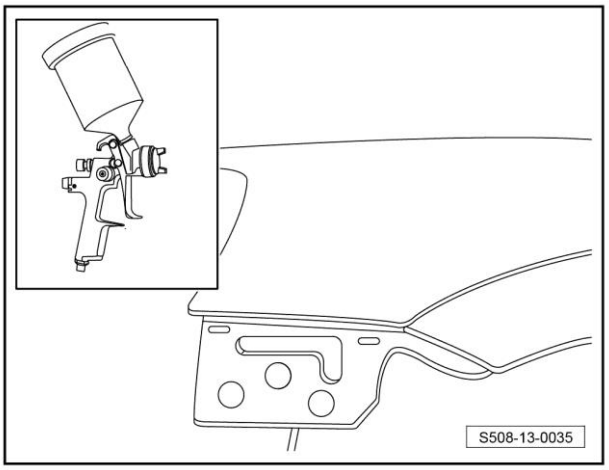
1 Fender scratches are serious, so local spraying (touch-up) process is adopted.



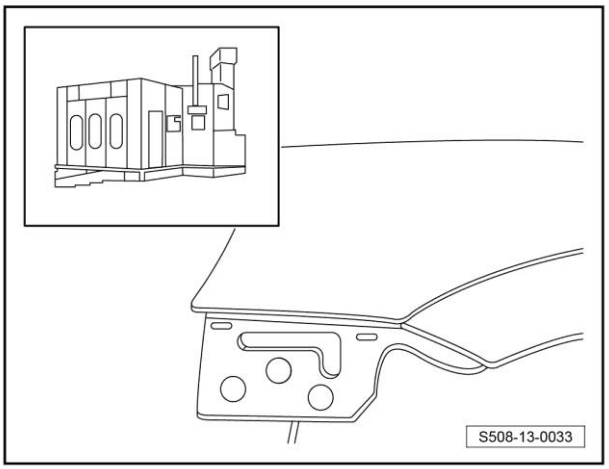
2 Grind the damaged top coat with # P500 wet (waterproof) sandpaper (round grinding).



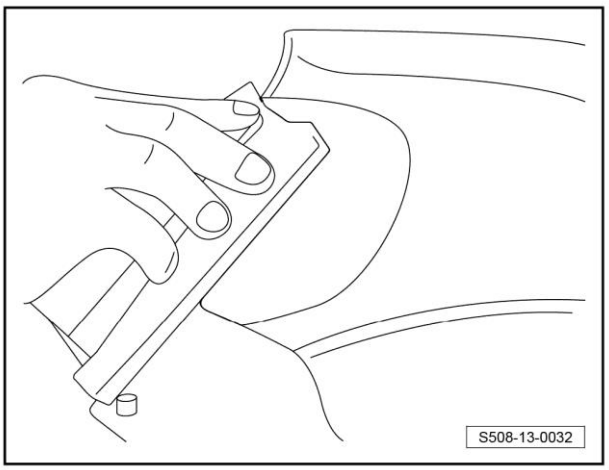
3 Degrease and clean it with degreasing agent after grinding.



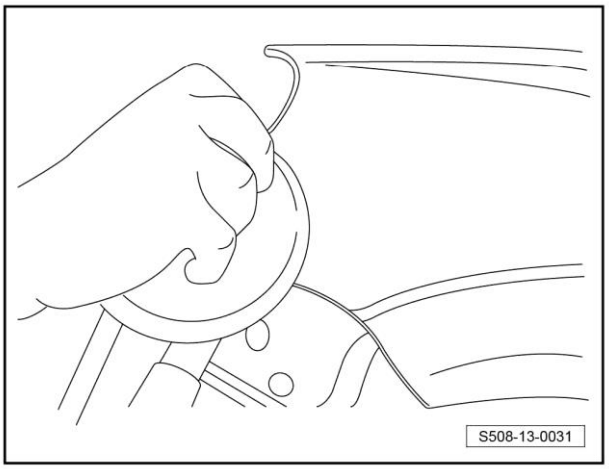
4 Apply primer during spraying, try to control the scope of primer spraying. The coating at the edge should be gradual and not stepped.



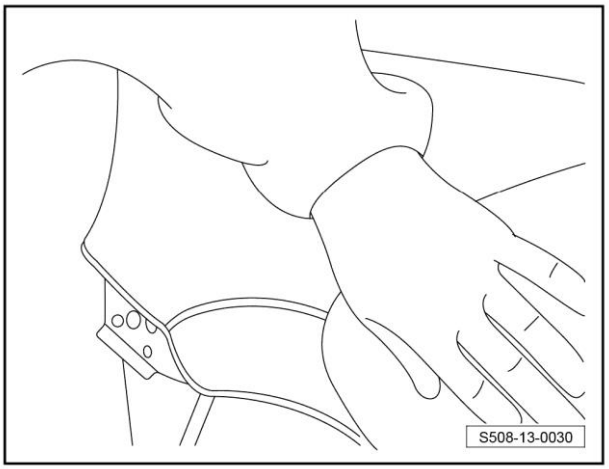
5 Flash dry for 4~5 min, and then dry for 20~30 min. Set the baking room temperature to 70~80 °C (158~176 °F).



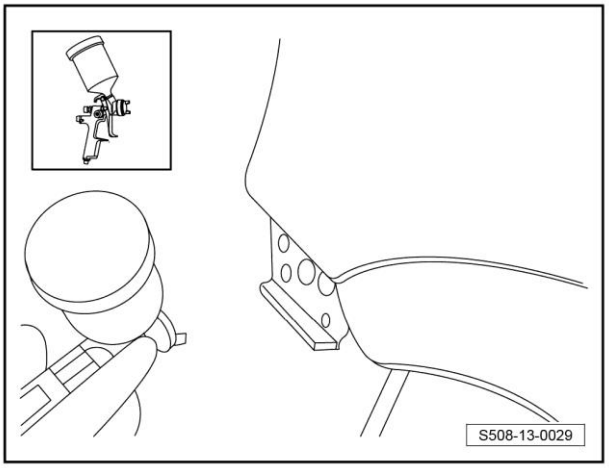
6 After drying, perform wet polishing with P800~1000# abrasive paper.



7 Perform polish with P2000# fine (waterproof) abrasive paper and expand the polishing range.



8 After grinding, use sticky gauze for dust removal before painting.



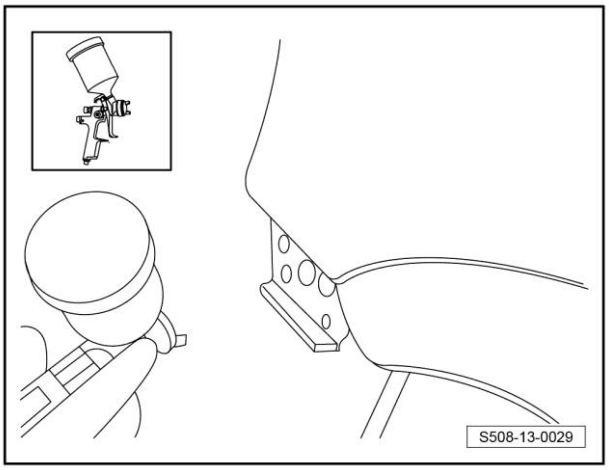
9 Spray primer.

Set the air pressure to 150~200 kPa (21.8~29.0 psi)

Spraying distance 20~30 cm (7.87~11.81 in)

Notes

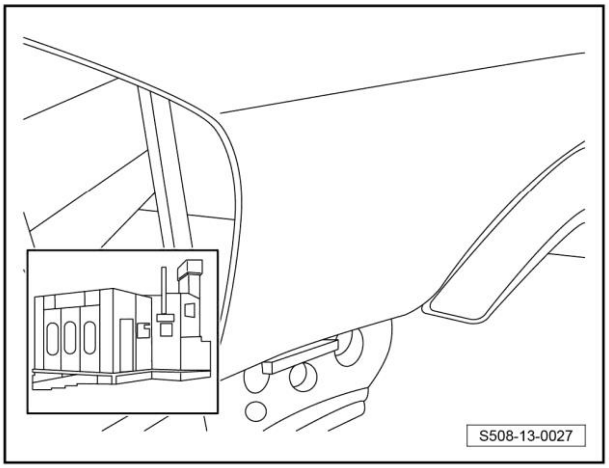
The spraying area of each layer shall be slightly wider than that of the previous layer as natural transition.



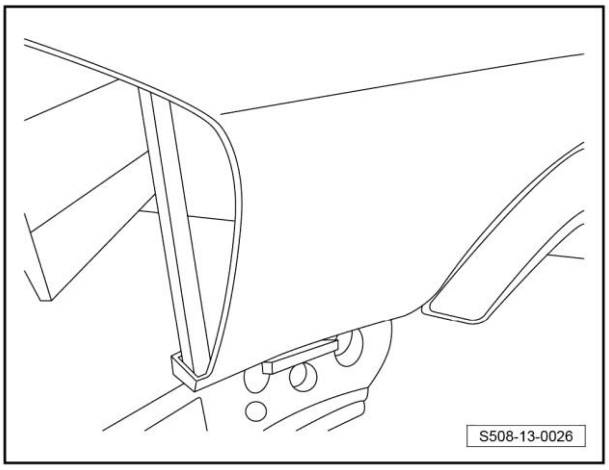
10 After flash drying for 2~3min, spray the second primer until the joint position is no longer obvious.

Set the air pressure to 150~200 kPa (21.8~29.0 psi)

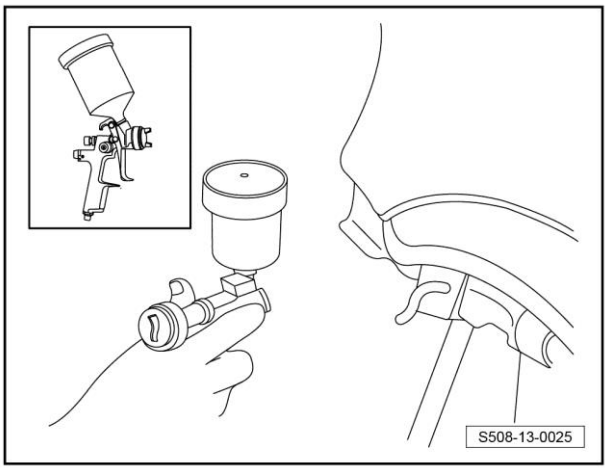
Spraying distance 20~30 cm (7.87~11.81 in)



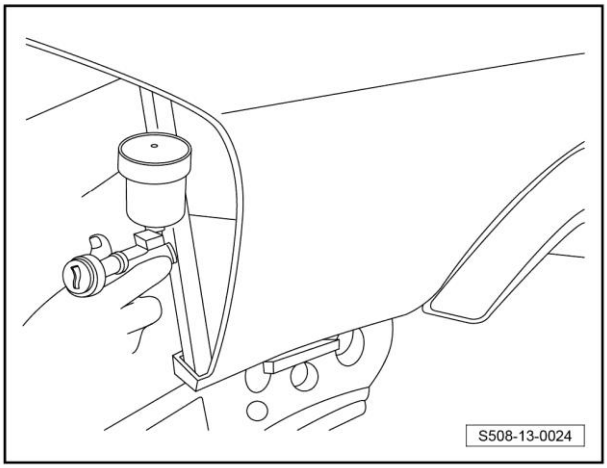
11 Perform flash drying for 4~5min, and then drying for 20~30min. Set the baking room temperature to 70～80 °C (158～176 °F)



12 After drying, use sticky gauze for dust removal before painting varnish.



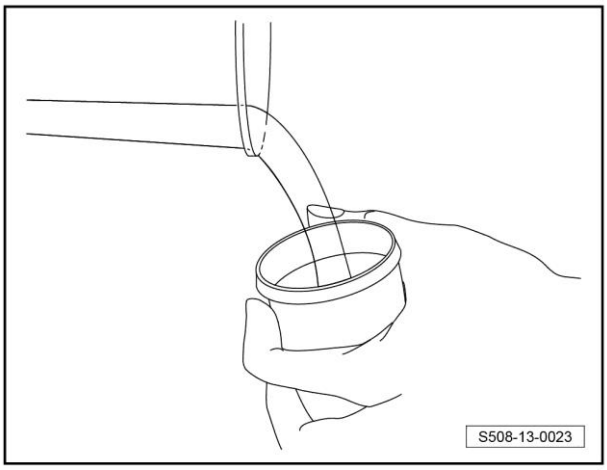
13 Spray transparent paint, with a spraying range completely covering the primer range. Set the air pressure to 150~200 kPa(21.8~29.0 psi), and spray distance to 20~30 cm (7.87~11.81 in)



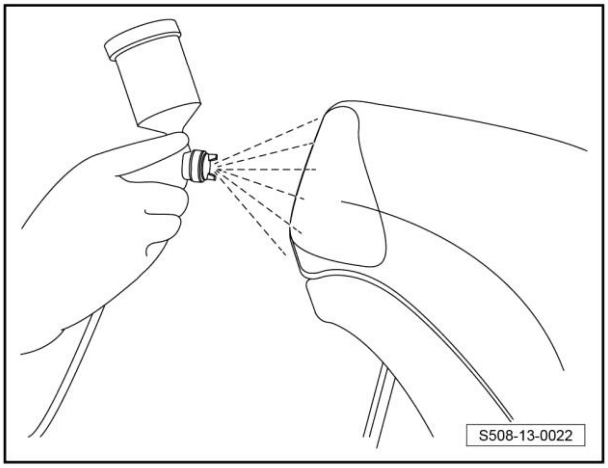
14 Perform flash drying for 2~3min, and spray the second transparent paint, with a spraying range completely covering the range of the first transparent paint.

Set the air pressure to 150~200 kPa (21.8~29.0 psi)

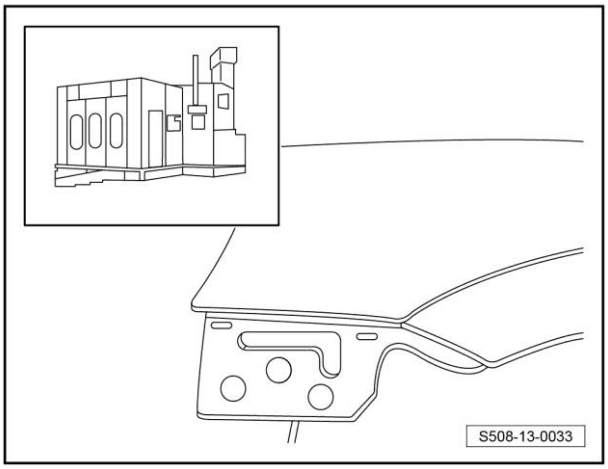
Spraying distance 20~30 cm (7.87~11.81 in)



15 After spraying the transparent paint, immediately add joint additives or diluent to the original transparent paint.



16 Spray diluted transparent paint for 2~3 times at the joint position.



17 Dry in the paint baking room for 20~30 min.

Set the baking room temperature to 70～80 °C (158～176 °F)

10.3.4.5 Painting for rigid surfaces after sheet metal repair

The paint spraying process for rigid surfaces after sheet metal repair is similar to that of the rigid surfaces, except that the following steps are added after the primer is ground and before the primer is sprayed:

1 Scrap and coat the poly-putty;

2 Grind the poly-putty;

3 Blow dust, degrease and clean;

4 Scrap and coat fillers;

5 Sand the surface of old paint film;

6 Clean, degrease, and shield areas that are not painted.

10.3.4.6 Paint repair procedures for the surface of plastic parts

Paint repair procedures for the surface of plastic parts:

The top coat repair of plastic parts surface can refer to the

above-mentioned paint spraying process for rigid surfaces. Pay attention to the temperature of spray booth.

Description

Set the baking room temperature to 70~80 °C (158~176 °F) and the time to 20~30 min.

Description

There are three basic requirements for paint coat repair of plastic part surface:

1 Paint has a certain adhesion with plastic, without losing mechanical properties.

2 The paint film should be flexible enough to deform with the plastic without breaking.

3 The original particles and rough texture on the surface of some plastic parts can be reflected.