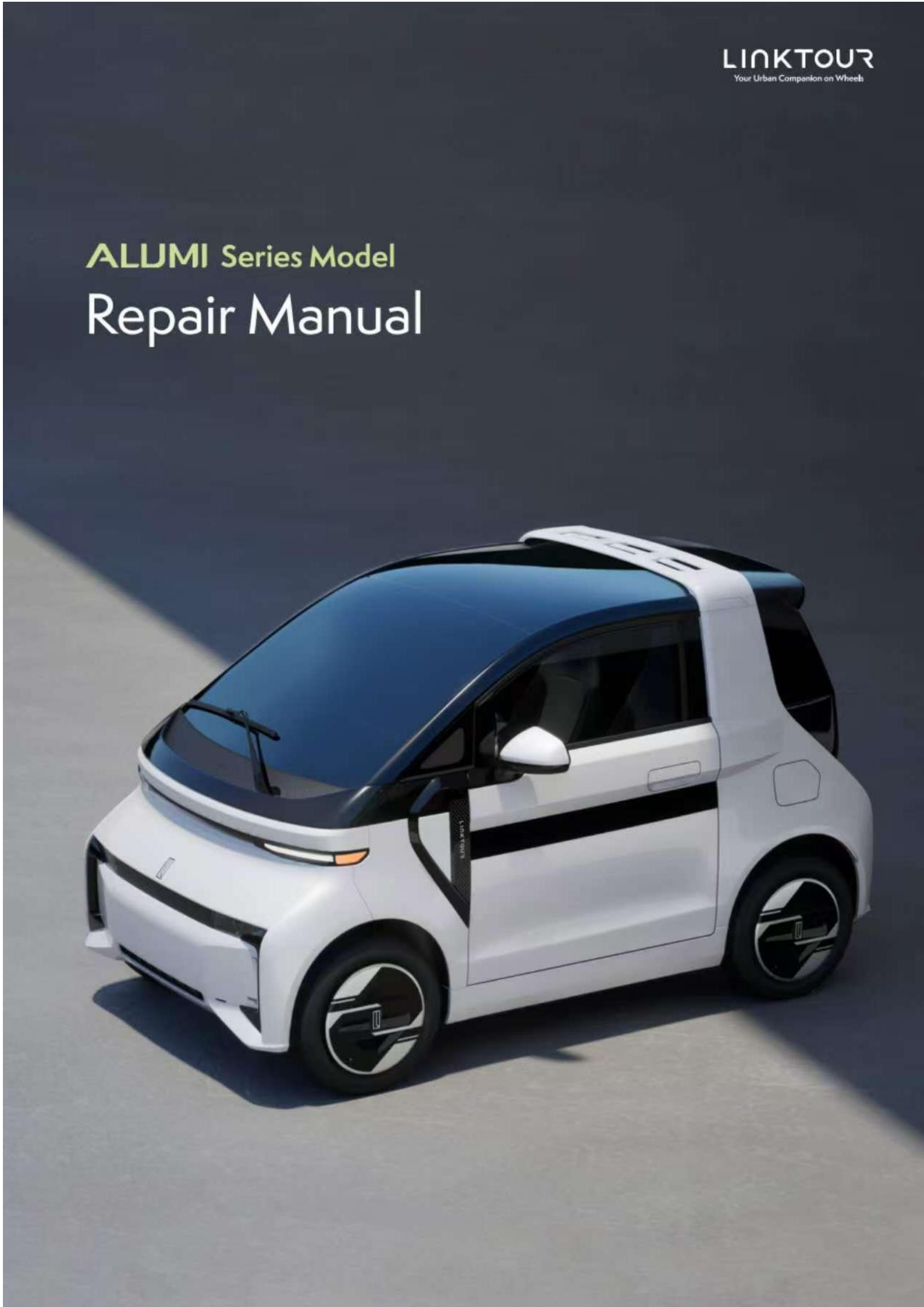
LINKTOUR
Your Urban Companion on Wheels

ALUMI Series Model

Repair Manual



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1 General Information

1.1 How to use this manual

1.1.1 General Information

❖This maintenance manual provides technical information on the specifications, diagnosis, adjustment and maintenance of Alumi vehicles.
❖Authorized maintenance personnel can provide better services to Alumi car owners only after understanding this manual.
❖When this manual mentions parts or special tools, we particularly recommend that you purchase the maintenance spare parts from the original factory.

1.1.2 Location Reference

❖The left and right sides of the vehicle are determined by looking forward when sitting in the driver's seat.

1.1.3 Special Tools

❖The dedicated maintenance tools displayed in this maintenance manual (with relevant illustrations for identification) can be purchased through Linktour Automobile Co., LTD..

1.1.4 Program operation Compilation standards

❖Warnings and precautions
Before each maintenance chapter, explain the warnings and precautions in that chapter.
Warning: Indicates that if not avoided, it may result in property damage, personal injury or death.
Note: If not avoided, it may cause damage to vehicles and equipment and reduce their service life..
❖System Overview
The system overview is introduced in two parts: the system component diagram and the system schematic diagram. The system component diagram mainly introduces the view information of the main components in this chapter. The view components included in this component diagram can be found with corresponding disassembly, assembly and maintenance information in this chapter. The system schematic diagram mainly provides a brief introduction to the information involved in this chapter, such as the direction of complex signals or the flow direction of liquids.
❖Component principle description
The description of component principles mainly focuses on the functions, control strategies and principles of electronic components such as sensors, actuators and ECUs.
❖Specialized tools and equipment
This section mainly introduces the summary of tools used in this chapter, including general tools and special tools. The special tool table provides all the special tools required for each maintenance, and the column table contains the part numbers of the special tools.
❖List of fastener torque
This list summarizes the fastener torques in this chapter and can be used to quickly review the fastener torques.
❖System Circuit diagram
This mainly introduces the Circuit diagrams of the electrical components and modules involved in the system.
❖Diagnostic information and procedures
The main contents include: data flow, fault symptom table, diagnostic process, module terminal list, and fault code diagnosis.
❖Matching learning
It mainly introduces the methods of module matching and learning, the sequence of matching, and the matching conditions of this module and other relevant information.
❖Inspection and adjustment
It mainly introduces the inspection and adjustment methods of components.
❖Disassembly and installation
It mainly introduces the disassembly, installation, decomposition of each component and related precautions.

1.1.5 Abbreviations and Symbols (Units, Meanings of Abbreviations)

❖International System of Units

Summary Table of International Units

The units used in this manual comply with the International System of Units (SI) standards

The name of the quantity	Unit name	Unit symbol
Length	millimeter	mm
Quality	Kilogram (kg)	kg
Current	An (Pei)	A
Voltage	Volt	V
Resistance	Ohm	Ω
Torque	One ton of rice	N · m
Pressure	Pa (Ska)	Pa
Celsius temperature	Celsius	℃

❖Module abbreviation

Serial number	Abbreviation	Name
1	AC	Air conditioning system
2	VCU	Vehicle controller
3	BMS	Battery management system
4	IHU	In-vehicle infotainment host
5	TBOX	Vehicle-mounted remote communication terminal
6	LBMS	Low-voltage battery management system
7	BCM	Body control module
8	ICM	Integrated chassis control module
9	PTC	Electric heater
10	MCU	Motor controller
11	OBC	On-board charger (integrated into OBC/DC-DC all-in-one machine)
12	EAC	Electric air conditioning compressor
13	ABS	Anti-lock control module
14	ESC	Vehicle body stability system
15	EPS	Electric power steering control module
16	OBD	Diagnostic interface

Summary table of Chinese meanings of module abbreviations

1.1.6 Warnings, Precautions and Important Precautions

The diagnostic and maintenance procedures in this maintenance manual include both general and specific warnings and precautions. Linktour Automobile Co., Ltd. provides maintenance information, aiming to assist technicians in diagnosing and repairing vehicles. Enable the vehicle to operate normally. However, if the recommended method is not followed, it will lead to danger.

❖Warnings and precautions

It is compiled to prevent danger, but not all dangers can be predicted. These matters will be compiled in a prominent position in the maintenance manual.

Note: Warnings and precautions are compiled to prevent the following situations

1. Damage the vehicle
2. It may cause personal injury
3. Unnecessary vehicle maintenance
4. Unnecessary replacement of parts
5. Improper maintenance or replacement of vehicle components.
6. Any warnings or precautions mentioned in the overview are from the respective systems.

Warning!
When warning instructions appear, you are required to take necessary measures. Ignoring this instruction will lead to the following consequences:
1. Seriously injure the technician himself/herself
2. Seriously injuring other personnel in the work area
3. If a vehicle is not properly maintained, it will seriously affect its safety.

❖The definition of Note
Special Note should be paid to necessary measures or prohibited measures. Ignoring this instruction will lead to the following consequences:
1. Damage the vehicle
2. Unnecessary vehicle maintenance
3. Unnecessary replacement of parts
4. The repaired system or component is not operating properly
5. Damage any system or component that depends on the normal operation of the maintenance system or component
6. Damaging fasteners, general tools or special tools
7. Matters concerning the use of coolant, lubricating oil or other major oils.

❖Warnings about disconnecting the battery

Warning!
Before repairing any electrical components, the ignition key must be in the OFF or LOCK position, and all electrical loads must be OFF, unless otherwise specified in the operating procedure. If the tool or equipment is prone to coming into contact with exposed electrical terminals that are live, the negative cable of the battery should also be disconnected. Violation of these safety guidelines may result in injury and/or damage to vehicle parts.

❖Warning about brake dust

Warning!
When repairing wheel brake parts. Avoid the following operations:
1.Do not grind the brake friction lining
2. Do not use sandpaper to grind the brake friction lining
3. Do not clean the wheel brake parts with dry brushes or compressed air
4. Some vehicle models or brake parts added after sale may contain a certain amount of asbestos fibers. It may be mixed with dust. Inhaling dust containing asbestos can seriously harm your health. Please clean any dust on the brake parts with a damp cloth. There are equipment for such cleaning operations available on the market, which can prevent fibers from mixing into the air during cleaning.

❖Warning about the irritation of brake fluid
Brake fluid is irritating to the eyes and skin. Once in contact, take the following measures
1. Eye contact - Rinse thoroughly with water.
2. Skin contact - Wash with soap and water.
3. If swallowed - See a doctor immediately.

❖Warning about brake pipe replacement

Warning!
Be sure to replace the brake tube with a double-walled steel brake tube. It is not recommended to use other types of pipelines, otherwise it may cause braking system failure. Carefully arrange and fix the replacement brake tubes. Be sure to use the correct fasteners and replace the brake tube in its original position. Improper arrangement and fixation of brake tubes can damage the brake tubes and the braking system, thereby causing injury to people.

❖Warnings about inhalation of R-134a

Avoid inhaling the vapor or mist of the refrigerant and lubricating oil in the air conditioning system. Contact with these can irritate the eyes, nose and throat. Work in a well-ventilated area. To remove R-134a from the air conditioning system, use certified maintenance equipment. In case of an accidental leakage in the system, the work area must be ventilated before continuing the repair. Other health and safety information can be obtained from the refrigerant and lubricating oil manufacturers.

❖Warnings about cooling fans

Warning!
The cooling fan in the front cabin can start and cause injury even when the drive motor is not running. Hands, clothes and tools should be kept away from any fans in the front cabin.

❖Warning about the disassembly of the expansion tank cover

To avoid burns, do not remove the radiator cap or the auxiliary water tank cap before the drive motor has cooled down. If the radiator cap or the auxiliary water tank cap is opened while the drive motor and radiator have not yet cooled down, the cooling system will release hot high-pressure liquid and steam.

❖Warnings about road test

Warning!
Test the vehicle on the road under safe conditions and abide by traffic regulations. Do not attempt operations that may endanger vehicle control. Violating the above safety instructions will seriously cause injury.
Warning about safety goggles and compressed air!
When using compressed air, wear safety goggles to avoid eye injuries.
Warnings about airbag systems.

Warning!
This vehicle is equipped with an airbag system. Violation of the correct operating procedures. It will lead to the following situations:

1. The airbag deploys and causes injury
2. Unnecessary maintenance of airbag systems
3. Observe the following guidelines to avoid the above situations:
Refer to the airbag system component diagram to determine whether you are carrying out maintenance on or around the airbag system components or Circuits.
If you are conducting maintenance on or around a component or Circuit of the airbag system, you must discontinue the airbag system.

❖Warnings regarding the handling of airbag systems

Warning!
If you are conducting maintenance on or around a component or Circuit of the airbag system, you must discontinue the airbag system.
System - Airbag related content. Violating the correct procedures can lead to the deployment of airbags, injury or unnecessary maintenance of the airbag system.

❖Warning about the scrapping of airbag system modules

To prevent the airbag from accidentally deploying and causing injury, the undeployed airbag module must not be disposed of as regular workshop waste. Undeployed airbag modules contain some substances. If the sealed container is damaged during the scrapping process, it can cause serious illness or injury. Undeployed airbag modules should be safely scrapped in accordance with the procedures. If the inflatable modules are not scrapped in the prescribed way, it may harm the human body itself or violate the law.

❖Warnings regarding the storage and handling of airbag system modules

When transporting undeployed airbag modules:
1. Do not use the wires or connectors on the airbag module for handling.
2. Make sure the airbag opening is not facing you.
When storing undeployed airbag modules, make sure that the airbag openings are not facing the surface where the airbags are placed. There should be sufficient space around the airbag to prevent accidental deployment, otherwise it may cause injury.

❖Warnings about special tools for airbag systems

To prevent the airbags from deploying when troubleshooting the airbag system. Only use the equipment specified in this manual and the methods specified in this manual. If the prescribed dedicated equipment is not used, it will cause the airbag to deploy, injuring oneself or others or unnecessary maintenance of the airbag system.

❖Warnings about vehicle lifting

To prevent vehicle damage and serious personal injury, lifting or supporting should be carried out in accordance with the designated parts in this manual

❖Warning about car window removal

Warning!
When processing any type of glass, use approved safety goggles and gloves to avoid injury.

❖Note to anti-rust materials

Note: The inner surfaces of some metal liners are coated with anti-rust agents to provide rust protection. When repairing the liner at the damaged part of the anti-rust material or installing a new liner.

Note to tightening the fasteners of the components

Note: The part number of the replaced component must be correct. Components that require the use of thread locking compound, lubricating oil, anti-corrosion agent or sealant are specifically specified in the maintenance procedure. Some new components are already coated. Unless otherwise specified, these coatings shall not be used on components. These coatings will affect the final torque, thereby further influencing the operation of the components. When installing components, use the correct torque specified value to avoid damage.

❖Precautions for using the fault diagnostic instrument

Diagnostic instruments that may display incorrect data should not be used. Using a faulty diagnostic instrument can lead to misdiagnosis and unnecessary replacement of parts.

❖Note to fasteners

Use the correct fasteners in the correct positions. The part number of the fastener to be replaced must be correct. The fasteners that require thread locking glue, lubricating oil, anti-corrosion agent or sealant should be specifically noted in the maintenance procedure. Paint, lubricating oil or anti-corrosion agents shall not be used on fasteners or fastener connection surfaces, unless otherwise specified. These coatings affect the torque of fasteners and further influence the operation of components. When installing components, use the correct torque specified value to avoid damage.

1.1.7 Maintenance Operation Guidance (Workshop Maintenance Operation Procedures, Warning Precautions, How to Power Off)

❖Important safety guidelines

1) Make sure that I have understood the basic safety operation procedures for maintenance, wear the corresponding clothing and use safe equipment. When carrying out any maintenance task, the following matters should be particularly noted:
2) Before the maintenance begins, read all the operation instructions and confirm that you have prepared the corresponding protective measures, tools and parts, as well as the skills required to safely and comprehensively carry out the task.
3) When working in environments such as hammering, drilling, grinding, or with pressurized air, liquids, and springs, it is essential to wear appropriate protective glasses, goggles, or eye shields to protect your eyes.
4) If other maintenance work may also cause eye injuries, eye protectors should also be worn.
5) When necessary, use other protective equipment, such as gloves or safety shoes.
6) When using a lift or jack to lift a vehicle, ensure that the vehicle is safely supported. If a jack bracket must be used for support, one must Pay attention to the safety of oneself and others.
7) When welding, wear a reliable welding helmet, gloves and safety boots to protect yourself.
8) When spraying paint, wear reliable protective masks, goggles and gloves, and avoid contact with paint and harmful chemicals. And it can only be sprayed in a well-ventilated drying room.

❖Maintenance Instructions

1) The diagnostic and repair procedures provided in this maintenance manual are for the use of professional technicians with relevant qualifications only. Attempting to carry out vehicle diagnosis and maintenance work without relevant training and without using appropriate tools and equipment can pose safety hazards to oneself, others or the vehicle.
2) This manual provides detailed instructions on the correct methods and steps for maintenance and repair. When carrying out certain steps, special tools and designated equipment need to be used. Any person who uses alternative parts, tools or adopts other maintenance procedures that are not within the recommended range

of Linktour Automobile Co., Ltd. must clearly understand whether such actions pose a danger to their personal safety and the driving safety of the vehicle.

3) If parts need to be replaced, the original factory repair parts provided by Linktour Automobile Co., Ltd. should be used.

❖Standard Workshop Operation Manual

1) When cars are being repaired in the repair workshop, it should be ensured
2) Apply the parking brake or fix the wheels to prevent the vehicle from moving forward or backward.
3) When working in front of a car, the key should be removed.
4) If a vehicle is to be started in the maintenance workshop, it is necessary to ensure good ventilation of the site or use an exhaust gas exhaust pipe to remove the exhaust gas.
5) When necessary, there should be enough space to lift the car and change the tires.
6) Engine compartment maintenance can only be carried out when fender pads are in place.
7) When performing maintenance or lifting the vehicle in the front compartment or under the vehicle, the MSD switch and the negative cable of the low-voltage battery should be disconnected first.

Warning!

1) When performing arc welding on a car, the MSD switch/battery and charger wiring harnesses should be disconnected first to prevent excessive current from damaging the internal components of the battery and charger.
2) If welding equipment is used in a car, a fire extinguisher should be placed nearby. Towing car

Warning!

During the towing process of the vehicle, its ignition switch or push-button start switch must be in the "ACC" position. And turn on the turn signal lock and activate the warning lights. Only in this way can the turn signals, horn and brake lights work properly; otherwise, it may cause personal injury.

Note: The movable tow hook has a left-hand thread and must be fully tightened before towing the vehicle. When it is necessary to tow a vehicle, a towing hook should be used. To prevent the rope from entangling the vehicle body, one end of the towing rope must be tightly fastened to the hook, and the other end must be connected to another vehicle.

❖Component cleaning

When reassembling components, the parts should be carefully cleaned before inspection and assembly

❖Cleaning method

1. Dry cleaning
2. Use a soft brush to remove the accumulated dirt.
3. Scrape off the dirt with a metal sheet or a wooden stick.
4. Wipe with a cloth

Warning!

1. Compressed air contains a relatively high amount of moisture, and special Note should be paid especially when it is used to clean the components of hydraulic systems.
2. Clean the dirt with compressed air. When using this method, protective glasses should be worn.
3. Clean the dry dust with a vacuum cleaner. This method is often used to clean the dust on the friction plates.
4. Steam cleaning method.

Warning!

Most solvents are harmful to the human body and need to be handled with care to avoid causing harm.

Note: Special cleaning agents must be used to clean some components, such as brake hydraulic components, electrical assemblies, etc.

1.1.8 Diagnostic Procedure

The objective of the diagnostic procedure is to develop a work plan for each specific diagnostic situation. For each diagnostic situation, a similar plan should be followed to maximize the efficiency of vehicle diagnosis or maintenance. Although the following diagnostic procedures have all been numbered, it is not necessary to execute each procedure in sequence to successfully diagnose the fault. The final step of the diagnostic process must be maintenance and verification of the repair status.

Serial number	Diagnostic steps
1	Verify the customer's complaint issue: The first part of this step is to learn as much as possible from the customer. Did the customer install the accessories by themselves? When did this situation occur? How long did this situation last? How often does it occur? To verify the issues of concern to customers, technicians must be familiar with the normal operation of the system and refer to the user manual or maintenance manual for any necessary information.
2	Preliminary inspection: Conduct a thorough visual inspection, review the repair records. Detect abnormal sounds or odors, and collect information on diagnostic fault codes to facilitate effective repairs.
3	Carry out routine checks on the diagnostic system: One or more diagnostic fault codes do not necessarily indicate a problem in the system. The purpose of system checks is to verify whether the system is operating normally, so that technicians can adopt a methodical diagnostic approach.
4	Check technical bulletins and other maintenance guidelines: Utilize real-time communication.
5	Stored diagnostic fault codes: Strictly follow the specified diagnostic fault code table and carry out effective maintenance. Symptom no diagnosis fault code: Select the symptom from the symptom table, complete the repair according to the diagnostic steps or suggestions, or refer to the corresponding component and system inspection.. Operation and system Circuit diagram description. Intermittent fault: It is a kind of fault that occurs discontinuously and only happens when the conditions are met. General intermittent faults are caused by electrical connection and wire faults, functional failure components, electromagnetic/radio frequency interference and installed equipment. Combine the knowledge of technicians with the utilization of existing maintenance information to assess the symptoms and conditions described by customers. Use a checklist or other methods to identify components and follow the suggestions for intermittent fault diagnosis in the maintenance manual. Operate the vehicle as per design requirements: During normal operation, if the situation described by the customer exists, it indicates that the situation described by the customer may be normal. But use another vehicle to confirm and explain your findings and the operation of the system to the customer.
6	Recheck the problem: If the technician fails to successfully identify the problem, it must be reverified. The problem may be intermittent or problem-free
7	the cause of the fault, carry out maintenance and check whether the operation is normal. Verify whether the symptoms have been resolved. During this process, it may be necessary to conduct a road test on the vehicle.

1.1.9 Precautions for Electrical Appliance Maintenance

Before performing electrical operations, turn off the entire vehicle's power supply, disconnect the negative terminal of the battery, and then wait for 2 minutes to allow the backup power supply of the airbag module to be completely drained
(Equipped with airbag system).
Disconnecting the battery connection will delete the storage of the clock, speaker and DTC. Therefore, it is necessary to confirm these storages before disconnecting the cables.
Only install components that meet the vehicle specifications.
Do not reverse the terminal electrodes of the battery.

1.Before replacing the control module, check the input and output conditions of the components as well as their functions
a.When disconnecting components:
- Do not apply excessive force when disconnecting the connector.
- f the connector is installed by fastening bolts, loosen the bolts and then disconnect the connector by hand.

b.When connecting components:
- Before installing the connector, make sure the terminals are not bent or damaged, and then connect them correctly.
- When installing the connector by fastening the bolts, tighten the bolts until the painted area of the connector is flush with the surface.

c.Do not drop or strike the control module to avoid excessive impac.

d. Be careful to avoid condensation of the control module due to rapid temperature changes, and keep it away from water droplets or raindrops. If water is found on the control unit, it should be completely dried first and then installed on the vehicle
e. Be careful not to let the oil come into contact with the control module connectors.
f. Avoid cleaning the control module with volatile oils.
When using a digital multimeter, be careful not to let the test probes come into contact with each other to avoid a short Circuit. Avoid damaging the battery due to a short Circuit in the power transistor within the control module.
When checking the input and output signals of the control module, use the specified test adapter.
2. Check the fuse
a. Check and confirm that the metal wire of the fuse has not broken.
b. If the metal wire of the fuse has broken, it confirms that there is no short Circuit in the Circuit.
When replacing a fuse, a fuse with the same rated amperage must be used..

1.1.10 Charging Precautions

❖Charging Safety Warning

1. Minors are prohibited from conducting charging operations or touching and using charging equipment. The charging gun is a high-voltage electrical device. Please do not allow minors to approach it during charging.

2. Charging may affect medical or implantable electronic devices. Please consult the electronic device manufacturer before charging. If you plan to use any medical equipment in the vehicle, please confirm with the manufacturer before use whether charging will affect the normal operation of the equipment. Charging may cause abnormal operation of the equipment and result in personal injury.

3. Please choose to charge in a relatively safe environment (such as avoiding hazardous chemicals, fire sources, heat sources, lightning, flammable and explosive environments, etc.).

4. Use dedicated charging equipment for electric vehicles that meets relevant national standards:

5. Do not modify, disassemble or repair the charging equipment and related ports to avoid charging failure and fire.

6. The use of substandard products is strictly prohibited.

7. It is strictly forbidden to operate with wet hands or touch the exposed metal of the charging port or charging base. Otherwise, it may cause electric shock or electric shock, resulting in personal injury.

8. When charging, if you notice any abnormality with your vehicle or charging equipment, such as an unpleasant smell or smoke, please stop charging immediately and it is recommended to contact an authorized BYD Auto service store. When charging, to avoid damaging the vehicle, do not shake the charging gun, as it may damage the vehicle's charging port.

9. Please do not repair the vehicle when it is charging.

10. Before the vehicle is driven, please make sure to unplug the charging and discharging equipment and close the charging port cover.

11. After the vehicle is externally charged, the cooling fan and air conditioning compressor may automatically start working due to battery cooling. This is a normal phenomenon.

❖Charging Precautions

1. Ac and DC charging can be carried out in any power setting. For safety reasons, it is recommended to set the power to the OFF position before charging.

2. When the external power grid experiences a short-term power outage and then resumes power supply, BYD's charging equipment will automatically restart charging without the need to reconnect the charging device.

3. If the charging port cover or the charging gun freezes due to weather or other reasons, do not forcibly open the charging port cover or forcibly pull out the gun.

4. To avoid damage to the charging equipment (Precautions for charging equipment)

5. Before starting the vehicle, please ensure that the charging device is unplugged. This is to prevent the vehicle from going into the "OK" gear and being able to shift gears when the charging gun is not fully inserted, which may cause damage to the charging device and the vehicle.

6. Do not close the charging port cover when the protective cover is open.

7. Do not pull or twist the charging cable forcefully.

8. Do not strike the charging device. Please be careful to prevent mechanical damage such as drops and external impacts.

9. Do not store or use the charging device in an environment with a temperature higher than 50℃.

10. Do not place the charging device near heaters or other heat sources.

❖Precautions before charging

1. Do not forcibly open the charging port cover when it is not unlocked.

2. First, make sure there are no foreign objects in the charging gun and the charging port, and that the anti-touch cap at the charging gun terminal is not loose or deformed.

3. Hold the charging gun in your hand, aim it at the charging port and push it in, making sure the charging gun is inserted properly.

❖Precautions during charging

1. The air conditioner can be used normally while charging. To ensure charging power, it is not recommended to turn on the air conditioner.

2. While charging, it is recommended that personnel do not stay in the vehicle.

3. When charging, it is recommended to park the vehicle in a well-ventilated area and do not block the air intake grille.

4. During charging, when the battery starts to heat up and work, the instrument may show a short-term fluctuation in the charging power, which is a normal phenomenon.

5. During charging, the combined instrument panel will indicate the estimated remaining full charging time. Under different temperatures, battery levels, charging facilities and other conditions, the remaining full charging time may have certain deviations, which is a normal phenomenon.

6. During charging, the battery cooling may start, and components such as the compressor and fan will work as needed. There will be a certain sound in the front compartment, which is a normal phenomenon.

7. Before charging is completed, to extend the battery's service life, battery balancing will be enabled, which may result in a longer charging time.

❖Precautions after charging is complete

1. First, stop charging and make sure the charging port is unlocked.

2. Hold the charging gun in your hand, press and hold the button on the charging gun, and then pull it out.

3. Do not forcibly pull out the charging gun when the charging port is locked, otherwise the charging port will be damaged.

4. After charging is complete, please unlock it first and then unplug the charging plug.

5. After unplugging the charging gun, please ensure that the protective cover of the charging port and the charging port cover are closed to prevent water or foreign objects from entering the charging port and affecting normal use.

6. When the battery temperature is too low or too high, the charging performance of the vehicle will be affected

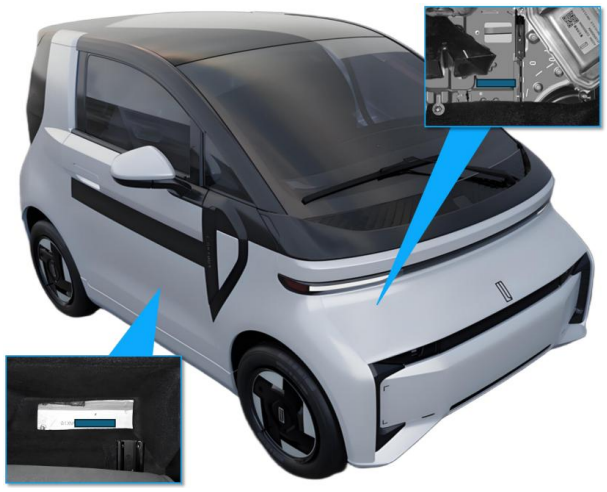
7. When charging at low temperatures, battery thermal management can improve the battery's low-temperature charging capacity, but the charging time will be prolonged and the power consumption for heating will increase, which is a normal phenomenon.

8. In areas with lower temperatures, it is recommended that users charge their devices indoors with heating.

9. In areas with higher temperatures, it is recommended that users charge their devices in a cool and well-ventilated place.

1.2 Vehicle identification code

The inner side of the passenger side front fender is pasted with a vehicle nameplate, which contains the vehicle identification number.

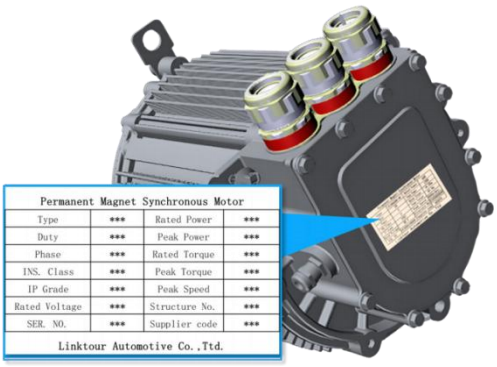


The vehicle identification number is engraved on the sheet metal under the passenger side seat.

OBD Diagnostic interface

OBD he interface is located below the driver's side dashboard. Through the original factory diagnostic equipment, the vehicle's VIN code and other vehicle-related information can be read.

1.3 Drive motor identification mark



The motor nameplate is located on the side of the motor. The displayed information includes: motor model, rated voltage, protection grade, etc

1.4 Traction and lifting

1.4.1 Traction

❖Tow the accident vehicle

General Instructions

•If the vehicle experiences the following faults during driving and cannot continue to move, and needs to be towed, it is recommended that you entrust an authorized dealer of Linktour or a professional rescue company to handle it on your behalf.

•When towing a vehicle, using appropriate towing equipment can ensure that the vehicle is not damaged. If the towing method is incorrect, it is possible to damage the vehicle.

•To avoid vehicle damage, the following precautions must be observed. When necessary, tow truck drivers are requested to read the content of this page.

•When the vehicle fails to start
•The motor is running normally, but the vehicle cannot move.
•When the steering system malfunctions.
•The vehicle made an abnormal sound.
•When the vehicle is severely damaged.

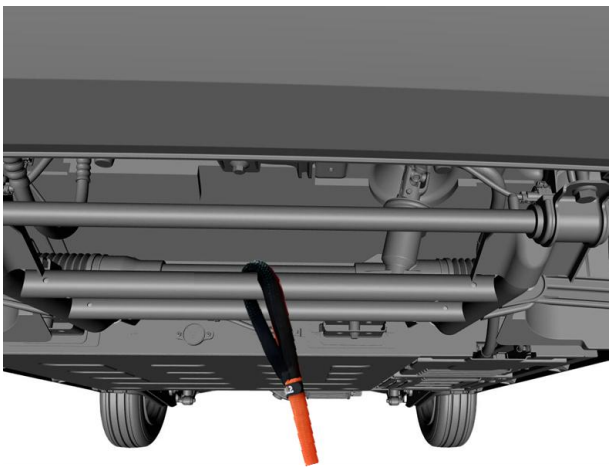
•Any traction must comply with local national or market laws and regulations. The wheels and axles in contact with the ground must be in good condition.

•If it has been damaged, a towing trolley must be used.

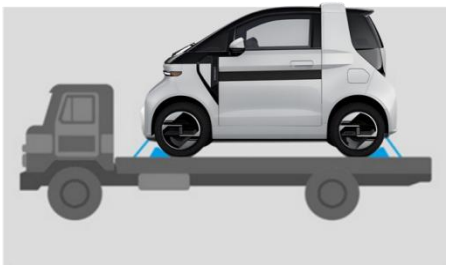
1.4.2 The method of towing a vehicle

❖Emergency traction

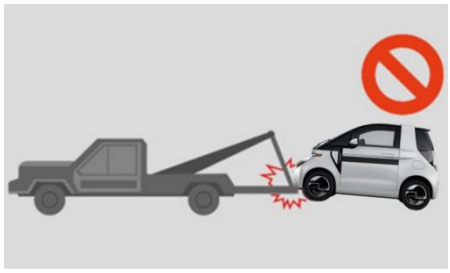
If a lift trailer or platform trailer cannot be found in an emergency, a trailer cable can be securely fastened to the front subframe under the vehicle's chassis to temporarily tow the vehicle. This method is only suitable for low-speed and short-distance traction.



❖Install the front towing trailer cable
1. Locate and confirm the thickest crossbeam of the front subframe.
2. Secure it to this crossbeam with a dedicated trailer cable.
❖Precautions for using trailer ropes
•Do not pull from the side or at a vertical Angle. At the same time, always keep the pulling in a straight line.
•Do not pull the trailer cable forcefully. Apply force steadily and evenly.
•The towing and towed vehicles must turn on the hazard warning lights and must abide by local traffic regulations.
•The towed vehicle must have the gearshift lever in the "N" position.
•The towed vehicle needs to switch the power mode to the "ON" position, turn the steering wheel back and forth, and make sure the steering lock is not locked.
•You must drive smoothly. Do not accelerate, decelerate or make sharp turns suddenly.
•Remember, neither the brake booster nor the power steering booster of the towed vehicle is functioning. When braking, the brakes should be applied forward compared to the normal situation.
•When performing traction operations, the traction rope must always be kept taut.
❖Use a platform trailer
Except for special regulations of relevant countries or markets, only platform trailers can be used to transport vehicles.



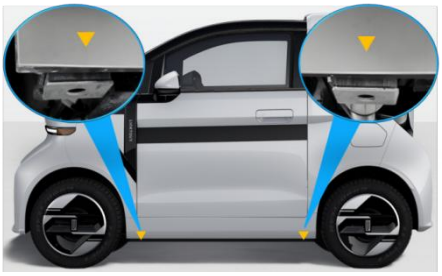
Warning!
•After towing the vehicle onto the platform trailer, it must be firmly fixed to the trailer.
•Do not tow from the rear of the vehicle when the power mode is in the "OFF" position. Otherwise, the steering lock mechanism cannot keep the front wheels straight, which may cause the towing to lose control.
•During the towing process, one should start at a low speed, shift gears smoothly, drive slowly, turn at the right time, and avoid emergency braking.
•When towing a vehicle, both the towing vehicle and the towed vehicle need to turn on the hazard warning lights.
The use of lifting cargo vehicles is prohibited
Do not use a lifting cargo vehicle to tow from the front or rear, otherwise it will cause damage to the vehicle body.



1.4.3 Lift

Warning!

Using the correct lifting position is of great significance for the safety of lifting. Otherwise, it may damage the vehicle or cause personal injury. Note: As shown in the following figure, when using a two-column lift to lift a vehicle, a horizontal liner must be used at the lifting position.



The lifting position of the vehicle is marked with a triangular pattern at the lower part of the vehicle body. Below the marking, there is a specially reinforced support point designed on the lower beam of the vehicle body.
Using the correct lifting position is of great significance for the safety of lifting. Otherwise, it may damage the vehicle or cause personal injury.
Vehicle lifting usually employs two methods: a lift and a jack.
When using a lift to lift a vehicle, a horizontal liner must be used at the lifting position. After firmly supporting the two side beams of the vehicle with the liner, the vehicle can be safely lifted.

1.4.4 Support and lifting

When using a jack to lift a vehicle, it is necessary to park the vehicle on a hard and flat surface. When lifting a vehicle, be sure to place the stop block in the opposite direction of the diagonal wheel position at the starting point of the lifting. Otherwise, it may cause injuries to people.

When using a jack, a pad should be applied to protect the car paint from damage.

Note!

When placing the jack, be careful not to bump into the pipeline, otherwise it may cause leakage in the pipeline and damage the vehicle.

Warning!

- Never operate a vehicle that is not properly supported, as it may cause serious damage, personal injury or death.
- If a vehicle needs to be lifted, the lifting tool must be placed at the lifting point. Lifting at any other point may cause damage to the vehicle or lead to an accident.
- When lifting a vehicle with a lifting tool, do not place any part of your body under the vehicle to avoid injury.

1.5 Emergency Rescue Guide

1.5.1 Warning and Precautions Warning

1.During the maintenance process, if the operation is not carried out in accordance with the correct procedures, it may lead to vehicle damage or serious accidents such as electric shock or shock.
2. Errors during the maintenance process may lead to serious accidents.

Before carrying out maintenance (including disassembling, assembling, inspecting or replacing parts, etc.), be sure to read the following instructions carefully and operate in accordance with the correct procedures stipulated in the maintenance manual.

1.5.2 Maintenance Precautions

The maintenance of the vehicle's high-voltage system can only be carried out by professionals who have been certified for high-voltage system maintenance. In addition to using diagnostic instruments for diagnosis, it is necessary to power on and use essential insulating labor protection and maintenance tools for insulation treatment.

1. Use the specialized tools approved by Linktour Automobile Co., Ltd. for the maintenance operation of high-voltage electric vehicle models!

2. Two-person operation, with one person supervising and the other operating!

3. During the maintenance process, ensure that no other personnel make mistakes that could cause high voltage to be applied to the entire vehicle, including turning the key and connecting the negative terminal of the 12V battery. When plugging or unplugging the high and low voltage plug-ins, be sure to follow the instructions of the plug-ins:

1) The disassembly and assembly of high-voltage components must be carried out in accordance with standard procedures and using dedicated tools to prevent falling accidents during maintenance.

2) There are "warning signs" at both high-voltage and high-temperature areas of the vehicle body. Operate strictly in accordance with the requirements indicated!

3) Before conducting vehicle maintenance, the power-off procedure must be followed first, and safety protective equipment must be worn before operation!

4) When washing the car, do not spray the high-pressure water gun at the charging port to prevent water from entering the charging port and causing electric shock!

5) Use the designated charging sockets and charging cables. Do not choose charging devices by yourself!

6) When extinguishing fires in vehicles, the "water pouring method" is strictly prohibited. Use "dry powder" fire extinguishers instead!

7) When maintaining a vehicle, do not operate when the vehicle body is wet or wet!

8) When disassembling and assembling the vehicle, do not operate the positive and negative poles simultaneously!

9) Do not connect the positive and negative poles. Avoid connecting the positive or negative poles to the ground through the human body!

10) The interfaces of the disassembled high-voltage lines should be insulated!

4. Do not touch the connectors of the electronic control parts of the high-voltage components unless necessary to prevent electric shock and the power-off process for vehicle maintenance (for details, please refer to the section content of "Overview of the Vehicle High-Voltage System")

5. In accordance with the standard power-off procedure for high-voltage systems, during operation, it is essential to strictly follow the sequence and standards.

6. Ensure that after the power-off process is completed, corresponding rescue, maintenance and inspection work can be carried out on the vehicle.

7. Power-on process for vehicle maintenance (for details, please refer to the section content of "Overview of Vehicle High-Voltage System")

8.After the vehicle maintenance operation is completed in accordance with the standard procedures, the high-voltage system needs to be re-powered in accordance with certain standard procedures to ensure the safety of personnel and the vehicle during and after the power-on process.

1.6 Technical data

1.6.1 The main performance parameters of passenger vehicles

Appearance dimensions			
Project	Unit	Low-end configuration	High-end configuration
Vehicle length	mm	2683	2683
Vehicle width	mm	1500	1500
Overall vehicle height	mm	1602/1566	1602/1566
Wheelbase	mm	1800	1800
Track (front/rear)	mm	1310/1300	1310/1300
Front overhang	mm	457	457
Rear overhang	mm	426	426

1.6.2 Vehicle mass

Model & Configuration	Status	Total mass	Front axle	Rear axle
L6 7.2kWh-low	Preparation	575	270	305
	Full load	715	324	391
L6 7.2kWh-In the	Preparation	585	275	310
	Full load	725	329	396
L6 7.2kWh- high	Preparation	595	295	300
	Full load	735	349	386
L7 12.9kWh- low	Preparation	625	305	320
	Full load	765	359	406
L7 12.9kWh- high	Preparation	645	320	325
	Full load	785	374	411

1.6.3 Dynamic performance

S gear	Unit	L6	L7
Maximum speed within 30 minutes	km/h	/	90
Creep maximum speed /S gear	km/h	/	4
0-50km/h acceleration time	s	/	/
Acceleration time: 50-90km/h	s	/	/
Maximum climbing gradient (5km/h)	%	/	≥ 20%
D gear	Unit	L6	L7
Maximum speed within 30 minutes	km/h	45	80
Maximum speed of 1km/h	km/h	45	80
Creep maximum speed /D gear	km/h	4	4
0-45km/h acceleration time	s	/	/
0-50km/h acceleration time	s	/	/
Maximum climbing gradient (5km/h)	%	≥ 20%	≥ 20%
Reverse mode	Unit	L6	L7
Maximum speed for reversing	km/h	20	20
Creep maximum speed /R gear	km/h	4	4
Accelerate from 0 to 20km/h when reversing	s	/	/
Maximum slope for reversing (5km/h)	%	≥ 20%	≥ 20%

1.6.4 Economic performance

WMTC range	Unit	L6	L7
Cruising range at normal temperature	km	116	170

1.6.5 Through performance

Project	Unit	L6&L7
Approach Angle (full load)	°	27.3
Departure Corner (Fully loaded)	°	29.3
Longitudinal passage Angle (full load)	°	17.5
Minimum ground clearance (full load)	mm	135
Turning diameter	m	9.5

1.6.6 Four-wheel alignment

Wheel	Parameter item	Parameter value	Remarks
Front wheel	Initial toe-in Angle	0.1° ±5′	Front beam
	Initial camber Angle	0.2° ±30′	Unadjustable
Rear wheel	The rear wheels are steered forward	0° ±15′	Unadjustable
	Rear wheel camber	0° ±20′	Unadjustable

1.6.7 Wheel

Parameter item	Parameter value	
	L6	L7
Tire specification	155/70 R13	155/65 R14
Cold air pressure	230±10kPa	
Rim model	4.5B*13	5J*14
Dynamic balance requirements	Unilateral≤ 10g	

1.6.8 Reducer

Parameter item	Parameter value	
	L6	L7
Reducer model	2H0022402000	2H0032402000
Speed ratio	10：1	8.1:1
Reducer oil model	GL-5 SEA 85W-90	
The amount of reducer oil used	0.8L±0.05L	

1.6.9 Recommended oil and capacity

Name of the oil	Specification parameters	Filling volume
Brake fluid	DOT4	1L
Reducer oil	GL-5 SEA 85W-90	0.8L±0.05L
Washing solution	/	1L
Refrigerant	R1234yf	320g

1.6.10 Braking performance

Project	Unit	L6	L7
45km/h Braking			
Braking distance	m	≤ 16	/
Pedal force	N	≤ 500	/
Stability	--	Do not deviate from the 3.5-meter test channel	/
50km/h Braking			
Braking distance	m	/	≤ 16
Pedal force	N	/	≤ 500
Stability	--	/	Do not deviate from the 3.5-meter test channel
80km/h Braking			
Braking distance	m	/	≤38
Pedal force	N	/	≤500
Stability	--	/	Do not deviate from the 3.5-meter test channel

1.6.11 Brake

Parameter item	Parameter	
	L6	L7
The allowable wear of the front brake disc	2mm	
Thickness of the front brake disc	7mm	8mm
Thickness of the front friction plate	13.5mm	
The wear limit thickness of the front friction disc	7.6mm	
Thickness of rear drum brake pads	4mm	
Wear limit of rear drum brake pads	2mm	

1.6.12 Suspension

Parameter name	Front suspension	Rear suspension
Structural form	Macpherson independent suspension	Integral bridge non-independent suspension
Shock absorber form	Bidirectional acting hydraulic cylinder type	
Spring model	Helical spring	

1.6.13 12V Start the battery

Parameters of low-voltage battery		
Serial number	Project	Indicator
1	Low-voltage battery model	CA3703EEA
2	The number of low-voltage batteries	1
3	Rated voltage of low-voltage battery	12.8V
4	Rated capacity of low-voltage battery	12.5Ah

1.6.14 Parameters of power battery

Serial number	Project	L6	L7
		7.2kWh-PACK	12.96kWh-PACK
1	Battery pack model	CA2101PEA	CA2101PEB
2	Number of battery packs	1	
3	Battery pack size	long：1341±2mm wide：994±2mm high：200.9±2mm	
4	The total rated voltage of the battery pack	96V	
5	The total power of the battery pack	7.2kWh	12.96kWh
6	Total capacity of the battery pack	75Ah	135Ah
7	Total mass of the battery pack	120（1±3%）kg	154（1±3%）kg
8	Rated voltage of individual cells	3.2V（0.33C） 3.1V（1C）	
9	Rated capacity of a single unit	15Ah/1C Charging and discharging 100%DOD （25℃±2℃）	

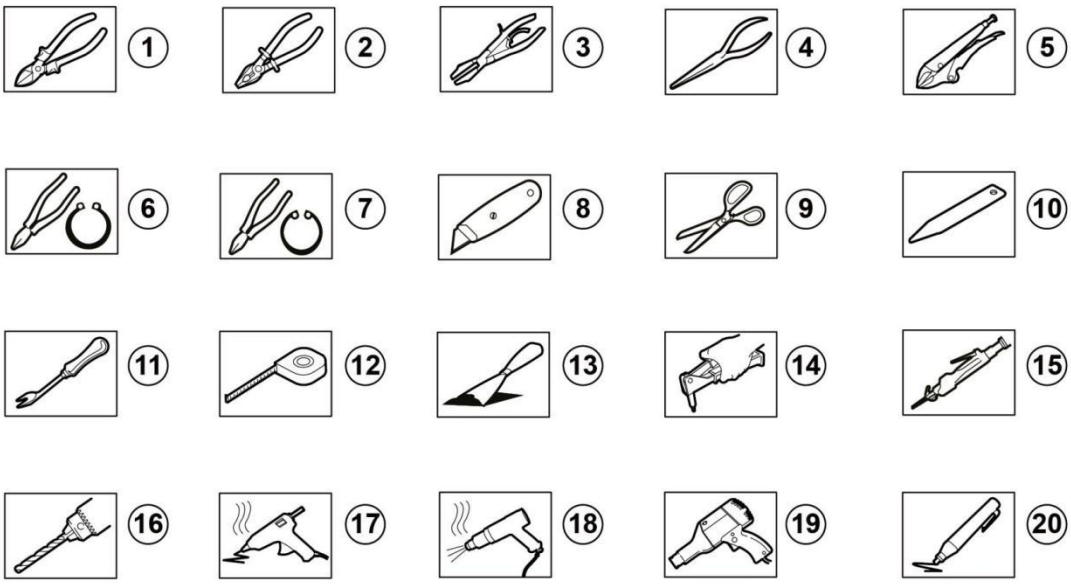
1.6.15 Parameters of the drive motor

Serial number	Parameter item	Unit	L6	L7
Technical parameters of the motor system assembly				
1	Rated voltage	VDC	96	
2	Operating voltage range	VDC	63 ～ 108	
3	The working environment temperature of the assembly	℃	-40 ～ 55	
Technical parameters of the drive motor				
1	Motor type	/	Permanent magnet synchronous motor	
2	Motor model	/	TZ160XZ6H-96	TZ153MZL01
3	Continuous power	kW	6	10
4	Peak power @ duration	kW@s	12	23
5	Continuous torque	N．m	16	28
6	Peak torque @ duration	N.m@ s	65	110
7	Rated rotational speed	r/min	3500	
8	Maximum rotational speed	r/min	6000	7500
9	The highest efficiency	/	≥ 95%	
10	Cooling method	/	Natural air cooling	

1.6.16External lighting parameters

Serial number	Function	LED Information				Input					Output				
		Model	Particle Quantity	Driving current of a single LED (mA)	Single Single LED power (Typical value)	Maximum power /W	Power range /W	Current range /mA	Power dictionary Type value /W	Typical value of current /mA	Voltage range /V	Power range /W	Current range /mA	Typical power value /W	Current dictionary Type value /mA
Front combination small lamp	Position light	SJ-CZ3537WPASE9CF01	16	18	0.055	1.99	1.224~1.99	95~136	1.49	110	4.2~6.8	0.62~0.986	146±10%	0.73	146
	Daytime running light	SJ-CZ3537WPASE9CF01	16	125	0.375	9.3	7.4~9.3	500~950	8.1	600	5.4~6.8	5.4~6.8	990±10%	5.95	990
	Turn signal	SJ-CZ3537WPASE9CF01	16	125	0.375	9.1	7.2~9.1	486~860	7.7	570	5.4~6.8	5.4~6.8	990±10%	5.95	990
Front combination lamp	Low beam lamp	SJ-CM2016-GSZ2X5765-01	7	850	2.55	23.8	19.6~23.8	1300~2500	21.06	1560	19.6~23.8	16.7~20.3	850±10%	17.85	850
	High beam	SJ-CM2016-GSZ2X5765-01	7+5	850	2.55	41.3	34~41.3	2200~4600	36.45	2700	33.6~40.8	28.6~34.7	850±10%	30.6	850
Rear combination lamp	Turn signal 1	HiB12CYCW140M-A0	6+6	185	0.555	8.24	6.75-8.24	500-610	7.49	555	5.5-7.5	2.75-4.58	500-610	3.6	555
	Turn signal 2	HiJ31CY1502	6+6	200	0.6	8.91	7.29-8.91	540-660	8.1	600	5.8-7.6	3.13-5.02	540-660	4	600
	Reversing light	HiB12CYCW140M-A0	6+6	210	0.63	9.36	7.65-9.36	567-693	8.51	630	5.8-7.6	3.29-5.27	567-693	4.22	630
	Position light	HiF21R150D	18	20	0.06	0.96	0.84-0.96	60-80	0.95	70	5.1-7.8	0.55-1.03	108-132	0.77	120
	Brake light	HiF21R150D	18	175	0.525	8.26	7.99-8.26	505-683	8.02	594	5.1-7.8	4.82-9	945-1155	6.77	1050
License plate light											13.5V			0.4	30

1.6.16 Maintenance tools



Serial number	Explanation
1	Diagonal pliers
2	Flat-mouthed pliers
3	Carp tongs
4	Pointed-nose pliers
5	Pliers
6	External retaining ring pliers
7	Internal retaining spring pliers
8	knife
9	Scissors
10	Interior tools
11	Snap screwdriver
12	Tape measure
13	Shovel
14	Riveting gun
15	Pneumatic cutting
16	Electric drill
17	Hot melt glue gun
18	Hot air gun
19	Pneumatic wrench
20	Marker pen

2. Maintenance and upkeep

2.1 Maintenance cycle

2.1.1 Vehicle maintenance

Car maintenance is divided into daily maintenance and regular maintenance. Daily maintenance and regular servicing help to extend the vehicle's service life, driving safety and vehicle performance.

As a user, you are the only one who can ensure the normal maintenance of your car. Please carry out daily and regular maintenance according to the odometer and date, strengthen inspection and adjustment, eliminate faults and potential hazards. Ensure that the car is in good condition and operates safely, and fully enjoy the convenience and pleasure of driving.

❖Daily maintenance

Daily maintenance includes the items that should be checked every day when driving normally. This is the most basic requirement if your car is to run continuously and normally. The main content of daily maintenance is to consistently check the safety mechanisms and the tightness of all component connections of the vehicle before departure, during driving, and after parking. Keep the cabin clean and ensure that the power battery is fully charged. Prevent water leakage and electric leakage; Keeping the vehicle clean and tidy mainly involves cleaning, replenishing and safety checks.

❖Regular maintenance

The time interval for regular maintenance can be determined based on the odometer reading or the time interval, whichever comes first. For maintenance items that have exceeded the last interval time, maintenance should also be carried out within the same interval time.

Whenever driving in sandy, muddy or water areas, the following items should be inspected daily and necessary maintenance or repairs should be carried out：

— Brake shoes and brake drums；
— Brake pads and brake discs；
— Brake tubing；
— Differential oil；
— The cabin is dry and clean..

❖Special tips for regular maintenance and servicing of the periodic table

The maintenance cycle is determined based on the normal driving conditions of the vehicle. For cars used under harsh conditions, some work must be carried out between two maintenance sessions or even earlier.

❖Harsh operating conditions include the following items

— Driving in dusty areas or vehicles that are frequently exposed to salty air or salt water.
— Drive on uneven, waterlogged roads or mountain roads.
— Driving in cold regions. .
— Drive in hot areas.
— Long-distance travel causes the power battery to be over-discharged while driving.
— Frequent use of the brake and frequent use of emergency braking are required.
— Towing vehicle.
— It can be used for renting vehicles or driving rented vehicles by oneself.
— Overloaded driving

Note:

❖If parts need to be replaced, genuine parts and accessories provided by Linktour Automobile Co., Ltd. should be used. Maintenance Schedule (General Conditions, Harsh Environments)

❖Its maintenance and upkeep should be carried out at the designated vehicle repair points. The recommended maintenance cycle is as shown in the table. A maintenance cycle plan for the Alumi model has been specially formulated..

❖Minimum maintenance requirements for the Alumi model

❖The items required for replacement under the minimum usage conditions of the Alumi model:

❖Reducer gear oil: Replace every year or 10,000 kilometers (model: FuCHS 75W90, GL-4).

❖Antifreeze for the power system cooling device: Replace tires every 2 years or 20,000 kilometers

❖The brake fluid needs to be replaced every three years or 60,000 kilometers during normal use:

❖Replace every 2 years or 20,000 kilometers (Model: DOT-4)

❖The rest of the vehicle body, chassis, electronic and electrical components, and new energy items have all been inspected to meet the oil requirements for the main reducer (Volkswagen 75W90; GL-4).

2.1.2 Detailed items and maintenance cycles

Project \ Maintenance intervals		1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	And so forth
		10000km	20000km	30000km	40000km	50000km	60000km	70000km	80000km	
Motor systems	Safe guarding	I	I	I	I	I	I	I	I	I
	High voltage insulation inspection	I	I	I	I	I	I	I	I	I
	Motor and controller inspection	I	I	I	I	I	I	I	I	I
	Appearance test	I	I	I	I	I	I	I	I	I
Power battery system	Safe guarding	I	I	I	I	I	I	I	I	I
	High voltage insulation inspection	I	I	I	I	I	I	I	I	I
	Junction status	I	I	I	I	I	I	I	I	I
	Characteristic	I	I	I	I	I	I	I	I	I
	Bolt tightening torque	I	I	I	I	I	I	I	I	I
	Appearance test	I	I	I	I	I	I	I	I	I
	DA	I	I	I	I	I	I	I	I	I
Brake assembly	Parking brake	I	I	I	I	I	I	I	I	I
	Front and rear brakes, brake pedal and bracket, brake booster	I	I	I	I	I	I	I	I	I
	Brake fluid	I	R	I	R	I	R	I	R	I

Brake assembly	Front and rear brake pads	I	I	I	I	I	I	I	I	I
Chassis system	The steering wheel and steering column are in a tight state	I	I	I	I	I	I	I	I	I
	The steering gear is securely connected	I	I	I	I	I	I	I	I	I
	Turn to tie rod clearance and dust cover	I	I	I	I	I	I	I	I	I
	Check power steering function	I	I	I	I	I	I	I	I	I
	Decelerator	I	I	I	I	I	I	I	I	I
	Transmission oil	R	R	R	R	R	R	R	R	R
	Rim	I	I	I	I	I	I	I	I	I
	Tyre	I	I	I	I	I	I	I	I	I
	Transmission shaft	I	I	I	I	I	I	I	I	I
	Front and rear shock absorbers	I	I	I	I	I	I	I	I	I
	Check the fastening bolt torque of the sub-frame and suspension connection	I	I	I	I	I	I	I	I	I
Air conditioning system	Condenser fan	I	I	I	I	I	I	I	I	I

Air conditioning system	Air conditioning heating and cooling function	I	I	I	I	I	I	I	I	I
	Compressor and controller	I	I	I	I	I	I	I	I	I
	Air conditioning pipe connection and fastening state	I	I	I	I	I	I	I	I	I
	Air conditioning condensate drain	I	I	I	I	I	I	I	I	I
Vehicle body system	Rain wipers and wind window washers	I	I	I	I	I	I	I	I	I
	Cowl, tailgate, door hinges and locks	I	I	I	I	I	I	I	I	I
Electronic and electrical control systems	High voltage insulation inspection	I	I	I	I	I	I	I	I	I
	Storage battery	I	I	I	I	I	I	I	I	I
	Lighting, signage	I	I	I	I	I	I	I	I	I
	Charging port and wiring harness	I	I	I	I	I	I	I	I	I
	Fault and alarm status	I	I	I	I	I	I	I	I	I
	High voltage cable fixing and protection	I	I	I	I	I	I	I	I	I

	Connection status of plug-in parts in cabin and chassis	I	I	I	I	I	I	I	I	I
Vehicle performance	Chassis undamaged	I	I	I	I	I	I	I	I	I
	Seat belt function check	I	I	I	I	I	I	I	I	I
	Braking performance, power performance, smoothness, noise, shifting, etc	I	I	I	I	I	I	I	I	I
	Full vehicle fault diagnosis and detection: use the diagnostic instrument to read the fault information stored in the controller	I	I	I	I	I	I	I	I	I
Note: I: Check, further adjust/Correct/clean/replace; R: Replace										

2.2 Oil replacement

2.2.1 Replace the brake fluid

2.2.1.1 Emission procedure

1. Preparatory work
a. Open the front hood assembly and firmly support it.
b. Open the cover of the brake fluid reservoir.
c. The assistant gets into the vehicle and sits in the driver's seat, then lifts the vehicle to an appropriate height.

2. Drain the brake fluid
a. Install the transparent hose onto the vent screw and place the other end into the exhaust bottle.
b. Loosen the air release screw and have the assistant inside the vehicle continuously press the brake pedal until the brake fluid stops flowing out.
c. Tighten the vent screw.
d. Lower the vehicle and then install the brake fluid reservoir cap.

2.2.1.2 Annotation Procedure

1. Add brake fluid.
a. Open the front hood assembly and firmly support it.
b. Open the cover of the brake fluid reservoir.
c. Add clean brake fluid to the brake fluid reservoir.
Brake fluid model: DOT4
Brake fluid usage: 780±50mL
d. Exhaust the braking system (refer to the following text).
e. Install the brake fluid reservoir cover.

2.2.1.3 Exhaust procedure

1. Quasi-employment.
a. Open the front hood assembly and firmly support it.
b. Open the cover of the brake fluid reservoir.
c. The assistant gets into the vehicle and sits in the driver's seat, then lifts the vehicle to an appropriate height.

2. Brake system exhaust.
a. The entire vehicle's power status is ON, the vehicle is stationary, the hood is open, the gear is in N position, and the brake pedal is continuously pressed deeply for 5 times within 20 seconds, with the brake pedal opening greater than 65%.
b. Install the transparent hose onto the vent screw and place the other end into the exhaust bottle.
c. After the assistant in the car continuously presses the brake pedal several times, keep it in the depressed position, loosen the air release screw. At this point, the air will be discharged from the pipeline along with the brake fluid. When the brake pedal drops to the lowest point of the stroke, tighten the air release screw.
d. Repeat the above operation until the bubble-free brake fluid flows out of the pipeline.
e. Wait for 1 minute and then deeply press the brake three times in a row within 20 seconds, with the pedal opening greater than 65%. Switch the power state to OFF and wait for 30 seconds to expel all the gas.

3. Use the same method to perform exhaust operations on the brake lines of other wheels in sequence.
4. Recheck the brake fluid level. If it does not meet the requirements, add brake fluid.
5. Install the cover of the liquid storage tank.

2.2.2 Replace the reducer oil

❖Emission and refueling procedures
1. Lift the vehicle and remove the rear lower guard plate of the front engine compartment. See: Rear Lower Guard Plate of the front engine compartment.
2. Place an oil recovery container under the vehicle.
3. Drain and refill the reducer oil.

a. Remove the oil filling plug a of the reducer.
b. Remove the oil drain plug b of the reducer and drain the gear oil of the reducer.
c. After the discharge is completed, install and tighten the oil drain plug. B.
d. Use a gear oil filling machine to add gear oil.

Specification:
Filling volume: 1±0.1L
e. Install and tighten the oil filler plug A of the reducer.
f. Wipe the oil from the oil filling plug and the oil drain plug.
4. Install the front lower guard plate assembly of the engine room.

Specification:
Filling volume: 1±0.1L
e. Install and tighten the oil filler plug A of the reducer.
f. Wipe the oil from the oil filling plug and the oil drain plug.
5. Install the front lower guard plate assembly of the engine room.

2.2.3 Replace the refrigerant and refrigeration oil

1. For vacuuming the air conditioning system, please refer to: Vacuuming the air conditioning system.
2. Add refrigeration oil.
a. Install the filling bottle and add compressor lubricating oil as per the standard.
b. Connect the high and low pressure pipelines of the refrigeration Circuit, open the high-pressure valve of the equipment and the lubricating oil filling switch of the compressor.
c. Start the air conditioner refrigerant filling machine and observe the height of the oil level in the filling bottle until the required oil quantity is reached.
d. Close the high-pressure valve.

2.2.4 Add glass cleaner

1. The detergent is used to clean the front windshield.
2 If any of the sprayers is not working, the washing liquid storage tank may have become empty. Please check the liquid level in the washing liquid storage tank.

2.3 Vehicle inspection

2.3.1 Electrical system inspection

Check the battery status, plug connection, wiring harness, lights, headlight adjustment and other connections to ensure they are normal and all functions are effective.

Motor system inspection:
1. Check whether the connectors on the motor controller are damaged and whether they are installed firmly.
2. Check whether the motor is working properly.
3. Check whether the bolts fixing the motor and the suspension, as well as the suspension and the vehicle body, are loose.
4. Check whether the reducer is leaking or damaged..

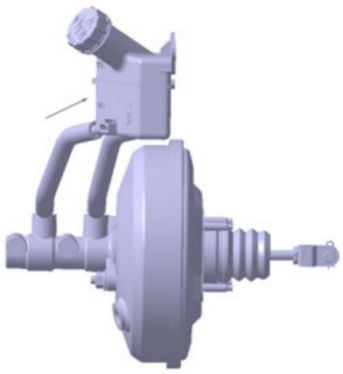
2.3.2 Inspection of Power Battery System

1. Check the fastening bolts between the power battery box and the vehicle body, and inspect the bottom and sides of the box for any impacts, dents, damages or deformations.
2. Check that the positive and negative terminals of the power battery and the connectors of the communication port are not corroded, oxidized or loose.
3. Measure the insulation resistance of the battery pack from the total positive side to the vehicle body and from the total negative side to the vehicle body (not less than 20MΩ).
4. Check the status of the BMS program and update it to the latest version.

2.3.3 Brake system inspection

2.3.3.1Check the brake fluid level

1. Confirm whether the brake fluid level in the oil tank is within the specified Range.
(Between the MAX and MIN marks), if the fluid level is too low, please check around the oil can and the braking system for any leakage.



2.3.3.2Exhaust of the braking system

Warning:

◆Brake fluid contains polyethylene glycol ether and polyethylene glycol. Avoid contact with eyes and thoroughly wash hands after operation. If the brake fluid accidentally gets into your eyes, rinse them with cold water for 15 minutes. If the allergy persists, please seek medical Note. If accidentally ingested, drink plenty of water and vomit forcibly, seek medical Note immediately.

※ Note:

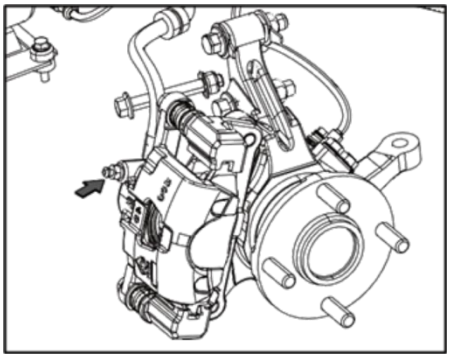
◆If brake fluid splashes onto the paint surface, the splashed area must be immediately rinsed with cold water.

◆Make sure the vehicle is parked on a level surface.

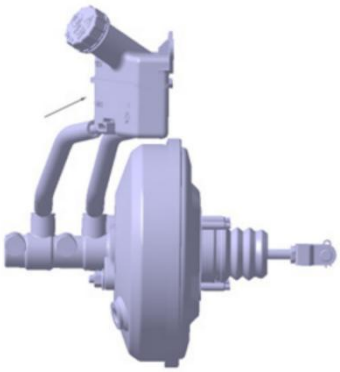
◆Each braking system is composed of independent Circuits, and each Circuit can exhaust air independently, and the exhaust is carried out in a clockwise direction.

◆During the exhaust process, the brake fluid reservoir must be filled with new and clean brake fluid.

1. Connect one end of the brake fluid air vent pipe to the brake caliper exhaust bolt.
2. Immerse the other end of the brake fluid air vent pipe into a reservoir containing a small amount of brake fluid.
3. Place the liquid storage tank at least 300mm below the exhaust bolt to maintain a certain pressure and prevent air from entering the braking system through the exhaust bolt of the brake caliper.
4. Fully press the brake pedal (maintain the pedal position until step 6)..



5. Loosen the exhaust bolt by about half a turn.
6. After the bubbles and brake fluid flow out, tighten the exhaust bolt.
7. Release the brake pedal, return it to the initial position and then fully press the brake pedal
Press the pedal several times, then repeat 4 to 6 steps until no more brake fluid containing bubbles is released.
8. Tighten the exhaust bolt.
9. Add brake fluid to the MAX line position of the reservoir and check the brake pedal travel and braking effect.
10. Repeat this operation on other brake lines for vehicles with anti-lock braking systems..



※ Note:
◆After the brake pipe has been vented, please cover the vent cap. Avoid clogging or contamination of the air vent.
◆After the exhaust is completed, conduct a road test on the vehicle to check the braking force and pedal travel. If the braking effect does not meet the requirements or is not satisfactory, please repeat the above exhaust process.
◆For vehicles equipped with an ABS system, when venting the braking system, only by following the steps indicated by the diagnostic instrument function can the gas within the hydraulic control unit be completely discharged. Use the diagnostic instrument and follow the steps indicated by the instrument to exhaust the braking system.

2.3.4 Inspection of friction plates

1. Check the thickness of the friction plate through the inspection hole on the clamp body. If it exceeds the wear limit thickness, it should be replaced.

Maximum thickness of the friction plate: 2mm.

Note:

➢The friction plates of the left and right wheels need to be replaced simultaneously.

➢When braking occurs when the thickness of the front friction plate remains at 2mm, the mechanical alarm plate will sound the alarm.

2. For replacing the friction plates, refer to: Front Friction Plates or refer to: Rear Friction Plates.

Check the brake discs and brake drums

1. Measure the thickness of the brake disc. If it exceeds the wear limit thickness, replace the brake disc.
   The standard thickness of the front brake disc is 13.5mm.
   Wear limit of the front brake disc: 7.6mm.
   The standard thickness of the rear brake drum is 10mm.
   Wear limit of the rear brake drum: 9mm.
2. For replacing brake discs, refer to: Front Brake Discs or: Rear Brake Discs.

2.3.5 Steering system inspection

a. Check the installation of the steering gear assembly, front suspension and steering column.
b. Check whether the wiring harnesses and connectors of the relevant components of the electric power steering system are connected correctly and whether they have been pinched or cut.
c. Check whether there is any movement when the steering wheel moves up and down and axially.
d. Check whether the fixing nuts and bolts of the steering device assembly are loose.

2.3.6 Vehicle body system inspection

Check the wiper blades, adjust the Angle of the wiper blades, ensure that the door hinges, tailgate hinges, seat belts, airbags, floor panels and other functions are functioning properly and there are no abnormal noises.

2.3.7 Inspection of the cooling system

Check that the pipeline connections of the cooling system are good and there is no leakage. Check the coolant level and the freezing point of the coolant.

2.3.8 Air conditioning system inspection

1. Check and replace the air conditioning filter element
a. Check if the air conditioning filter is dirty and clean it with compressed air.
b. Check if the air conditioning filter is damaged and replace the damaged or severely dirty one. See: Air conditioning filter element

2. Check and replace the refrigerant
a. Check the pressure of the high and low pressure pipelines of the air conditioning system. The pressure at the low pressure end of a normal air conditioning system is 2 to 3.5bar, and the pressure at the high pressure end is 1 to 18bar.
b. Replace the refrigerant. See: Recovery and refilling of refrigerant

3. Clean the condenser
a. Check the cleanliness of the fin surface of the outdoor condenser. If oil stains, soil or other debris are found adhering to the condenser, they should be cleaned up in time.

2.3.9 Inspection of the transmission system

a. The dust cover is cracked or otherwise damaged.
b. The dust cover clamp is loose.

c. Obvious loosening of the ball cage universal joint.

2.3.10 Wheel dynamic balance

Unbalanced car tires will cause vibration when the wheels rotate at high speed, especially the front wheels. This vibration will cause the front wheels to swing, affecting the safety and smoothness of car driving. At the same time, it will also increase tire wear. The Detection and adjustment of tire dynamic balance are very important.

Note: Check as the situation requires based on vehicle usage and user feedback

2.3.11 Four-wheel alignment

• Four-wheel alignment is extremely important for maintaining driving safety, steering stability and normal tire wear. If the vehicle's alignment Angle is incorrect, it may veer off course or skid sideways during emergency braking, leading to serious accidents. During normal operation, it may shorten the lifespan of tires, and the misalignment or failure of components such as the steering tie rods often leads to the loss of steering control, with unimaginable consequences. Therefore, four-wheel alignment for vehicles is of vital importance.

Note: Check as the situation requires based on vehicle usage and user feedback

The use of diagnostic instruments

1. Connect the diagnostic instrument.

a. Connect the diagnostic instrument cable to the OBD diagnostic interface.

The OBD diagnostic interface is located at the lower left corner of the dashboard.

b. Set the power status to the "ON" position.

c. Turn on the diagnostic instrument and select the vehicle.

Note: If the display screen shows a communication failure, it indicates that there is a problem with the vehicle or the diagnostic instrument.

d. Select to read information as needed.

2.3.12 Road test

• Test the vehicle on the road under the premise of ensuring safety and abide by all traffic regulations. Do not attempt any operation that may endanger vehicle control.

• Violation of the above safety guidelines may result in personal injury and/or vehicle damage, etc

3. New energy system

3.1 Overview

❖Introduction

As an electric vehicle, the Alumi model operates with high voltage (relatively safe voltage). The rated voltage of its power battery is 96V (direct current), which is used to supply power to all high-voltage components of the vehicle. The working voltage range of the motor controller is 96V. The advantages and disadvantages of using high voltage electricity are as follows:

❖The advantages of using high voltage

— Under the same power, the line current is small, the energy loss is low, and the heat generation is less.
— Reduce the line diameter, allow for a relatively higher contact resistance, and lower the contact requirements.

❖Disadvantages of using high voltage

— The working voltage is higher than the safe voltage, which requires strict safety and insulation design, and the system is relatively complex

— It has relevant risks of electric shock safety

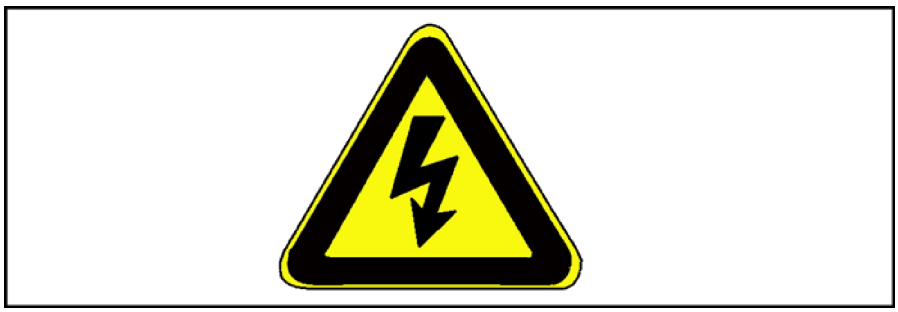
Given the advantages and disadvantages of using high-voltage electricity, electric vehicles, due to their high power, generally operate with high-voltage electricity. Therefore, the vehicle's high-voltage system must be equipped with corresponding high-voltage safety functions.

❖The full-vehicle high-voltage safety features of the Alumi model include
— High-voltage components and wiring harnesses are equipped with appearance markings and prompts that comply with relevant standards
— The high-voltage Circuit Circuits are independently arranged, and both the positive and negative poles are insulated from the vehicle body grounding
— The high-voltage components and wiring harnesses are equipped with insulation designs and functions that comply with relevant safety standards
— Leakage protection function of high-voltage system
— Interlock protection function for high-voltage components and wiring harnesses
— Collision-induced Power Cut-off Protection Control
— High-voltage system fault handling and control
— The charging connection status prohibits power-on operation control

❖High-voltage safety function description

Appearance markings and prompts for high-voltage components and wiring harnesses
① The high-voltage wiring harnesses of the entire vehicle are uniformly identified using orange insulating outer skins.
② High-voltage hazard signs.

All high-voltage components of the vehicle are affixed with high-voltage maintenance labels, and some high-voltage components are also labeled with relevant danger warning words.



Example diagram of high-voltage hazard signs

❖Insulation Detection and protection control of high-voltage systems

The vehicle's power battery is equipped with an insulation Detection function. By using the insulation Detection Circuit inside the power battery, the insulation resistance of the positive and negative Circuits of the power battery output to ground is measured respectively, and then it is determined whether there is a possibility of leakage. If a possible leakage is identified, the output of the power battery will be interrupted, and at this time, the high-voltage power of the entire vehicle will be cut off, achieving the leakage protection function.

❖Interlock protection function for high-voltage components and wiring harnesses

The interlocking function of high-voltage components and wiring harnesses refers to the fact that when the plug of any high-voltage component's high-voltage wiring harness is disconnected or the cover of the high-voltage distribution box is opened, the vehicle will automatically disconnect the high-voltage power output of the power battery to prevent electric shock accidents caused by the output of high-voltage power. The interlocking function of high-voltage components and wiring harnesses is realized through the monitoring of the vehicle's high-voltage interlocking Circuit.

The high-voltage interlock Circuit connects all high-voltage connectors and the open cover interlock switch inside the distribution box in series. Once a connector is disconnected at any point or the open cover interlock switch is disconnected after the distribution box cover is opened, causing the interlock Circuit to be disconnected, the entire vehicle reports a high-voltage interlock fault. The BMS waits for the instruction from the vehicle controller VCU; otherwise, it will automatically cut off the power after 10 seconds. It serves a high-voltage protection function. The control unit for the output and input of the high-voltage Circuit interlock signal of the Linktour Alumi model is the battery management system (BMS) built into the power battery. That is to say, the starting and ending points of the interlock Circuit are located in the BMS within the power battery. The BMS sends interlock Detection signals through the interlock signal output terminal. When the high-voltage interlock Circuit is normal, the interlock Detection signal sent by the output terminal is received through the interlock signal receiving terminal of the BMS. If any link in the high-voltage interlock Circuit has a problem, the interlock signal receiving terminal of the BMS will not receive the interlock Detection signal, and the BMS recognizes that an interlock fault has occurred. Execute the power-off protection control in accordance with the relevant control strategy.

❖Collision power-off protection control

When a vehicle is involved in a collision accident, a collision power-off protection control will be carried out based on the intensity of the collision and relevant control strategies to prevent the vehicle from leaking electricity after the accident and posing a risk of high-voltage electric shock to the vehicle occupants and relevant rescue personnel.

Vehicle collisions are identified through the airbag system. The battery management system (BMS) simultaneously receives collision information through the vehicle's CAN communication system and hardwire collision signals, and analyzes the collision intensity to determine whether to execute the collision power-off protection control.

Warning!

- During the maintenance process, if the operation is not carried out in accordance with the correct procedures, it may lead to serious accidents such as damage to the power battery or electric shock.

- Mistakes during the maintenance process may lead to serious accidents.
- Before carrying out maintenance (including disassembling, assembling, inspecting or replacing parts, etc.), be sure to read the following instructions carefully and operate in accordance with the correct procedures stipulated in the maintenance manual.

- Maintenance personnel for the Linktour Alumi vehicles must undergo professional training, be familiar with electrical safety knowledge and first aid methods for electric shock, and have a high level of safety awareness.

- When maintaining high-voltage components, operators must hold relevant qualification certificates to operate.
- Strictly abide by the relevant national laws and regulations on high-voltage system operations.

- When conducting vehicle maintenance, strictly follow the relevant maintenance operation standards of Linktour Automobile Co., Ltd. and set up relevant warning signs.

❖Maintenance Precautions

1. The maintenance of the vehicle's high-voltage system can only be carried out by professionals who have been certified for high-voltage system maintenance. Except for operations such as diagnosis using a diagnostic instrument that must be powered on, All other maintenance and disassembly and inspection operations related to high-voltage systems must be carried out before the standard high-voltage power-off operation (turning off the ignition switch, disconnecting the 12V power supply, disconnecting the high-voltage busbar cable and conducting a voltage test before insulation treatment) is performed. Moreover, during the standard high-voltage power-off operation, insulating labor protection and insulating maintenance tools must be used.

2. When plugging or unplugging high and low voltage plug-ins, it is essential to follow the self-locking structure sequence of the plug-ins. Do not forcibly plug or unplug them to avoid damaging the plug-ins.

3. The disassembly and assembly of high-voltage components must be carried out in accordance with standard procedures and using dedicated tools to prevent falling accidents during maintenance.

4. There are "warning signs" at both high-voltage and high-temperature areas of the vehicle body. Operate strictly in accordance with the requirements of the signs!

5. Before conducting vehicle maintenance, the power-off procedure must be carried out first, and safety protective equipment must be worn before operation!

6. When washing the car, do not spray the high-pressure water gun at the charging port to prevent water from entering the charging port and causing electric shock!

7. Use the designated charging sockets and cables. Do not choose charging devices by yourself!

8. When extinguishing fires in vehicles, the "water pouring method" is strictly prohibited. Use "dry powder" fire extinguishers instead!

9. When maintaining a vehicle, do not operate when the vehicle body is wet or wet!

10. When disassembling and assembling the vehicle, do not operate the positive and negative poles simultaneously!

11. Do not connect the positive and negative poles. Avoid the positive or negative poles being connected to the ground through the human body!

12. The interfaces of the disassembled high-voltage lines should be insulated!

13. Do not touch the connectors of the electronic control parts of the high-voltage components unless necessary to prevent electric shock and damage!

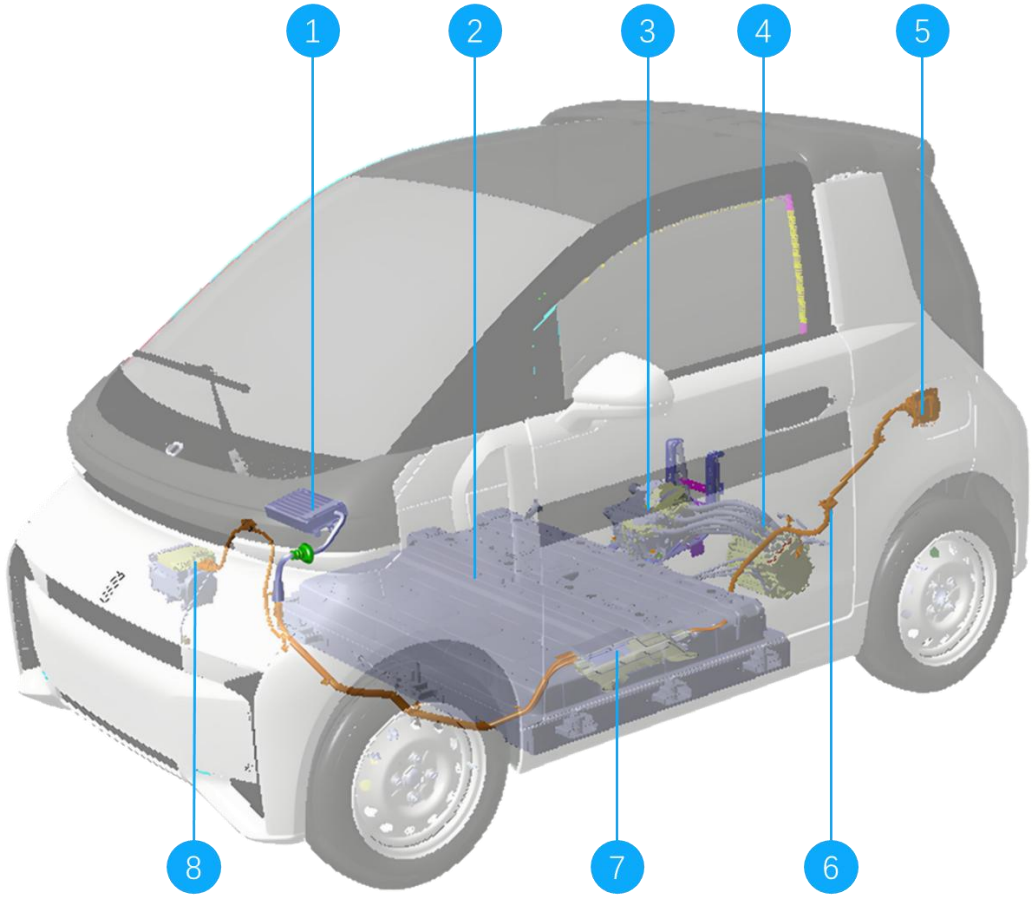
14. Use the specialized tools approved by Linktour Automobile Co., Ltd. for the maintenance operation of high-voltage electric vehicle models!

15. Two-person operation, with one person supervising and the other operating!

16. During the maintenance process, ensure that no other personnel make mistakes that could cause high voltage to be applied to the entire vehicle, including turning the key and connecting the negative terminal of the 12V battery.

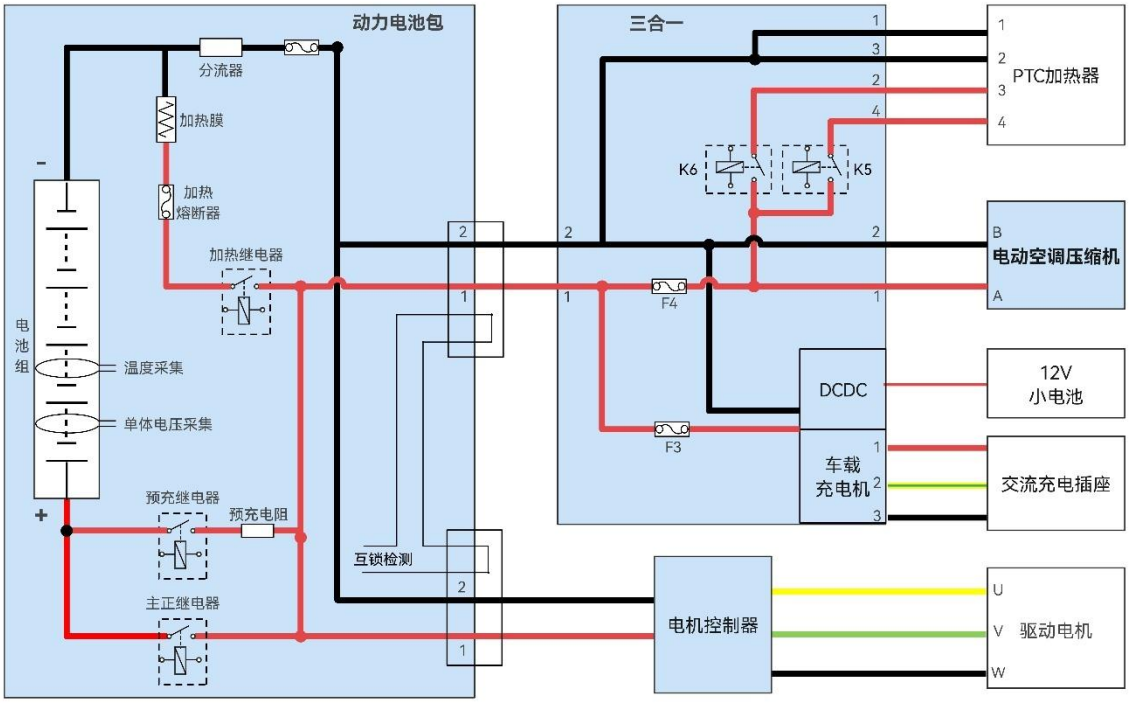
3.2 Components of new energy systems

The high-voltage components of the new energy system of the Linktour Alumi model include the following parts:



Serial number	Name	Serial number	Name
1	PTC heater	5	Ac charging port
2	Power battery	6	High-voltage wiring harness
3	Drive motor controller	7	Three-in-one (OBC, DC/DC, PDU)
4	Drive motor	8	Electric air conditioning compressor

3.3 The working principle of new energy system



The working principle of the high-voltage system of the Linktour Alumi model is briefly described as follows:

"For more detailed explanations, please refer to the system descriptions in each system chapter"

❖Functions of the vehicle controller

The Vehicle control unit (VCU) is the control center of a pure electric vehicle. As the topmost control unit of the vehicle, it is responsible for controlling the vehicle's power on and off, starting and stopping, driving mode management, power distribution, braking energy recovery, and accessory control, etc.

❖Power battery

The power battery is the source of energy supply for the entire vehicle. On the one hand, it provides electrical energy for the drive motor and the operation of all high-voltage components. On the other hand, it reduces the voltage to 13-14V through a DC-DC converter to supply power to the vehicle's low-voltage system.

❖Motor system.

The motor system consists of a motor controller, a drive motor and related accessory systems. The vehicle converts the electrical energy of the power battery into mechanical energy to drive the vehicle through the motor system, and at the same time, it can convert the mechanical energy during the vehicle's deceleration and braking process into electrical energy to charge the power battery.

❖Charging and DC-DC power supply system

The entire system is designed to support the realization of both fast and slow charging functions for power batteries, enabling the vehicle to receive supplementary power supply from the power grid. It also has the DC-DC (Direct Current - Direct current) conversion function, which reduces the high voltage of the high-voltage battery to a low voltage output to provide power for the vehicle's 12V low-voltage power supply system.

❖High-voltage wiring harness.

On the Alumi model of Linktour, high-voltage wiring harnesses are used to connect various high-voltage components. High-voltage wiring harnesses are special cables used for transmitting high voltages, and high-voltage cables are uniformly identified with orange insulating sheaths.

3.4 Technical parameters of main components

Project	Specification
Rated voltage of power battery	350.4V
Voltage range of power batteries	307.2-403.2V
Weight of power battery	245±5kg
The working voltage range of the motor controller	240-400V
Insulation resistance value	≥ 1MΩ

Connection part	Number	Torque	L6 low	L6 In the	L6 high	L7 low	L7 high
VCU To the vehicle body	3	7±1	N	N	N	Y	Y
MCU To the bracket	4	25±3	N	N	N	Y	Y
MCU To the bracket（L6）	4	25±3	Y	Y	Y	N	N
MCU From the bracket to the vehicle body	4	25±3	Y	Y	Y	Y	Y
MCU Take the train	1	7±1	Y	Y	Y	Y	Y
From the motor to the rear axle	3	25±3	Y	Y	Y	Y	Y
Motor grounding	1	7±1	Y	Y	Y	Y	Y
The three-phase lines of the motor have arrived MCU（L7）	3	12±0.5	N	N	N	Y	Y
MCU Upper cover plate（L7）	10	2±0.5	N	N	N	Y	Y
The three-phase line connector to MCU Shell（L7）	3	6.5±0.2	N	N	N	Y	Y
The three-phase lines of the motor have arrived MCU（L6）	3	13±2	Y	Y	Y	N	N
Three-phase line waterproof tightening head（L6）	3	9±1	Y	Y	Y	N	N
MCU Upper cover plate（L6）	10	5±1	Y	Y	Y	N	N
Three-in-one power supply to battery holder	4	25±3	Y	Y	Y	Y	Y
Three-in-one bracket to battery pack	4	9±1	Y	Y	Y	Y	Y
The charging socket is connected to the vehicle body	4	7±1	Y	Y	Y	Y	Y
The main cable MCU	2	12±0.5	N	N	N	Y	Y
The main cable connector connects to the MCU housing（L7）	3	6.5±0.2	N	N	N	Y	Y
The main cable	3	13±2	Y	Y	Y	N	N
Main cable waterproof tightening head	3	9±1	Y	Y	Y	N	N

3.5 Maintenance Operation Guide

Note

- Technicians must undergo professional training before they can repair and inspect high-voltage systems.
- All high-voltage wires and connectors are orange. Warning labels are on high-voltage components. Please do not touch these wire harnesses and components at will.
- When there is a fault with the wiring harness or connectors of the high-voltage Circuit, do not attempt to repair the line or connectors. Instead, replace the damaged or faulty high-voltage wiring harness or connectors.
- Before using insulating gloves, be sure to check if they have any cracks, wear or other types of damage.
- When repairing a vehicle, please do not carry metal items such as rulers to avoid short Circuits caused by accidental drops of these items.
- After disconnecting or exposing high-voltage connectors, insulation treatment should be carried out immediately with insulating tape.
- Tighten the bolts and nuts of the high-voltage terminals to the specified torque. Insufficient or excessive torque may both cause malfunctions.
- Use a sign that reads "Warning: Do Not Touch High Voltage" to inform other technicians that they are inspecting and/or repairing the high voltage system.
- After repairing the high-voltage system, check again to confirm that no parts or tools are left in the system, and at the same time, the high-voltage terminals have been tightened and the connectors have been correctly connected.
- Before inspecting or repairing a high-voltage system, be sure to follow all safety measures, such as wearing insulating gloves to prevent electric shock.
- Before touching exposed high-voltage terminals, it is necessary to wear insulating gloves and use Detection equipment to determine that the voltage of the terminal is 0V..

❖ The power-off process for vehicle maintenance

Step 1: Park safel

① First, step on the brake and shift the gear lever to N.

②. Set up the parking brake and use the parking block if necessary to prevent the vehicle from moving.

Step 2: Turn off the low-voltage power supply

① Set the start switch to the OFF position.

Note:

1. It is not possible to confirm whether the vehicle's power supply has been cut off merely by the status of the READY indicator light on the instrument panel. When this vehicle is ignited in the ON position, the power battery will output high voltage to provide power for DC-DC.
2. Under normal circumstances, when the READY indicator light goes out and the instrument panel does not light up at the same time, the vehicle power supply is cut off..

② Disconnect the negative terminal of the 12V battery and wait for 5 minutes.

Warning!

After the vehicle power is cut off, the power supply of the high-voltage system can last for several minutes at most. To prevent severe burns or electric shock that could cause serious injury or even death, do not touch, cut or damage any orange high-voltage cables or high-voltage components at this time.

Step 3: Disconnect the high-voltage busbar plug of the power battery

① Check if the insulating gloves are damaged and ensure their insulating performance.

For subsequent steps, as they involve contact with high-voltage components and it has not yet been confirmed that the entire vehicle has been powered off, it is necessary to wear insulating gloves when operating.

② Disconnect the high-voltage busbar plug on the power battery side.

Note::

Use insulating rubber protective sleeves or insulating tape to seal the busbar heads and sockets to prevent touching the positive and negative poles of high voltage during maintenance, and at the same time ensure that the plugs and sockets are contaminated, resulting in poor contact or a decline in insulation performance.

If the maintenance process does not involve lifting the vehicle, it is possible to choose to disconnect the high-voltage busbar plug on the motor controller side.

Step 4: Power off and confirm the detection

① Measure the voltage between the positive and negative terminals of the high-voltage bus interface of the power battery to ensure there is no voltage at the interface. Output (use the DC voltage range of a multimeter to measure, and the measured value should be less than 5V)
② Measure the voltage between the positive and negative terminals of the high-voltage busbar cable to ensure that the capacitors inside the load such as the motor controller have been completely discharged and there is no voltage output (use the DC voltage range of a multimeter to measure, and the measured value should be less than 5V).

Note: During the test, be careful not to let the exposed part of the test lead come into contact with the grounded metal part. Similarly, the positive and negative poles of each high-voltage cable can be tested, all of which should be below 5V voltage.

Step 5: Set up high-voltage maintenance warning labels
①Set up warning labels to alert that the vehicle under maintenance is a pure electric vehicle and that it has some exposed high-voltage parts.
②At this point, the entire vehicle's power-off process is completed..

Note: The above five steps are the standard power-off procedures for high-voltage systems. During the operation, it is essential to strictly follow the sequence and standards.
Ensure that after the power-off process is completed, corresponding rescue, maintenance and inspection work can be carried out on the vehicle.
During the maintenance process, it is necessary to isolate and protect the corresponding high-voltage wire harness plugs, interfaces, etc

- The power-on process for vehicle maintenance

Note: After the vehicle maintenance operation is completed in accordance with the standard procedure, the high-voltage system needs to be re-powered in accordance with certain standard procedures to ensure the safety of personnel and the vehicle during and after the power-on process.

Step 1: Confirm that the vehicle installation inspection is normal
1. After repairing the high-voltage system, make sure to put all the tools back into the toolbox or the corresponding positions.
2. Inspect the disassembled or replaced parts to ensure they are correctly installed and that there are no abnormalities in the installation of other vehicle components, to prevent potential safety hazards after the vehicle is powered on.
3. Ensure that all connection bolts or screws of the lines are tightened (if they are loose, it will cause high temperature when current flows through), and make sure that all connectors are properly connected, especially the connectors of high-voltage components, which must be correctly installed and locked.

Step 2: Low-voltage power-on inspection

1. Reinstall the negative terminal of the 12V battery.
2. Confirm that the vehicle has no abnormalities and the instrument readings are normal.
Note: It is necessary to confirm that the vehicle has no other high-voltage faults or abnormalities.

Step 3: Final vehicle inspection

1. After reconfirming that the vehicle has no abnormalities, turn on the vehicle power and conduct a final inspection of the vehicle.
2. The vehicle repair is completed if there are no abnormalities.
3. At this point, the power-on process for the entire vehicle is completed.

Note: The above three steps are the standard power-on procedures for high-voltage systems. During the operation, it is essential to strictly follow the sequence and standards.

3.6 Maintenance tools

Name	Function	Model	Remarks
Digital multimeter	1. Voltage measurement of individual units (modules); 2. Wiring harness conduction; 3. Relay measurement.	FLUKE-115C	
Insulation resistance tester	1. Insulation testing of modules (assemblies) 2. Insulation inspection of high-voltage components of the entire vehicle.	FLUKE-1508	
Clamp-on multimeter	Leakage Detection is mainly aimed at the sampling wiring harness of the module.	FLUKE-F771	
Can card	1. Read battery information; 2. Message collection.	PCAN～Compatibility ZLG	
Collection wiring harness	1.OBD wiring harness - Collecting battery (vehicle) information; 2. Communication terminal sampling harness - collecting battery information.	The company provides standard parts	
Upper computer	1. Battery information collection; 2. Query alarm information; 3. Relay control.	丽驰7107上位机(V1.0.0.1	

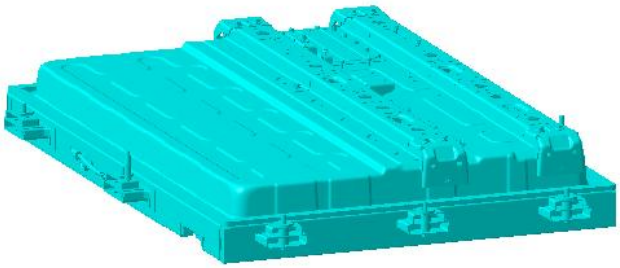
Name	Function	Model	Remarks
Ratchet sleeve tool	Disassembly of the fixing bolts	SATA ratchet wrench & Screwdriver comprehensive set	
Adjustable torque wrench	Torque calibration of fasteners	SATA 3/8" adjustable torque wrench	
Diagonal pliers	Remove the wire harness fixing cable ties	SATA diagonal pliers	
Electric screwdriver	Disassemble and assemble bolts	BOSCH 12V lithium battery electric screwdriver	
Insulating tape	Insulation protection of electrical connection terminals	3M electrical insulating tape	
Self-locking nylon cable ties	Wire harness fixation		

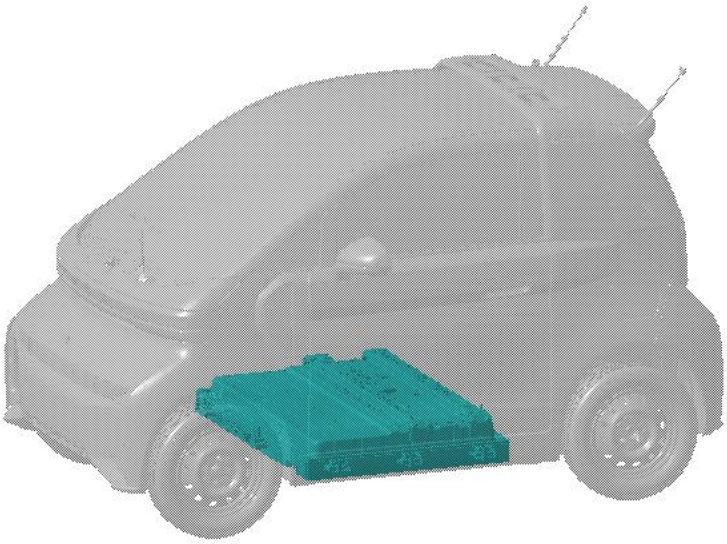
Name	Function	Model	Remarks
Safety shoes	Safety protection	Unlimited	
Insulating gloves	Safety protection	Pressure resistance >500V	
12V mobile power supply	BMS power supply	Unlimited	
Portable air tightness meter	Air tightness test	Unlimited	
Tear-resistant label	Prevent private repair		

3.7 Power battery system

3.7.1 Component drawing

Position view of power battery





Warning!

- During the maintenance process, if the operation is not carried out in accordance with the correct procedures, it may lead to serious accidents such as damage to the power battery or electric shock.

- Mistakes during the maintenance process may lead to serious accidents.
- Before carrying out maintenance (including disassembling, assembling, inspecting or replacing parts, etc.), be sure to read the following maintenance precautions carefully and operate in accordance with the correct procedures stipulated in the maintenance manual.

- Maintenance personnel for the Linktour Alumi vehicles must undergo professional training, be familiar with electrical safety knowledge and first aid methods for electric shock, and have a high level of safety awareness.

- When maintaining high-voltage components, operators must hold relevant qualification certificates to operate.
- Strictly abide by the relevant national laws and regulations on high-voltage system operations.

- When conducting vehicle maintenance, strictly follow the relevant maintenance operation standards of Linktour Automobile Co., Ltd. and set up relevant warning signs.

3.7.2 Maintenance Precautions

The maintenance of the vehicle's high-voltage system can only be carried out by professionals who have been certified for high-voltage system maintenance. Except for operations such as diagnosis using a diagnostic instrument that must be powered on, All other maintenance and disassembly operations related to high-voltage systems must be carried out before the standard high-voltage power-off operation (turning off the ignition switch, disconnecting the 12V power supply, disconnecting the high-voltage busbar cable and conducting a voltage test before insulation treatment) is performed. Moreover, during the standard high-voltage power-off operation, insulation labor protection and insulation maintenance tools must be used.

To avoid dangerous operation and damage to the battery assembly, please strictly follow the following instructions:

- Before maintenance operations, it is essential to wear the operation protective tools correctly to avoid personal injury.
- When performing maintenance operations, it is essential to use the designated or recommended tools to avoid damaging the battery assembly.
- If parts need to be replaced, only genuine parts of the same Model from Linktour Auto must be used. Do not use inferior parts.
- It is essential to strictly adhere to the "Warnings" and "Precautions" in this manual to prevent personal injury or damage to the battery assembly due to operational errors during maintenance or repair.
- Pay attention to the safety labels on the battery pack;
- Vehicles/batteries are not allowed to be parked for a long time (8 hours or more) in an environment above 45℃.
- The power battery box must not be used for any other purposes. It is strictly prohibited to disassemble, squeeze, puncture, leave the battery at high temperatures or bake it.
- It is strictly prohibited to short-Circuit the positive and negative terminals of the battery. All objects that may conduct electricity must not come into contact with the positive or negative terminals of the battery.
- It is prohibited to use this series of products in series or parallel with batteries of other models or types.
- It is prohibited to operate the entire power system containing lithium-ion battery protection Circuit boards or battery management systems in series or parallel again;

Warning::

- If the battery reaches an extremely high temperature or has caught fire, please first ensure personal safety, avoid inhaling harmful substances, and then cool the battery or extinguish the fire.
- A large amount of water can be used to cool and extinguish the fire (the DC and AC systems are not grounded, so there is no risk of electric shock)

Note: ABC dry powder fire extinguishers cannot extinguish battery flames.

- Please avoid touching high-voltage components during fire extinguishing or evacuation operations as there is a risk of electric shock.

❖ Battery Pack Storage Instructions

1. Inventory status and maintenance cycle

The inspection should be carried out every three months. If the voltage drop of the battery pack is significant, supplementary charging maintenance is required.

2. Storage Precautions

2.1 Before long-term storage, try to ensure that the SOC of the battery or battery pack is maintained at 40% to 60%. Test the battery every three months to ensure that the SOC is ≥ 40%; otherwise, it will affect the service life of the battery. At the same time, formulate the inventory battery voltage and charging tracking table. After each inspection or charging, make detailed records.

2.2 Store in an ambient temperature ranging from -20℃ to 45℃;

2.3 Store in a dry, well-ventilated and cool environment, avoiding direct sunlight, high temperature, high humidity, corrosive gases, severe vibration and other conditions, and formulate corresponding emergency plans. The structure should be intact and safe. The battery pack should not be disassembled to prevent leakage.

2.4 Do not stack. This series of products are not allowed to be stacked (if necessary, please use a dedicated battery rack).

2.5 Any form of discharge behavior is prohibited during storage.

2.6 Battery packs should not be piled up in open-air areas. When stored in warehouses, a dedicated battery storage area must be set up, and no other flammable or explosive items are allowed to be stored in this area. The battery should be at least 2 meters away from the heat source and a warning sign as shown in the following figure should be provided.

❖Instructions for Battery Pack Transportation.

- During loading, unloading and transportation, violent vibration and significant external force impact should be avoided. Throwing, rolling, inverting, squeezing and stacking too high are strictly prohibited to prevent damage to the outer shell or internal structure of the electrocell.
- During transportation, protective measures should be taken to avoid direct sunlight and rain.
- Before transportation, it is necessary to ensure that the high-voltage terminals and communication terminals have been properly protected with protective covers.
- Before transportation, it is necessary to ensure that the battery or battery pack has been disconnected from the load or charging equipment, and there is no form of charging or discharging behavior.

❖Regular maintenance of battery packs

Daily maintenance project

- Pre-drive inspection: Before driving the vehicle, please check if the instrument panel has any warning or alarm prompts.
- Slow acceleration: When the vehicle is in motion, both rapid acceleration and deceleration are not conducive to the use of power batteries. Please try to maintain slow acceleration and avoid sudden deceleration, which can significantly increase the driving range and service life.
- The maintenance cycle for vehicle status: Every 3 months is one cycle. If the vehicle has been left unused for more than 6 months, it is necessary to ensure that the battery level is maintained at 40% to 60%. The vehicle needs to be started periodically for one charge and discharge cycle. Regular and correct use of batteries can ensure the best performance of battery packs and extend their service life.
- As the vehicle is used, the working time of the battery pack in pure electric mode may be shortened. If the working time of the battery pack drops to 80% of its original working time, please consider having it inspected and confirmed at the designated maintenance place.
- When driving daily, please avoid getting water into the vehicle. When driving in the rain, please avoid waterlogged roads.
- Periodically clean the battery box (do not use organic solvents for cleaning to avoid damaging the insulation coating and creating hidden dangers; do not use high-pressure water guns to rinse the box connectors and sealing parts, otherwise water may enter). Ensure the box is clean and Pay attention to its sealing performance.
- The battery discharge capacity is closely related to the ambient temperature. The driving range will decrease as the ambient temperature drops, but the discharge capacity will recover once the temperature returns to normal.
- High-temperature exposure to direct sunlight can cause damage to the battery pack and affect its service life. Please try to avoid exposing your vehicle to direct sunlight in the hot summer weather.

❖Regularly inspect the items

1. Appearance

1.1 The information such as markings, nameplates and warning labels on the battery pack box should be clearly visible.
1.2 The surface of the battery pack box should be free from severe corrosion, deformation, cracks and other damages.
1.3 The mechanical interface connecting the battery pack box to the vehicle should be firm and free of looseness, and the lock should be reliable in locking.

2. Insulation property

According to the method specified by the manufacturer, measure the insulation resistance values between the positive and negative poles of the power battery pack and the battery pack box or the vehicle's electrical chassis. The measured values should meet the requirements specified by the manufacturer.

3. Consistency of battery packs

3.1 Measure the voltage of individual cells through the battery management system at room temperature;

3.2 Static consistency or dynamic consistency shall comply with the requirements of the product specification sheet.

4. Voltage of individual cells

The monitoring of the highest and lowest cell voltages reported by the battery management system should comply with the requirements of the product specification sheet.

5. Fuse

When applying charge and discharge current to the battery pack, there should be current passing through the fuse.

6. Cooling or heating device

Under the conditions specified in the design, when the battery management system issues cooling or heating control instructions, the cooling or heating devices of the battery pack should be able to operate normally.

❖Protective measures for battery package-related components before operation

1. Before maintenance, make sure that the maintenance tools used have no exposed metal.

2. The withstand voltage specification of the insulating gloves should be greater than the total voltage of the battery assembly.

3. Maintenance can only be carried out after wearing insulating protective equipment correctly.

4. Do not approach the lift when it is in operation.

5. After the lift is positioned, do not shake the vehicle.

6. When performing maintenance work, be careful not to hit your head.

7. During the maintenance process, if the lift malfunctions or the vehicle tilts, please move away quickly.

3.7.3 The working principle of the system

3.7.3.1System Overview

The power Battery of the Lintu Alumi model adopts ternary Lithium battery (Lithium ion Battery), with compounds such as lithium cobalt oxide, lithium manganese oxide or lithium nickel oxide as the positive electrode, carbon materials that can intercalate lithium ions as the negative electrode, and organic electrolytes are used. The battery has a capacity of 38.54kwh and weighs 245kg. The power battery assembly is installed at the lower part of the vehicle body and wrapped with aluminum alloy material.
The power battery is the source of energy supply for the entire vehicle. On the one hand, it provides electrical energy for the drive motor and the operation of all high-voltage components. On the other hand, it reduces the voltage to 10-16V through a DC-DC converter to supply power to the vehicle's low-voltage system.

❖Functions and Operations.

The entire System that controls the power Battery is called the BMS (Battery Management System). The BMS can monitor in real time the total voltage and total current of the power battery pack, the temperature of each measurement point, and the voltage parameters of individual battery cells. And carry out fault diagnosis, SOC (remaining Power Ratio) calculation, short-Circuit protection, leakage monitoring, alarm display, charge and discharge mode selection, etc. The BMS can report the relevant parameters of the power battery to the VCU, which controls the charging and discharging power of the power battery.

❖The components of power batteries include.

Each module assembly, CSC acquisition system, battery control unit (BMU), battery high-voltage distribution unit (BDU), and other components.

❖The functions of each sub-component

1. Single cell：

The minimum energy supply unit of the energy storage device, composed of multiple individual units forming a module;

2. Module：

1) Composed of multiple battery cells, it is the smallest replacement unit of the battery system. The module of this vehicle is called 6S9P, and the power box has a total of 5 modules.CSC

2) The abbreviation of Current Supervision Cell. Its main function is to collect the voltage and temperature of the cell and perform the equalization function. BMU

3) The abbreviation of Battery Management Unit, which is the core control module of battery management; BDU

4) The abbreviation of Battery Disconnect Unit. Its main function is to integrate components such as relays, fuses, and current sensors to perform the functions of high-voltage Circuit disconnection, current detection, and short-Circuit protection in the power system.

3. Battery voltage detection：

1) Voltage Detection includes the measurement of individual cell voltage and real-time determination of overcharge and overdischarge alarm protection for individual cells and battery packs. Single-cell voltage Detection accuracy：

2) ≤ ±5mV（0V~5V，25℃ ~0℃ or 40℃ ~85℃)
3) ≤ ±5mV （0V~5V， 0℃ ~40℃)

4. Temperature detection：

Temperature control includes temperature measurement and heating and air-cooling control of the battery box. It is installed based on the typical distribution of the internal temperature field of the battery box. It measures the temperature of the battery management system itself, as well as temperature points such as the air inlet and outlet. It can also determine in real time faults such as over-temperature, low-temperature or excessive temperature

difference of the battery box, and control heating or air cooling according to the temperature conditions of the battery box. Temperature error range: ±2℃.

5. Current detection:

Current Detection includes current measurement and real-time judgment of battery pack Over current alarm protection. The accuracy of current Detection is ±1%.

6. Insulation testing:

1) Insulation testing includes battery insulation measurement and insulation fault alarm, and the insulation status is carried out in accordance with the national standard of 100 Ω /V insulation. Test the insulation test grade

2) Level 1:500 ohms /V
3) Level 2:100 ohms /V

7. SOC detection:

Real-time calculation of the SOC of the battery pack and the instantaneous charge and discharge power (current) that the battery pack can provide.

8. CAN Correspondence:

The BMS is equipped with three CAN buses that comply with the CAN2.0B protocol. During vehicle operation, the BMS can send the necessary data for vehicle operation to the vehicle controller, and at the same time, send the detailed data of the battery to the driver's combination instrument panel for display. During the battery charging process, the BMS CAN communicate with the charger, enabling the charger to fully understand the current status of the battery cell and ensuring charging safety. The control box and BDU communicate with the main control box through CAN.

9. Internal total voltage detection:

Independently detect the total internal voltage of the battery and quickly make corresponding controls on the value of the total internal voltage. Internal total voltage Detection accuracy: ±0.5%.

10. External total voltage detection:

Independently detect the total external voltage of the battery and quickly make corresponding controls on the value of the total external voltage. External total voltage Detection accuracy: ±0.5%.

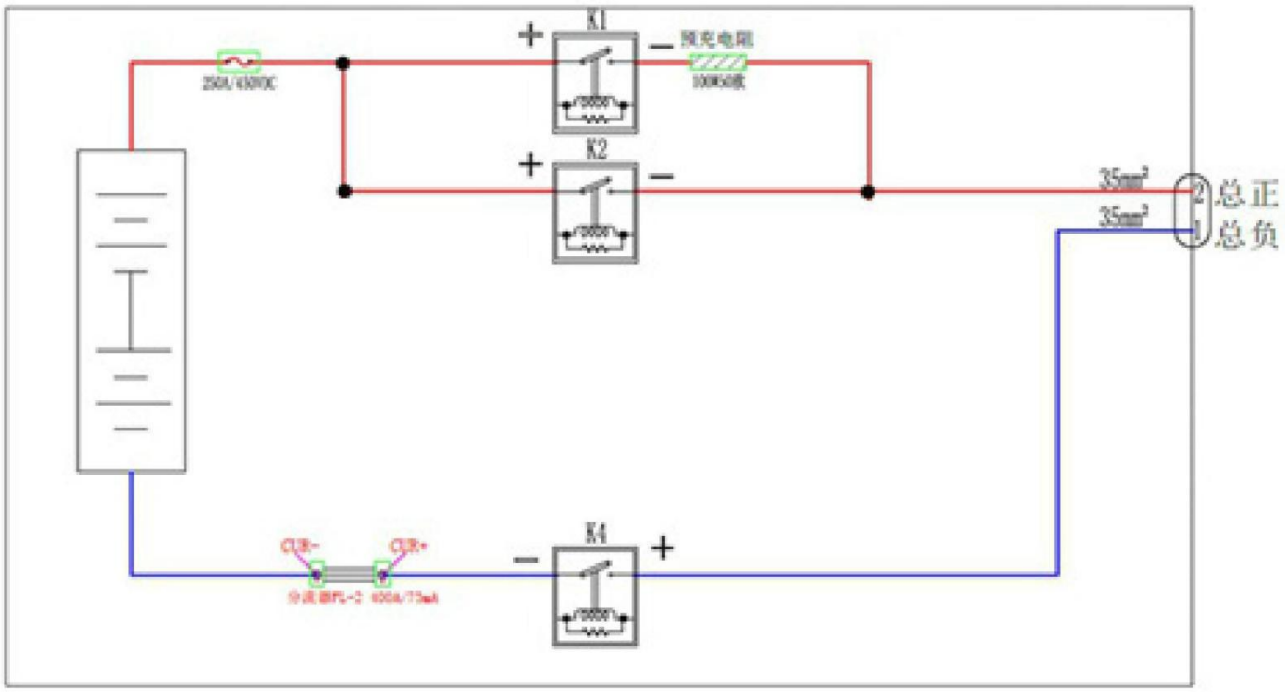
11. System self-check:

The BMS is equipped with a powerful system self-checking function. After the system is powered on, it checks components such as voltage, temperature, communication, clock, and memory to ensure the normal operation of the system itself.

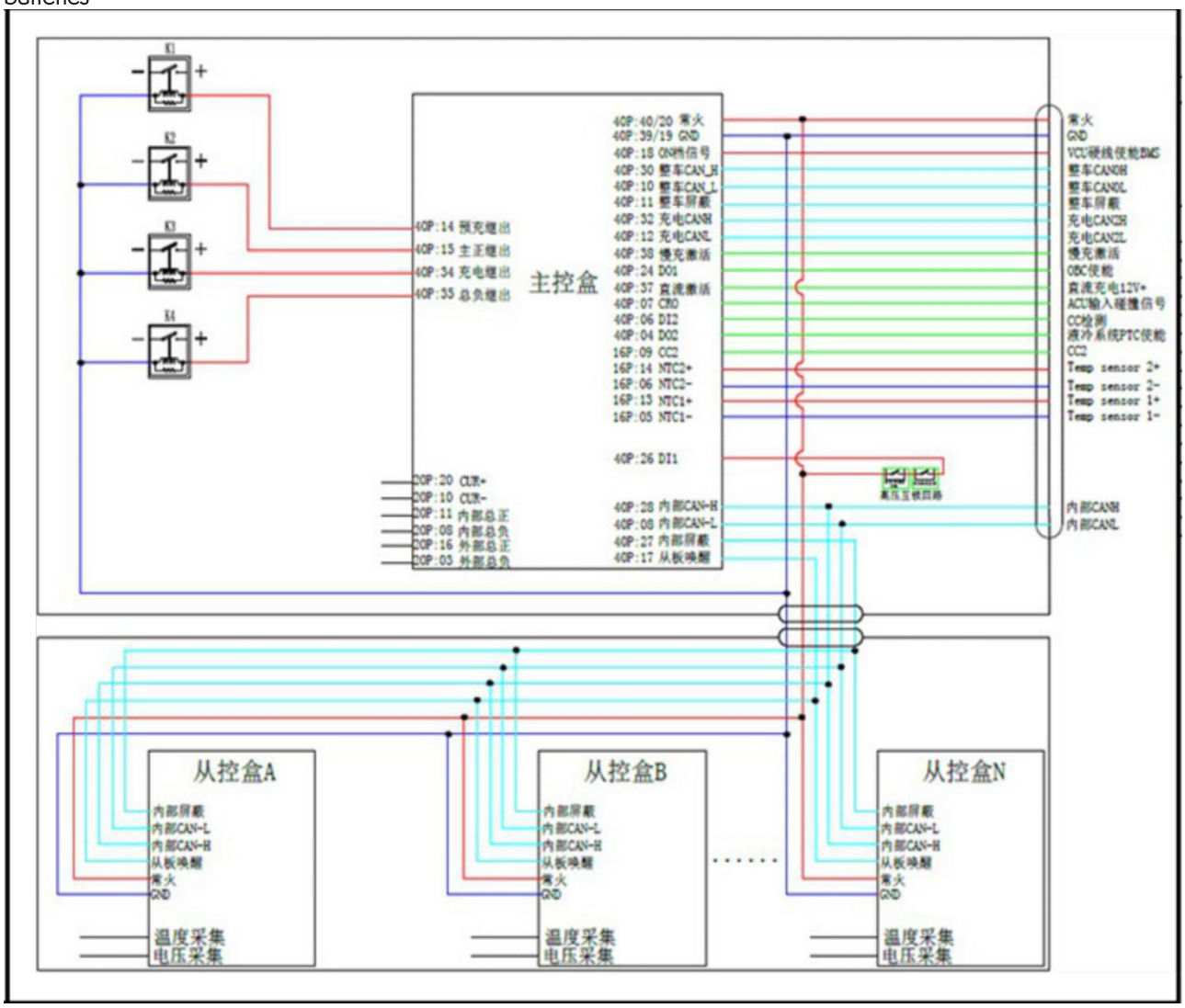
12. BMS Other functions:

It features unified monitoring, relay control, balance control functions, low-voltage power supply monitoring, calibration and detection, overvoltage alarm, under voltage alarm, SOC correction strategy, and more.

3.7.3.2 System principle block diagram



High-voltage schematic diagram of power batteries



3.7.3.3.Explanation of system principle

1. Discharge power-on and power-off control

The power ON and off control is carried out based on the key ON signal output to the BMS (12V) and the VCU command.

2. Slow charging power on and off control

1) When the slow charging gun is inserted, the CC wakes up the OBC. After the OBC initialization is successful, it detects that the CC and CP connections are reliable. Then, S2 is closed (the control and Detection of CC and CP signals comply with the new national standards). After the AC input of the charging pile is detected as normal by the authenticated OBC, 12V is output to wake up the BMS. After the BMS initialization is completed, the VCU is awakened. The OBC charging is ready, the entire vehicle has completed low-voltage poweron, and the VCU/BMS determines that the entire vehicle is in the slow charging demand mode.

2) After the BMS self-check is completed, determine whether the T-BOX allows charging commands and the execution strategy of the slow charging power-on process: Determine that the VCU has no high voltage command, and then close the total negative and slow charging relays in sequence to enter the charging state. 3) After the OBC pre-charging is completed, the slow charging is powered on. The T-BOX sends a command not allowing charging, or the battery is fully charged, or the VCU does not allow charging, or the battery system has a fault prohibiting charging, or the OBC interrupts the hard wire wake-up output. The BMS sends a stop charging command to the OBC, and the OBC interrupts the 12V wake-up output. The entire vehicle then enters the slow charging power-off process.

3) During the slow charging process, the BMS determines the feedback working status of the OBC, the slow charging open Circuit status, or the battery temperature being too high or too low, and sends a standby command to the OBC. All awakennings maintain the output, and the entire vehicle is in a slow charging waiting state. When the conditions for re-charging are met, the BMS sends voltage and current demand commands to the OBC. When the charging is completed, a stop charging command is sent to the OBC. The OBC interrupts the 12V wake-up output, and the entire vehicle enters the slow charging and power-off process.

4) Slow charging power-off process execution strategy: If the VCU has no high-voltage power-on command, the BMS will successively disconnect the slow charging and the total negative relay, with a delay time of 100ms. After the entire vehicle is completed with slow charging and high-voltage power-off, the BMS determines the low-voltage power-off command of the VCU and the absence of a hard wire wake-up signal, interrupts the hard wire wake-up output of the VCU, and enters a 1-minute delay sleep mode. After the slow charging is completed and the slow charging power-off process determines that the VCU has a high-voltage power-on command, maintaining the high-voltage power-on state. Both OBC and BMS are required to interrupt the slow charging wake-up output, while BMS and VCU remain in normal working condition.

3. Instrument charging indicator light control

The fast charging BMS detects CC2 and sends the charging connection signal. The slow charging OBC sends a cc connection signal and lights up the charging cable connection indicator light. When the charging reaches the charging cut-off voltage, send the "fully charged" status and light up the "fully charged" indicator light of the instrument. When charging is in progress, the BMS sends the charging status and lights up the charging indicator light on the instrument.

4. Discharge power control

1) The BMS detects that KL15 (ON) is effective. The BMS is awakened and enters the normal working mode, conducting a self-check. After passing the self-check, it enters the self-power-on state.

2) The BMS receives the high-voltage instruction sent by the VCU. After self-checking without faults, it closes the main negative relay and the pre-charge relay. The BMS separately collects the voltage of the pre-charge Circuit/the voltage at the MCU terminal and closes the main positive relay. If the calibrated time is exceeded or there is no total voltage, the pre-charge is not completed.

3) When the BMS receives a high-voltage instruction or a system failure (for specific faults, please refer to the fault list), it enters the high-voltage process. The BMS disconnects the main positive relay and the main negative relay. The system enters a 0-power waiting state. The BMS stores relevant data (SOC/ fault) and performs self -checking. The low-voltage power disconnection process enters sleep mode.

5. Discharge feedback power control

Based on the SOC and temperature, the BMS, in combination with the discharge current of the battery pack cells under different temperature and SOC conditions, allows the discharge feedback current/power and sends it to the VCU to determine the current vehicle discharge feedback power.

6. Insulation Detection strategy

The insulation Detection Circuit inside the power battery is used to measure the insulation resistance of the positive and negative Circuits of the power battery output to ground respectively, and then determine whether there is a possibility of leakage. If a possible leakage is identified, the output of the power battery will be interrupted, and at this time, the high-voltage power of the entire vehicle will be cut off, achieving the leakage protection function.

7. Collision protection control.

Vehicle collisions are identified through the airbag system. The BMS receives the CAN signal output by the SRS. When a collision is detected, the BMS cuts off all high-voltage Circuits. The collision signal is input to the BMS through the vehicle's CAN network, and at the same time, the BMS also receives the hard wire collision signal. The degree of collision is judged by the different wavelengths of the hard wire signal to determine the opening and closing of the high-voltage Circuit.

8. High-voltage interlock function

The high-voltage interlock output signal is emitted from the BCU pin and is a 12V level signal. With the high-voltage discharge connector and fast charging connector inside the box.

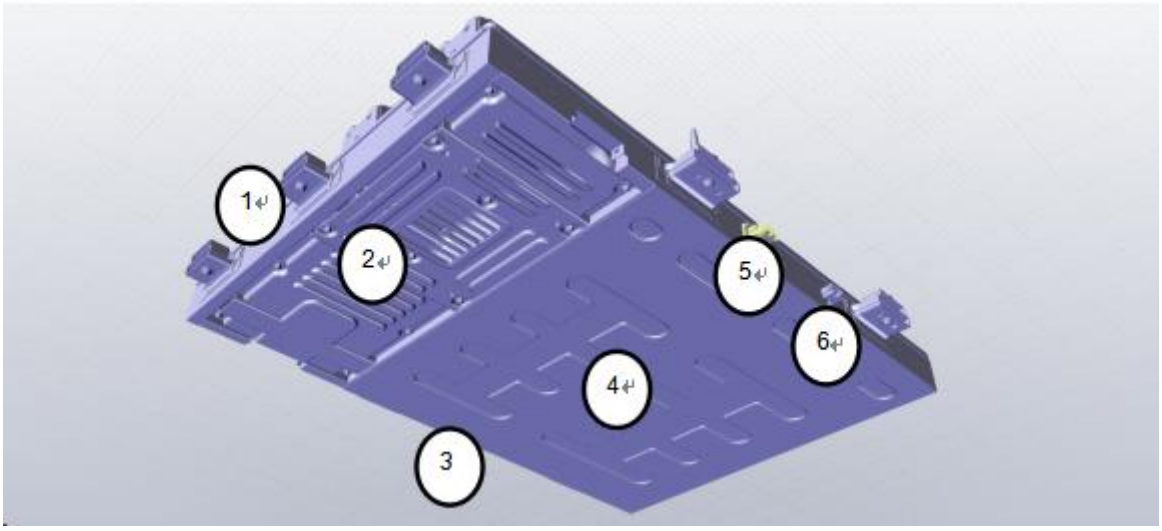
When the BMS detects a high-voltage interlock fault, it reports to the vehicle's VCU via CAN communication. The BMS then performs corresponding controls based on the VCU instructions, such as limiting the vehicle's power and power-off at high voltage.

9. Relay status Detection function

1) The main positive relay: If the BMS is not closed and the total voltage detected by the insulation Detection extension HV2 is greater than or equal to 95% of the total battery voltage, it is determined that the main positive relay is adhered. Otherwise, it was not adhered.

2) Total negative relay: If the BMS main negative relay is not closed and the total voltage detected by the insulation Detection expansion PACK+ and LINK- is ≥ 95% of the total battery voltage, it is determined that the main negative relay is adhered. Otherwise, it was not adhered. Fast charging relay: If the BMS does not close the heating relay and the total voltage detected by the insulation Detection extension HV3 is greater than or equal to 95% of the total battery voltage, it is determined that the fast charging relay is adhered. Otherwise, it was not adhered

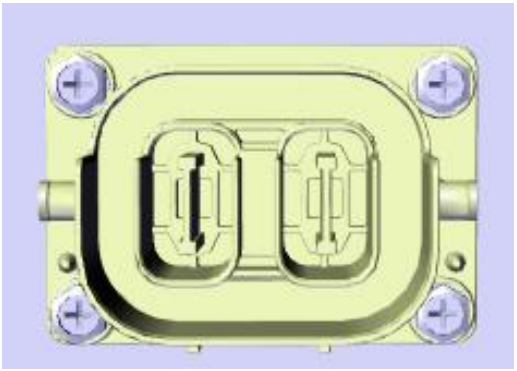
3.7.4 Information on electrical connectors



Serial number	Name	Serial number	Name
1	Power battery installation brackett	4	Power battery
2	Three-in-one wire harness interface	5	High-voltage wiring harness interface for motor controller
3	Explosion-proof valve	6	Low-voltage communication socket

3.7.4.1View and description of low-voltage connectors for power batteries

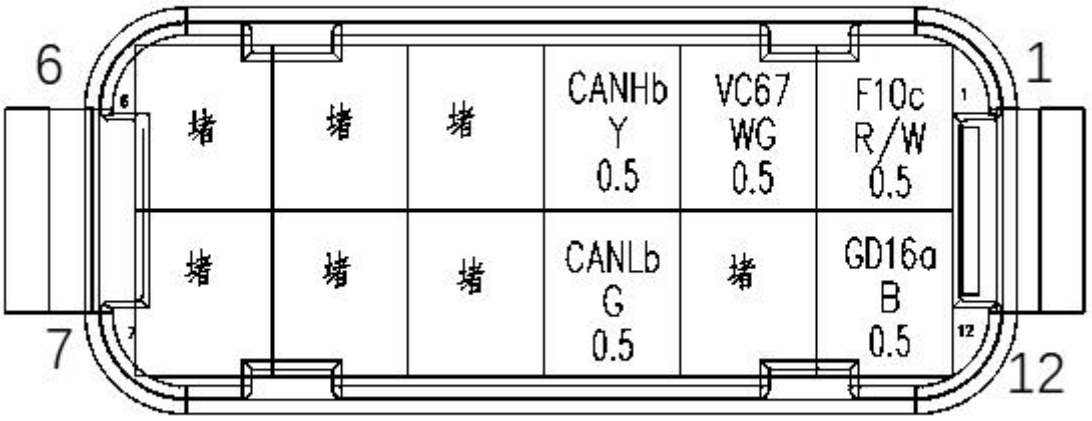
View and description of high-voltage connectors for power batteries



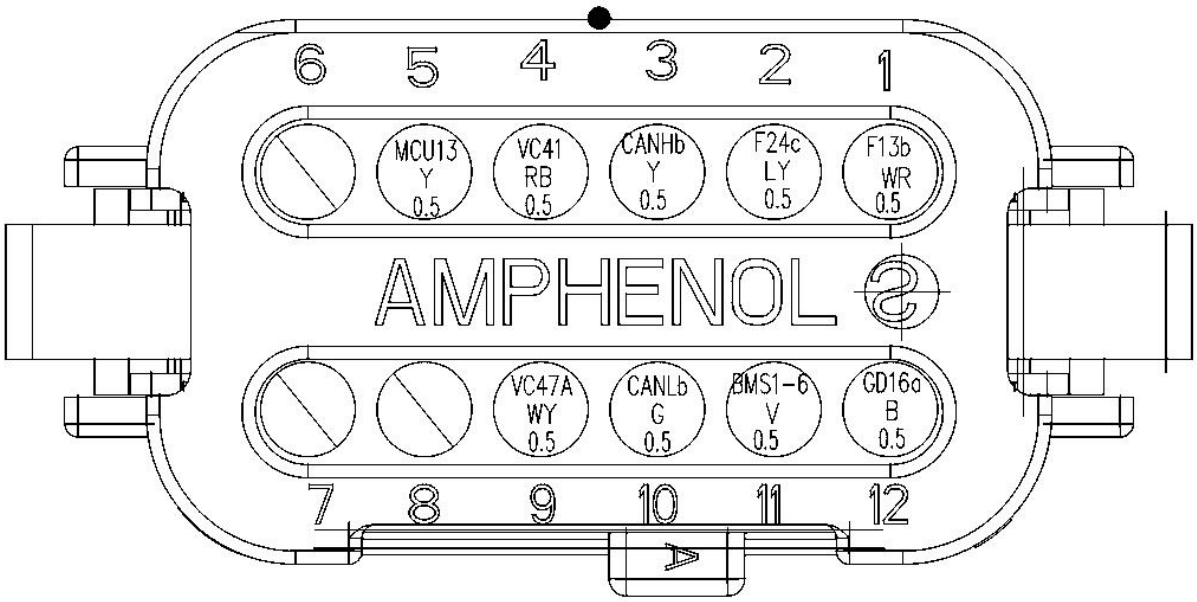
Three-in-one wire harness interface		High-voltage wiring harness interface for motor controller	
Serial number	Name	Serial number	Name
1	High-voltage direct current charging -	1	High voltage -
2	High-voltage direct current charging +	2	High voltage +
3	Interlock socket	3	Interlock socket

3.7.4.2View and description of low-voltage connectors for power batteries

BMS Module（L7)



Pin number	Pin definition	Line color	Wire diameter（mm）
1	BATPower supply	RW	0.5
2	IGKey wake-up	WG	0.5
3	CAN-H	Y	0.5
4-9	-	-	-
10	CAN-L	G	0.5
11	-	-	-
12	Power supply ground	B	0.5



Pin number	Pin definition	Line color	Wire diameter（mm）
1	BAT Power supply	WR	0.5
2	IG Key wake-up	LY	0.5
3	CAN-H	Y	0.5
4	Charge Wake-up (OBC wake-up BMS	RB	0.5
5	MCU wake-up	Y	0.5
6-8	-	-	-
9	BMS wake-up	WY	0.5
10	CAN-L	G	0.5
11	The positive pole of the MC main relay coil	V	0.5
12	Power supply ground	B	0.5

3.7.5 Fault code

3.7.5.1Fault code

Fault code	DTC Meaning
P171001	The total voltage is too high - level 1
P171002	The total voltage is too high - level 2
P171003	The total voltage is too high - level 3
P171101	The total voltage is too low - level 1
P171102	The total voltage is too low - level 2
P171103	The total voltage is too low - level 3
P171201	The discharge current is too large - grade 1
P171202	The discharge current is too large - level 2
P171203	The discharge current is too large - level 3
P171301	The charging current is too high -1 grade
P171302	The charging current is too high - level 2
P171303	The charging current is too high - level 3
P171401	The feedback current is too large -1 grade
P171402	The feedback current is too large - level 2
P171403	The feedback current is too large - level 3
P171501	The maximum single-cell voltage is too high by -1 grade
P171502	The maximum single-cell voltage is too high by -2 levels
P171503	The maximum single-cell voltage is too high - level 3
P171601	The minimum cell voltage is too low by -1 grade
P171602	The minimum cell voltage is too low by -2 levels
P171603	The minimum cell voltage is too low - level 3
P171701	Battery temperature imbalance - Grade 1
P171702	The battery temperature is uneven - grade 2
P171703	The battery temperature is unbalanced - grade 3
P171801	The battery temperature is too high - grade 1
P171802	The battery temperature is too high - level 2
P171803	The battery temperature is too high - level 3
P171901	The battery temperature is too low - grade 1
P171902	The battery temperature is too low - level 2
P171903	The battery temperature is too low - level 3
P171A01	The voltage difference between a single box or an entire group of individual cells is too large -1 grade
P171A02	The voltage difference between a single box or an entire group of individual cells is too large -2 levels
P171A03	The voltage difference between a single box or an entire group of individual cells is too large -3 levels
P171B01	The SOC is too low - level 1
P171B02	The SOC is too low - level 2
P171B03	The SOC is too low - level 3
P171C01	The SOC is too high
P171C02	Insulation fault - Level 2
P171C03	Insulation fault - Level 3
P171D01	BMS self-check fault
P171D02	The BMS equalization module is faulty
P171D03	Internal communication failure of the BMS

P171E01	There is a collision signal.
P171E02	The BMS current Detection module is faulty
P171E03	The BMS voltage Detection module is faulty
P171F01	The BMS temperature Detection module is faulty
P171F02	Total negative relay adhesion fault
P171F03	The main positive relay has an adhesion fault
P172001	No interlock signal
U007300	The BMS enters the BUS Off state
U011000	The BMS has lost communication with the MCU
U017000	BMS and SRS have lost communication
U012200	The communication between BMS and VCU has been lost
U025500	The BMS and OBC have lost communication
U016600	The communication between BMS and HVH has been lost
U010F00	BMS has lost communication with AC
U029800	The BMS has lost communication with the DC-DC
U015600	The BMS has lost communication with the T-BOX

3.7.5.2 L6Vehicle model fault code

Serial number	DTC display code	The meaning of DTC	Mature conditions for faults	System performance	Conditions for fault resolution
1	B1D0011	Single-cell overvoltage first-level fault	1. There is no "AFE single-body collection obstacle". 2. There is no "AFE communication error"” 3. Cell_max_V>=3.7V,debounce >=3s"	Record DTC;	Cell_ max_V<=3.6V,debounce >=2s
2	B1D0012	Single-cell over voltage level two fault	1. There is no "AFE single-body collection obstacle". 2. No "AFE communication errors"3. Cell_max_V>=3.8V,debounce >=2s"	Record DTC;	"C e l l _ m a x _ V <= 3.5 V, de bounce >=2s and the lateral voltage is less than or equal to 13.8V"
3	B1D0013	Single-cell over voltage level three fault	1. There is no "AFE single-body collection obstacle". 2. No "AFE communication errors"3. Cell_max_V>=3.9V,debounce >=3s"	Record DTC;	"(C e l l _ m a x _ V <=3 . 5V, de bounc e >=2s And the external voltage is less than or equal to 13.8V, or (meets the hard wire wake-up condition for 5-30 seconds and the external voltage is less than 13.8V)"
4	B1D0111	The total voltage of the battery pack is over voltage by level one fault	1. No "total voltage collection fault within the battery pack" 2. No "AFE communication errors"3. Battery_V>=14.6V,debounce >=3s"	Record DTC;	Battery_V<=14.4V,debounce >=2s
5	B1D0112	A level two fault of total over voltage in the battery pack	1. No "total voltage collection fault within the battery pack" 2. No "AFE communication errors" 3. Battery_V>=15V,debounce >=2s"	Record DTC;	"B a t t e r y _ V < = 1 4.8 V, de bo u nce > = 2 s and the lateral voltage is less than or equal to 13.8V"

6	B1D0113	A level three fault of total over voltage in the battery pack	1. No "total voltage collection fault within the battery pack" 2. No "AFE communication errors" 3. Battery_V>=15.4V,debounce >=3s "	Record DTC;	"(Battery_V<=15.2V,debounce >=2s And the external voltage is less than or equal to 13.8V, or (meets the hard wire wake-up condition for 5-30 seconds and the external voltage is less than 13.8V)"
7	B1D0211	Single-cell under-voltage first-level fault	1. There is no "AFE single-body collection obstacle". 2. No "AFE communication errors" 3. Cell_min_V<=2.3V,debounce >=3s"	Record DTC;	Cell_min_V>=2.8V,debounce >=2s
8	B1D0212	Single-cell under-voltage level two fault	1. There is no "AFE single-body collection obstacle". 2. No "AFE communication errors" 3.Cell_min_V<=2.0V,debounce >=3s"	Record DTC;	Cell_min_V>=2.5V,debounce >=2s
9	B1D0213	Single-cell under-voltage level three fault	1. There is no "AFE single-body collection obstacle". 2. No "AFE communication errors" 3. Cell_min_V<=1.5V,debounce >=3s"	Record DTC;	Cell_min_V>=2V,debounce >=2s
10	B1D0311	The total voltage of the battery pack is under voltage by level one	1. No "total voltage collection fault within the battery pack" 2. No "AFE communication errors" 3. Battery_V<=9.5V,debounce >=3s"	Record DTC;	Battery_V>=11.5V,debounce >=2s
11	B1D0312	The total voltage of the battery pack is under voltage at level two	1. No "total voltage collection fault within the battery pack" 2. No "AFE communication errors" 3. Battery_V<=8.5V,debounce >=2s"	Record DTC;	Battery_V>=11V,debounce >=2s
12	B1D0313	A level three fault of total under-voltage in the battery pack	1. No "total voltage collection fault within the battery pack" No "AFE communication errors" 3.Battery_V<=7.5V,debounce >=0.5s"	Record DTC;	Battery_V>=10V,debounce >=2s
13	B1D0411	The battery pack has a fault due to overheating	1. No "battery pack NTC open Circuit fault" 2. No "battery pack NTC short Circuit fault" No "AFE communication errors" Cell_max_T>=68℃ ,debounce >=3s"	Record DTC;	Cell_max_T<=60 ℃ ,debounce >=3s
14	B1D0412	The battery pack has a secondary fault due to overheating	1. No "battery pack NTC open Circuit fault" 2. No "battery pack NTC short Circuit fault" No "AFE communication errors" Cell_max_T>=70℃ ,debounce >=3s"	Record DTC;	Cell_max_T<=65 ℃ ,debounce >=3s
15	B1D0413	The battery pack has a third-level overheating fault	1. No "battery pack NTC open Circuit fault" 2. No "battery pack NTC short Circuit fault" 3. There are no "AFE communication errors" 4.Cell_max_T>=75℃ ,debounce >=3s"	Record DTC;	Cell_max_T<=70 ℃ ,debounce >=3s

16	B1D0511	The battery pack has a first-level fault due to low temperature	1. No "battery pack NTC open Circuit fault" 2. No "battery pack NTC short Circuit fault" 3. No "AFE communication error" : Cell_min_T <= -32℃,debounce >=3s"	Record DTC;	Cell_min_T>= -25 ℃ ,debounce >=3s
17	B1D0512	The battery pack has a second-level fault due to low temperature	1. No "battery pack NTC open Circuit fault" 2. No "battery pack NTC short Circuit fault" 3. No "AFE communication errors" 4. C e l l _ m n _ T < = -38℃,debounce >=3s"	Record DTC;	Cell_min_T>= -33 ℃ ,debounce >=3s
18	B1D0611	A first-level fault of Over current during battery pack charging	1. There is no "AFE current collection fault". 2. No "AFE communication errors" 3. When I >=2S, the power rate map*1.7 and PackV<13.2V,debounce >=2s	Record DTC;	I < Current-limiting for the map, and LBMS_PackExtU - LBMS_PackIntU < 1.5V, debounce time ≥ 30s
19	B1D0612	Level two fault of Over current during battery pack charging	1. There is no "AFE current collection fault". 2. No "AFE communication errors" 3. I >=2S power map*2debounce >=2s	Record DTC;	Hibernation --> Awakening
20	B1D0613	A first-level fault of battery pack discharge over current	1. There is no "AFE current collection fault". 2. No "AFE communication errors" 3. I < =-300A,debounce >=5s or I < =-200 debounce >=20s"	Record DTC;	I > =-200,debounce >=5s and I > =-100 debounce >=20s
21	B1D0614	Level two fault of battery pack discharge over current	1. There is no "AFE current collection fault". 2. No "AFE communication errors" 3. I < =-400A,debounce >=2s or I < =-300,debounce >=10s	Record DTC;	Hibernation --> Awakening
22	B1D0711	The battery pack malfunctioned due to a short Circuit during charging	1. There is no "AFE current collection fault". 2. No "AFE communication errors" 3. Battery_I >= 650A debounce >=0.3s"	Record DTC;	Hibernation --> Awakening
23	B1D0712	The battery pack has a short Circuit due to discharge and malfunctions	1. There is no "AFE current collection fault". 2. No "AFE communication error" Battery_I < =-650A debounce >=0.3s	Record DTC;	Hibernation --> Awakening
24	B1D0811	Excessive single-cell pressure difference leads to a first-level fault	1. There is no "AFE single-body collection obstacle". 2. No "AFE communication error" Cell_max_V -Cell_min_V > 0.5V debounce ≥ 5 seconds	Record DTC;	Cell _ max _V - Cell _min__V < 0.15V, debounce ≥ 5s
25	B1D0812	Excessive temperature difference between individual units leads to a first-level fault	1. No "battery pack NTC open Circuit fault" 2. No "battery pack NTC short Circuit fault" 3. No "AFE communication error" Cell_max_T - Cell_min_T > 10℃, debounce ≥ 10s"	Record DTC;	Cell_max_T - Cell_min_T < 7℃, debounce ≥ 10s
26	B1D0911	There is an open Circuit fault with the NTC of the battery pack	1. No "AFE communication error". 2. NTC_n_R > 500 KΩ, debounce time ≥ 2 s.	Record DTC;	NTC_n_R > 0.5KΩ and NTC_n_R < 300KΩ debounce ≥ 2s
27	B1D0912	The NTC of the battery pack has short-Circuited and malfunctioned	1. No "AFE communication error". 2. NTC_n_R < 0.3 KΩ, and the debounce time is ≥ 2 s.	Record DTC;	NTC_n_R > 0.5KΩ and NTC_n_R < 300KΩ debounce ≥ 2s

28	B1D0913	Battery pack NTC0, 1. 2 Fault	1. No "AFE communication error". 2. All three NTCs are out of the range (NTC_All_R ≥ 0.3 KΩ and NTC_All_R ≤ 500 KΩ), with a debounce time of ≥ 2 s.	Record DTC;	At least one of the three NTCs falls within the range (NTC_All_R > 0.5 KΩ and NTC_All_R < 300 KΩ), with a debounce time of ≥ 2 s.
29	B1D0A11	SOC low level one fault	1、SOC < 30 debounce 5S,	Record DTC;	SOC>35% debounce 5S,
30	B1D0A12	Low SOC level 2 fault	1、SOC < 10% debounce 3S,	Record DTC;	SOC>15% debounce 5S,
31	B1D0B11	Battery pack thermal runaway	"The occurrence as described in Article 1&3 or 2&3 below shall be judged as heat loss: 1. The temperature is too high before lifting the item: The temperature collection is effective, and there is no AFE communication failure. Diagnosis: T m a x is greater than 75 ℃ and lasts for 3 seconds; 2. The temperature rise rate improvement condition: The temperature collection is effective, and there is no AFE communication failure. The rate of temperature rise is greater than or equal to 1 ℃ /s and persists for 3 seconds. 3. Before the electrical voltage outbursts: The electrical voltage collection is effective, and there is no AFE communication failure. Diagnosis and diagnosis: The single-body voltage deviates from the average voltage value Δ V1 >1.5V, and within the following 1 minute, Δ V2 > Δ V1 occurs (average voltage value =sum(CellV(i)-Cellmax-CellVmin))/(Cellnumber-2). "	Record DTC;	UDS $14 service troubleshooting
32	B1D0C11	A first-level fault of overheating of the charging MOS	1. No "short Circuit fault of charging MOS NTC" 2. No "charging MOS NTC open Circuit fault". 3. CMOS_T > 85℃, debounce ≥ 3 seconds	Record DTC;	CMOS_T < 80 ℃ , debounce ≥ 3s
33	B1D0C12	Level two fault of overheating of the charging MOS	1. No "short Circuit fault of charging MOS NTC" 2. No "charging MOS NTC Circuit failure", CMOS_T > 95℃, debounce ≥ 3 seconds	Record DTC;	CMOS_T < 90 ℃ , debounce ≥ 3s
34	B1D0C13	A first-level fault of over-temperature of the discharge MOS	1. No "discharge MOS NTC short-Circuit fault" 2. No "discharge MOS NTC open Circuit fault". 3. DMOS_T > 85℃, debounce ≥ 3 seconds	Record DTC;	DMOS_T < 80 ℃ , debounce ≥ 3s
35	B1D0C14	Level two fault of over-temperature of the discharge MOS	1. No "discharge MOS NTC short-Circuit fault" 2. No "discharge MOS NTC open Circuit fault". 3. DMOS_T > 95℃, debounce ≥ 3 seconds	Record DTC;	DMOS_T < 90 ℃ , debounce ≥ 3s
36	B1D0D11	A first-level fault of over-temperature in the current-limiting module	1. No "short-Circuit fault of the current-limiting module NTC" 2. There is no "open Circuit fault of the current-limiting module NTC" 3. DCDC_T > 85 ℃, debounce ≥ 3s"	Record DTC;	DCDC_T < 80 ℃ , debounce ≥ 3s

37	B1D0D12	The current-limiting module has a secondary fault of over-temperature	1. No "short-Circuit fault of the current-limiting module NTC" 2. There is no "open Circuit fault of the current-limiting module NTC" 3. DCDC_T > 95℃ , debounce ≥ 3s"	Record DTC;	DCDC_T < 90 ℃ , debounce ≥ 3s
38	B1D0E11	Short-Circuit fault of the charging MOS driver	1. No "total voltage collection fault within the battery pack". 2. When the CMOS is disconnected, (gate voltage - total voltage within the battery pack) >5V, debounce ≥ 5 seconds.	Record DTC;	Hibernation --> Local event or network wake-up
39	B1D0E12	Charging MOS driver open Circuit fault	1. No "total voltage collection fault within the battery pack". 2. When the CMOS is closed, (gate voltage - total voltage within the battery pack) <2V, debounce ≥ 5 seconds.	Record DTC;	When the CMOS is closed, the (gate voltage - total voltage inside the cell packet) is greater than 10V, and the debounce is ≥ 1s
40	B1D0E13	Short-Circuit fault of the discharge MOS drive	1. No "AFE communication failure". 2. When the DMOS is disconnected, (gate voltage - total voltage outside the cell packet) >5V, debounce ≥ 5 seconds.	Record DTC;	Hibernation --> Local event or network wake-up
41	B1D0E14	Discharge MOS drive open Circuit fault	1. There is no "A, F, E communication failure". When the D MOS is closed, (2. Gate voltage - total voltage outside the battery pack) <2V, debounce ≥ 5 seconds.	Record DTC;	Hibernation --> Local event or network wake-up
42	B1D0E15	MOS Circuit failure	1. There is no "AFE communication failure" (when DMOS is disconnected, the discharge current is greater than 1A or CMOS is disconnected, BUCK is not enabled, the charging current is greater than 1A or CMOS is disconnected, BUCK is enabled) External total voltage - internal total voltage > 2V, charging current less than 0.5A debounce ≥ 10s"	Record DTC;	UDS $14 service troubleshooting
43	B1D0F11	AFE current acquisition failure	1. There is no "AFE communication fault". The fault flag bit for current acquisition of the AFE chip is 1"	Record DTC;	Hibernation --> Local event or network wake-up
44	B1D0F12	AFE individual collection failure	1. There is no "AFE communication fault". 2. The fault flag bit for individual collection within the AFE is 1(the diagnostic voltage threshold is 1v).	Record DTC;	Cell_min_V>=2V (for three consecutive cycles)
45	B1D0F13	AFE temperature collection failure	1. There is no "AFE communication fault". 2. The fault flag bit for the internal temperature collection of the AFE is 1	Record DTC;	Hibernation --> Local event or network wake-up
46	B1D0F14	AFE balancing Circuit failure	1. There is no "AFE communication fault". 2. There is no single-body collection obstacle 3. The internal equalization fault flag bit of AFE is 1"	Record DTC;	Hibernation --> Local event or network wake-up
47	B1D0F15	AFE communication error	1. The SPI communication between M C U and A F E is abnormal for 1 second or the cell voltage, current and temperature do not update, debounce ≥ 1 minute.	Record DTC;	The SPI communication between the MCU and AFE is normal
48	B1D1011	Short Circuit fault of the current-limiting module NTC	1、NTC_R < 0.2KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ and NTC_n_R < 200KΩ debounce ≥ 2s

49	B1D1012	Open Circuit fault of the current-limiting module NTC	1、NTC_R > 250KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ andNTC_n_R < 200KΩ debounce ≥ 2s
50	B1D1111	Short Circuit fault of the discharge MOS NTC	1、NTC_R < 0.2KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ andNTC_n_R < 200KΩ debounce ≥ 2s
51	B1D1112	Discharge MOS NTC open Circuit fault	1、NTC_R > 250KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ andNTC_n_R < 200KΩ debounce ≥ 2s
52	B1D1113	Short-Circuit fault of the charging MOS NTC	1、NTC_R < 0.2KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ andNTC_n_R < 200KΩ debounce ≥ 2s
53	B1D1114	The charging MOS NTC has an open Circuit fault	1、NTC_R > 250KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ andNTC_n_R < 200KΩ debounce ≥ 2s
54	B1D1211	Short Circuit fault of the board temperature NTC	1、NTC_R < 0.2KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ andNTC_n_R < 200KΩ debounce ≥ 2s
55	B1D1212	Open Circuit fault of the board temperature NTC	1、NTC_R > 250KΩ debounce ≥ 2s	Record DTC;	NTC_n_R > 0.3KΩ andNTC_n_R < 200KΩ debounce ≥ 2s
56	B1D1311	EEPROM storage failure	1. The CheckSum of the data stored in the EEPROM is incorrect	Record DTC;	Hibernation --> Awakening
57	B1D1411	Real-time clock failure	There is an abnormal communication between the MCU and the RTC	Record DTC;	Communication between the MCU and the RTC is normal
58	B1D1511	The BMS system experienced an abnormal power failure	Both AFE and SBC lost power supply simultaneously	Record DTC;	Hibernation --> Awakening
59	B1D1711	Total voltage collection failure in the battery pack	1. No "AFE communication failure" 2. MCU ADC collection voltage - AFE GPIO collection voltage > 3V debounce 3 seconds	Record DTC;	MCU ADC acquisition voltage -AFE GPIO acquisition voltage < 1V debounce 3 seconds
60	B1D0E16	Hard wire jamming fault	When the switch card lag time exceeds 30 seconds, the fault indicator bit is 1	Record DTC;	No switch signal was detected for more than 0.5 seconds
61	U16E301	CAN bus shutdown fault	The voltage of the battery pack is between 9 ~ 16 V.The battery pack voltage is within the range of 9 ~ 16 V. Detect the bus-off state for 5 times.When the ECU continuously detects entry into the BUSoff state 5 times, it records a DTC (Diagnostic Trouble Code).	Record DTC;	"transmit a canmessage successfully When one frame of the EC U recovery report is sent, After recovery form bus off, bus off does not occur in 200ms after the ECU performs bus off recovery, No bus off was detected within 200ms"
62	U16E001	"VCU Missing VCU Lost node"	"1、Message VCU6_St_100ms(0x357)timeout for 10cycle2、L7 model 3. The battery pack voltage is within the range of 9 to 16V"	Record DTC;	Message VCU6_St_ 100ms(0x357) has been received for 5 cycle
63	U16E002	"DC DC Missing DCDC Lost node"	"1、Message DCDC1_ 500ms (0x596) timeout for 10cycle 2、The battery pack voltage is within the range of 9 to 16V"	Record DTC;	Message DC DC1_ 500ms (0x596) has been received for 5 cycle

3.7.5.3 Fault code for L7 model

Serial number	DTC display code	The meaning of DTC	Mature conditions for faults	System performance	Conditions for fault resolution
1	P180000	" Low-temperature monomer primary under voltage		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Power limiting (Discharge state)	
2	P180100	" Primary under voltage of normal temperature monomer		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Power limiting (Discharge state)	
3	P180200	" Cell Secondary Under-Voltage CellUnderUFltLv2"		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Power limiting (Discharge state)	
4	P180300	" Single unit over voltage Cell Over UFlt"		1. Allow energy recovery power limit 0% (discharge state) 2. Light up the battery fault light (charge state) 3. Turn on the system fault light (in charging mode) 4. Lower high voltage (charging state) 5. Record DTC"	
5	P180400	" The total battery voltage is low and under-voltage BattLoTUnderUFlt"		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Power limiting (Discharge state)"	
6	P180500	" e total battery voltage is under-voltage at normal temperature"		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Power limiting (Discharge state)"	
7	P180600	" The total pressure is seriously under-voltage BattCritUnderUFlt"		"1. Record DTC 2. Light up the battery fault light (discharge status). 3. Light up the system fault light (discharge status). 4. Lower high voltage (discharge state) "	
8	P180700	" The total battery voltage is over voltage CellOverUFlt"		"1. Allow energy recovery power limit 0% (discharge state) 2. Light up the battery fault light (charge state) 3. Turn on the system fault light (in charging mode) 4. Lower high voltage (charging state) 5. Record DTC"	
9	P180800	" The battery pressure difference is too large CellOverDifU"		1. Record DTC	
10	P180900	" The voltage acquisition chip is malfunctioning CellUDetdFlt"		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Power limiting (Discharge state) 4. Turn on the battery fault light (charging status) 5. Turn on the system fault light (charging status) 6. Low voltage (charging state)"	
11	P180A00	" The individual voltage acquisition line is loose CellUDetdHwFlt"		1. Record DTC	
12	P180B00	" The individual cell voltage does not match the total voltage BattMismatchU"		1. Record DTC	

13	P180C00	" Discharge Over current fault BattDchaOverI"		"1. Record DTC Light up the battery fault light (discharge status). 3. Light up the system fault light (discharge status). 4. Emergency high voltage (discharge state)"	
14	P180D00	" Over current charging fault BattChrgOverI"		"1. Energy recovery power limit: 0% (discharge state) 2. Turn on the battery fault light (in charging state) 3. Turn on the system fault light (in charging mode) 4. Lower high voltage (charging state) 5. Record DTC"	
15	P180E00	" Battery over-temperature limit power BattOverT"		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Power limiting (Discharge state)"	
16	P180F00	" The battery is seriously overheated BattCritOverT"		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Turn on the battery fault light (in charging/discharging mode) 4. Turn on the system fault light (in charging mode) 5. Power limiting (Discharge state)"	
17	P181000	" The battery temperature is too lowBattUnderT"		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Turn on the battery fault light (in charging/discharging mode) 4. Power limiting (Discharge state)"	
18	P181100	" The battery temperature is uneven BattUnBalT"		1. Record DTC	
19	P181200	" Current sensor failure DiverterInvld"		1. Record DTC	
20	P181300	" Insulation fault InsulationFlt"		1. Record DTC	
21	P181400	"Severe insulation failure CritInsulationFlt"		"1. Record DTC 2. Turn on the battery fault light 3. Turn on the system fault light 4. Apply high pressure urgently "	
23	P181500	" Abnormal temperature sensor SnsrTFlt"		1. Record DTC	
25	P181600	" The insulation Detection system is abnormal Insulation SnsrFlt"		1. Record DTC	
26	P181700	" High-voltage interlock BattHvilFlt"		"1. Record DTC 2. Turn on the battery fault light 3. Turn on the system fault light 4. Apply high pressure"	
27	P181800	" The heating contactor cannot close		1. Record DTC	

28	P181900	" The heating contactor cannot be disconnected		"1. Record DTC 2. Light up the turtle lamp (in discharge state) 3. Turn on the battery fault light (in charging state) 4. Turn on the system fault light (in charging mode) 5. Power limiting (Discharge state)"	
29	P181A00	" Pre-charge timeout fault PrechgFlt"		"1. Record DTC 2. Turn on the battery fault light 3. Turn on the system fault light 4. Apply high pressure "	
30	P181B00	" The main and positive relays are stuck together		"1. Record DTC 2. Turn on the battery fault light 3. Turn on the system fault light 4. Apply high pressure "	
31	P181C00	"The main and positive relay cannot close		"1. Record DTC 2. Turn on the battery fault light 3. Turn on the system fault light 4. Apply high pressure "	
32	P181D00	" Charging runaway fault ChrgSlidFlt"		"1. Record DTC 2. Turn on the system fault light (in charging mode) 3. Lower high voltage (charging state"	
33	U011000	"MCU Message loss MCUTiOutFlt"		"1. Record DTC 2. Turn on the motor fault light (in discharge mode) 3. Turn on the system fault light (in discharge mode) 4. Lower high voltage (discharge state"	
34	U015500	"ICM message is lost ICMTiOutFlt"		1. Record DTC	
35	U019600	"IHU message is lost IHUTiOutFlt"		1. Record DTC	
36	U029800	"DCDC message is lost DCDCTiOutFlt"		1. Record DTC	
37	U110187	"EAC message is lost EACTiOutFlt"		1. Record DTC	
38	U019B00	"OBC message is lost OBCTiOutFlt"		"1. Record DTC 2. Turn on the system fault light (in charging mode) 3. Lower high voltage (charging state)"	
39	U014000	"BCM message is lost BCMTiOutFlt"		1. Record DTC	
40	U010F00	"AC message is lost ACTiOutFlt"		1. Record DTC	
41	U110087	"LBMS message is lost LBMSTiOutFlt"		1. Record DTC	
42	P181E00	" Thermal runaway fault		"1. Record DTC 2. Turn on the battery fault light (in discharge mode) 3. Turn on the system fault light (in discharge mode) 4. Emergency high voltage (discharge state)"	

3.7.6 Guidance on Fault Diagnosis

3.7.6.1Fault diagnosis process

Serial number	Processing flow	Tools	Precautions
1	Check the upper computer or diagnostic instrument to read the fault code	Diagnostic instrument, upper computer, acquisition wiring harness, Can card	
2	"1. Confirm the type of fault based on the fault code. 2. Possible fault types: ① Large single cell pressure difference ② Pre-charging failure ③ Fuse failure "	Diagnostic instrument, upper computer, acquisition wiring harness, Can card	
3	Check the corresponding files to confirm the fault		
4	" After unpacking, measure the actual voltage of the low-voltage module with a multimeter. A. If the actual voltage is consistent with the voltage displayed on the upper computer, disconnect the voltage acquisition wiring harness from the slave board. Use a clamp meter to clamp the voltage sampling line corresponding to the low-voltage individual unit. If the current is greater than 1mA, the wiring harness is faulty. When the current is less than 1mA, the slave board is faulty. Just replace the corresponding accessories and modules. As shown in the following example. b. If the actual voltage is inconsistent with the voltage displayed on the upper computer. bb. Observe whether the wiring harness is damaged. If there is any damage, take photos to record it and replace the corresponding wiring harness. bbb. Keep the upper computer connected, gently shake the acquisition terminal, and observe the individual data. If there is any change, it is determined that the connector is loose. Reinsert it tightly and shake it again for verification. If no abnormalities are found in the above checks, it is determined that the slave board is faulty and the corresponding slave board should be replaced.	Multimeter, clamp meter	"When using the clamp meter, be careful not to press on the sampling line 2. Standards for individual unit maintenance and replacement: The voltage distribution is based on the voltage distribution of the majority of individual cells ※ Replace the modules if they meet the replacement standards"
5	" After the module replacement is completed, confirm the dynamic and static pressure differences. Retain the screenshots of the static pressure difference from the upper computer and the discrete diagrams of the dynamic pressure difference."	Can card, sampling wiring harness	"1. Dynamic testing must be conducted for module replacement. 2. The fastening bolts must be re-marked with a paint pen."
6	After the module replacement is completed, it must be remarked with a paintbrush.	Paint pen	"1. Dynamic testing is required for module replacement. 2. The fastening bolts must be re-marked with a paint pen."
7	Disassemble the battery pack as per the operation requirements and remove the upper cover of the battery	Multimeter, insulating gloves, paint pen	"1. High-voltage components pose a high voltage hazard. Insulating gloves must be worn during measurement. 2. The fastening bolts must be re-marked with a paint pen."

3.7.6.2 L6Guidance on vehicle model fault diagnosis

Serial number	DTC display code	DTC Meaning	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
1	B1D0011	Single-cell overvoltage first-level fault	The capacity of the low-voltage battery is too high	Detection DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
2	B1D0012	Single-cell overvoltage level two fault	The capacity of the low-voltage battery is too high	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
3	B1D0013	Level three fault of individual overvoltage	The capacity of the low-voltage battery is too high	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
4	B1D0111	The total voltage of the battery pack exceeded the voltage by one level, resulting in a fault	The capacity of the low-voltage battery is too high	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
5	B1D0112	The total voltage of the battery pack overvoltage level two fault	The capacity of the low-voltage battery is too high	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
6	B1D0113	The total voltage of the battery pack was overvoltage by level three, resulting in a malfunction	The capacity of the low-voltage battery is too high	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
7	B1D0211	Single-cell under-voltage fault of level one	The capacity of the low-voltage battery is relatively low	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
8	B1D0212	Single-cell under-voltage level two fault	The capacity of the low-voltage battery is relatively low	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
9	B1D0213	Single-cell under-voltage level three fault	The capacity of the low-voltage battery is relatively low	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
10	B1D0311	The total voltage of the battery pack is under-voltage by one level, resulting in a fault	The capacity of the low-voltage battery is relatively low	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "

11	B1D0312	The total voltage of the battery pack is under voltage by level two, causing a fault	The capacity of the low-voltage battery is relatively low	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
12	B1D0313	The total voltage of the battery pack is under voltage by level three, resulting in a fault	The capacity of the low-voltage battery is relatively low	Detect DCDC	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
13	B1D0411	A first-level fault of battery pack overheating	The battery temperature is too high.	Cooling of the battery pack	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
14	B1D0412	Battery pack overheating level two fault	The battery temperature is too high.	Cooling of the battery pack	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
15	B1D0413	Battery pack overheating level three fault	The battery temperature is too high.	Cooling of the battery pack	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
16	B1D0511	The battery pack has a first -level low-temperature fault	The battery temperature is too low.	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
17	B1D0512	Low-temperature level two fault of the battery pack	The battery temperature is too low.	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
18	B1D0611	The battery pack is faulty due to Over current during charging	Abnormal charging device	Inspect the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
19	B1D0612	The battery pack is faulty due to Over current level 2 during charging	Abnormal charging device	Inspect the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
20	B1D0613	The battery pack has a fault due to Over current discharge	Load anomaly	Inspect the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
21	B1D0614	The battery pack has a secondary fault due to Over current discharge	Load anomaly	Inspect the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "

22	B1D0711	Battery pack charging short Circuit fault	Abnormal charging device	Inspect the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
23	B1D0712	Battery pack discharge short Circuit fault	Load anomaly	Inspect the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
24	B1D0811	Excessive single-cell pressure difference leads to a first-level fault	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
25	B1D0812	Excessive temperature difference between individual units leads to a first-level fault	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
26	B1D0911	Battery pack NTC open Circuit fault	Battery system failure	Investigate the NTC wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
27	B1D0912	Short Circuit fault of NTC in the battery pack	Battery system failure	Investigate the NTC wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
28	B1D0913	Battery pack NTC0, 1, 2 faults	Battery system failure	Replace the battery pack	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
29	B1D0A11	A level one fault occurs when the SOC is too low	The capacity of the low-voltage battery is relatively low	Charge the lithium battery	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
30	B1D0A12	Level two fault due to low SOC	The capacity of the low-voltage battery is relatively low	Charge the lithium battery	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
31	B1D0B11	Thermal runaway of the battery pack	Battery system failure	Replace the battery pack	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
32	B1D0C11	The charging MOS has a fault due to overheating	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
33	B1D0C12	The charging MOS has a secondary fault due to overheating	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
34	B1D0C13	The MOS discharge is over-heated and thus malfunctions	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "

35	B1D0C14	The secondary fault of the over-temperature discharge MOS	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
36	B1D0D11	A first-level fault of over-temperature in the current-limiting module	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
37	B1D0D12	The current-limiting module has a secondary fault of over-temperature	Battery system failure	/	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
38	B1D0E11	The charging MOS driver short-Circuited and malfunctioned	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
39	B1D0E12	The charging MOS driver has an open Circuit fault	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
40	B1D0E13	The discharge MOS drive short-Circuited and malfunctione d	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
41	B1D0E14	The discharge MOS driver is open-Circuited and faulty	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
42	B1D0E15	The MOS Circuit is faulty	Battery system failure	Check the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
43	B1D0F11	AFE current collection failure	Battery system failure	Check the wiring harness inside the package	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
44	B1D0F12	AFE individual collection failure	Battery system failure	Check the wiring harness inside the package	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
45	B1D0F13	AFE temperature collection failure	Battery system failure	Check the wiring harness inside the package	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
46	B1D0F14	AFE equalization Circuit failure	Battery system failure	Check the wiring harness inside the package	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "

47	B1D0F15	AFE communicati on error	Battery system failure	Check the wiring harness inside the package	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
48	B1D1011	The current-limiting module NTC has short-Circuited and malfunctioned	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
49	B1D1012	The current-limiting module NTC has an open Circuit fault	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
50	B1D1111	Short Circuit fault of the discharge MOS NTC	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
51	B1D1112	The discharge MOS NTC has an open Circuit fault	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
52	B1D1113	The charging MOS NTC has a short Circuit fault	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
53	B1D1114	The charging MOS NTC has an open Circuit fault	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
54	B1D1211	Short Circuit fault of the board temperature NTC	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
55	B1D1212	Board temperature NTC open Circuit fault	Battery system failure	Replace the LBMS	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
56	B1D1311	EEPROM storage failure	Battery system failure	Check the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
57	B1D1411	The real-time clock is malfunctionin g	Battery system failure	Check the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
58	B1D1511	The BMS system experienced an abnormal power outage	Battery system failure	Check the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "

59	B1D1711	Total voltage collection failure in the battery pack	Battery system failure	Check the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
60	B1D0E16	The hard wire is stuck and the problem persists	The vehicle switch is abnormal.	Check the wiring harness	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
61	U16E301	CAN bus shutdown fault	"CAN hardware error, include CAN-H&CAN-L CAN hardware, including CAN -H and CAN-L"	"1.check whether CAN-H short to CAN-L or not; Is CANH a short route to CANL; 2.check whether CAN-H short to ground or not; Is CANH short-Circuited to ground ; 3.check whether CAN-L short to battery or not Is CANL short-Circuited to the power supply; "	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
62	U16E001	"VCU Missing The VCU node is lost "	"VCU failure or Harness failure The VCU is damaged or the wiring harness malfunctions "	"1) Check bus status Check the bus status 2) Check harness Check the wiring harness 3) Check related ECU Check relevant ECU 4) Check bus status after replace VCU Check the status of the main line after replacing the VCU "	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
63	U16E002	"DCDC Missing DCDC Lost node "	"DCDC failure or Harness failure DCDC Damaged or faulty wiring harness "	"1) Check bus status Check the bus status 2) Check harness Check the wiring harness 3) Check DCDC Check DCDC 4) Check bus status after replace DCDC After replacing the DCDC, check the bus status "	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "

64	U16E003	"BCM Missing The BCM node is lost"	"BCM failure or Harness failure The BCM is damaged or the wiring harness malfunctions "	"1) Check bus status Check the bus status 2) Check harness Check the wiring harness 3) Check BCM Check BCM 4) Check bus status after replace BCM After replacing the BCM, check the status of the main line "	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "
65	U16E004	"BMS Missing The BMS node is lost"	"BMS failure or Harness failure BMS damage or wiring harness failure "	"1) Check bus status Check the bus status 2) Check harness Check the wiring harness 3) Check related ECU inspection -related ECU 4) Check bus status after replace BMS Check the status of the main line after replacing the BMS "	" (1) Aging 40 times Self Clean Self-cleaning after 40 ages (2) UDS command clear UDS command is cleared "

3.7.6.3 L7Vehicle model repair guidance for fault codes

Serial number	DTC display code	DTC Meaning	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
1	P180000	" Low-temperature monomer primary under voltage CellLoTUnderUFltLv1"	Battery voltage too low	Charging	
2	P180100	" Primary under voltage of normal temperature monomer CellNormTUnderUFltLv1"	Battery voltage too low	Charging	
3	P180200	" Secondary under voltage of a single unit CellUnderUFltLv2"	Battery voltage too low	Charge or repair the battery	
4	P180300	" Single unit overvoltage CellOverUFlt"	Battery voltage too high	Discharge or repair the battery	
5	P180400	" The total battery voltage is low and under-voltage BattLoTUnderUFlt"	Battery voltage too low	Charging	
6	P180500	" The total battery voltage is under-voltage at normal temperature BattNormTUnderUFlt"	Battery voltage too low	Charging	
7	P180600	" The total pressure is seriously under-voltage BattCritUnderUFlt"	Battery voltage too low	Charging	
8	P180700	" The total battery voltage is overvoltage CellOverUFlt"	Battery voltage too high	Discharge or repair the battery	
9	P180800	" The battery pressure difference is too large CellOverDifU"	Battery voltage unbalance	Balance the battery pack	
10	P180900	" The voltage acquisition chip is faulty CellUDetdFlt"	AFE chip failure	Repair or replace the BMS controller	
11	P180A00	" The individual voltage acquisition line is looseCellUDetdHwFlt"	The battery collection wiring harness is loose or broken	Check the battery pack acquisition wiring harness	
12	P180B00	" The individual cell voltage does not match the total voltage BattMismatchU"	The error in individual voltage collection or total voltage collection is relatively large	Repair or replace the BMS controller	
13	P180C00	" Discharge Over current fault BattDchaOverI"	Short Circuit in the high-voltage Circuit	Check the high-voltage wiring harness	
14	P180D00	" ChargingOver current fault BattChrgOverI"	Short Circuit in the high -voltage Circuit and abnormal control of the Charging machine	Check the high-voltage wiring harness and the condition of the Charging machine	
15	P180E00	" Battery over-temperature limit power BattOverT"	The battery temperature is too high.	When the vehicle is stopped, the battery temperature drops ;	
16	P180F00	" The battery is seriously overheated BattCritOverT"	The battery temperature is too high.	When the vehicle is stopped, the battery temperature drops ;	
17	P181000	" The battery temperature is too low BattUnderT"	The battery temperature is too low	Stop driving; Plug in the Charging gun to heat the battery	
18	P181100	" The battery temperature is uneven BattUnBalT"	The battery/heating and heat dissipation are unbalanced	Check whether the heating film is normal; Is it because the heat dissipation holes are clogged	
19	P181200	" Current sensor failure DiverterInvld"	Current sensor failure	Replace the current sensor	

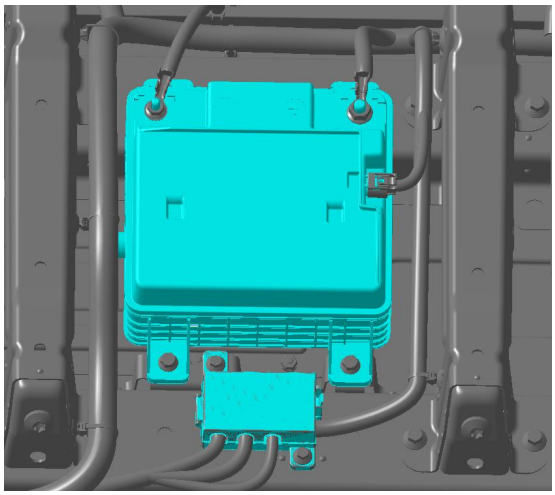
20	P181300	" Insulation fault InsulationFlt"	There is water ingress in the high-voltage Circuit/the gauge skin is damaged	Check the high-voltage Circuit	
21	P181400	" Severe insulation failure CritInsulationFlt"	There is water ingress in the high-voltage Circuit/the gauge skin is damaged	Check the high-voltage wiring harness	
23	P181500	" Abnormal temperature sensor SnsrTFlt"	Short-Circuit the temperature sensor to the power supply or ground	Check the battery pack temperature sensor	
25	P181600	" The insulation Detection system is abnormal InsulationSnsrFlt"	BMS Hardware failure	Replace BMS	
26	P181700	" High-voltage interlock BattHvilFlt"	The high-voltage connector is disconnected	Check the high-voltage connector	
27	P181800	" The heating contactor cannot close HeatRlyConnecttFlt"	The heating film relay is faulty	Replace the heating film relay	
28	P181900	" The heating contactor cannot be disconnected HeatRlyDisConnecttFlt"	The heating film relay is faulty	Replace the heating film relay	
29	P181A00	" Pre-charge timeout fault PrechgFlt"	The pre-charge relay is faulty	Replace the fault of the pre-charge relay	
30	P181B00	" The main and positive relays are stuck together MainRlyDisConnecttFlt"	The main positive relay is faulty	Replace the main positive relay fault	
31	P181C00	" The main and positive relay cannot close MainRlyConnecttFlt"	The main positive relay is faulty	Replace the main positive relay fault	
32	P181D00	" ChargingRolling faultChrgSlidFlt"	When Charging, the handbrake was not pulled up and the vehicle moved	Improper user operation	
33	U011000	"MCU message is lost MCUTiOutFlt"	CAN communication short Circuit or MCU Controller anomaly	Check the CAN communication line or replace the MCU controller	
34	U015500	"ICM message is lost ICMTiOutFlt"	CAN Short Circuit in communication or abnormality of the instrument	Check the CAN communication line or instrument	
35	U019600	"IHU message is lost IHUTiOutFlt"	Short Circuit in CAN communication or abnormality on the large screen	Check the CAN communication line or the large screen	
36	U029800	"DCDC message is lost DCDCTiOutFlt"	CAN Communication short Circuit or DCDC Abnormal	Check the CAN communication line or DCDC	
37	U110187	"EAC message is lost EACTiOutFlt"	Short Circuit in CAN communication or abnormal EAC	Check the CAN communication line or EAC	
38	U019B00	"OBC message is lost OBCTiOutFlt"	CAN Communication short Circuit or OBC Abnormal	Check the CAN communication line or OBC	
39	U014000	"BCM message is lost BCMTiOutFlt"	CAN Communication short Circuit or BCM Abnormal	Check the CAN communication line or BCM	
40	U010F00	"AC message is lost ACTiOutFlt"	CAN Communication short Circuit or AC Unusual	Check the CAN communication line or AC	
41	U110087	"LBMS message is lost LBMSTiOutFlt"	CAN Communication short Circuit or LBMS Abnormal	Check the CAN communication line or LBMS	
42	P181E00	" Thermal runaway fault BattThermRunaway"	Battery thermal runaway	Check the high-voltage wiring harness	

3.7.7 Disassembly and installation

3.7.7.1 Disassemble the battery pack assembly

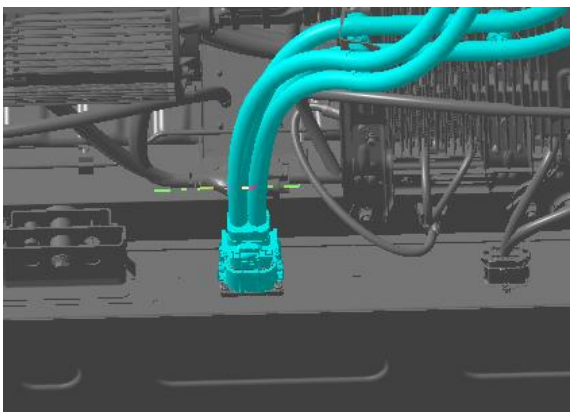
1.Remove the left front seat assembly. Refer to "Disassembly and Assembly Steps for the Left Front Seat Assembly".
Disassemble the right front seat assembly. Refer to "Disassembly and Assembly Steps for the Right Front Seat Assembly".
Disassemble the main body of the secondary instrument panel. Refer to "Steps for Disassembling and assembling the Sub-instrument Panel Body".
Disassemble the rear lower guard plate assemblies on both sides of the inner side panel.
Disassemble the front threshold guard plate assemblies on both sides inside the side panel.
Disassemble the assembly of the lower guard plates of the A-pillars on both sides of the side enclosure.
Disassemble the carpet assembly. Refer to "Carpet Assembly Disassembly and Assembly.".

2.Remove the battery. Refer to "Battery Disassembly and Assembly."



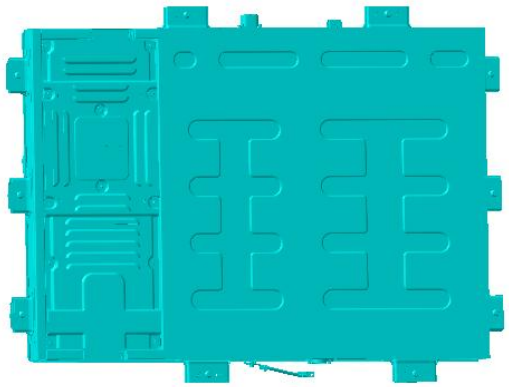
3.Remove the upper fixing bolts of the power battery.

After lifting the entire vehicle, push it into the trolley with a fixed battery pack..



4. Disconnect the low-voltage plug-in component of the power battery, the three-in-one assembly/motor controller assembly - the high-voltage plug-in component at the power battery end, and the Charging plug-in component to cut off the wire connecting the entire vehicle to the battery system assembly.

5. Remove the fixing bolts between the power battery and the entire vehicle, and move the battery system assembly to the operation platform.
Place the dedicated battery assembly disassembly support platform at the bottom of the vehicle body. Lower the lift slowly until it touches the bottom surface of the power battery assembly. Remove the eight bolts that fix the power battery pack. After slowly lifting the vehicle, the dedicated power battery assembly is removed from the lift station, and the support platform with the power battery pack is moved out. Remove the power battery pack.



Torque：70±5N.m

Installation:

Proceed in the reverse order of the disassembly steps.
Torque：70±5N.m

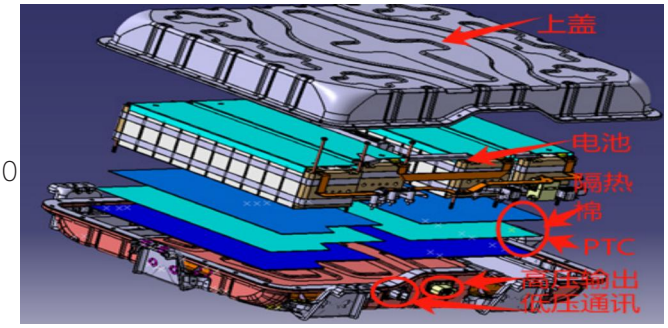
Warning:

- When performing operations, protective equipment must be worn to avoid the risk of electric shock.
- Before carrying out maintenance work, it is essential to ensure that the entire vehicle's Circuit has been disconnected to avoid personal injury.
- When replacing the battery assembly, do not shake the vehicle and do not operate the lift or hoist easily.

3.7.7.2 Disassemble the BMS controller

1. To disassemble the battery system assembly onto the working platform, refer to "Disassembling the Battery Pack Assembly".

2. Remove the box cover fixing bolts, a total of 36 M5*20 hexagonal flange bolts.



3. Disconnect the sampling line of the module connected to the BMS motherboard from the BMS iron wire.

4. Remove the fixing screws that secure the BMS motherboard. Replace the BMS motherboard.

Installation:
Proceed in the reverse order of the disassembly steps.

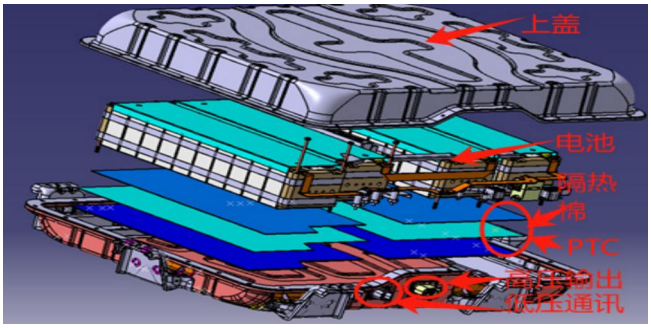
Torque：4~5Nm

Warning:

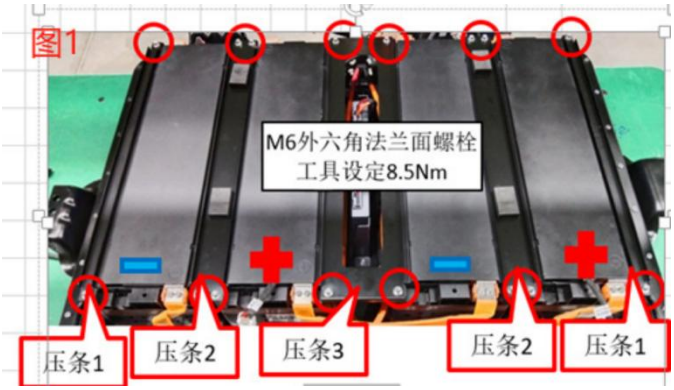
- Before starting the work, first make sure that the anti-tear label is intact.
- Do not pull the wiring harness during the disassembly process.

3.7.7.3 Disassemble the battery pack module

1. To disassemble the battery system assembly onto the working platform, refer to "Disassembling the Battery Pack Assembly".

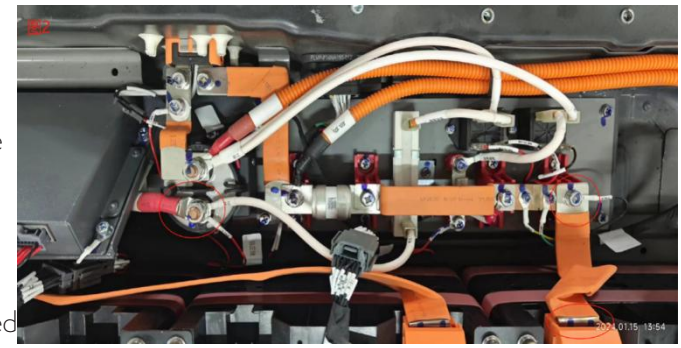


2. Remove the box cover fixing bolts, a total of 36 M5*20 hexagonal flange bolts.



3. First, disconnect the low-voltage control lines and module acquisition harnesses connected to the BMS mainboard within the red box.

4. Disconnect the main positive and main negative copper cords of the battery connected to the BDU assembly and ensure proper insulation protection.



5. Remove the module pressure strip connection pressure plate and 16 M6 hexagonal flange face nuts.

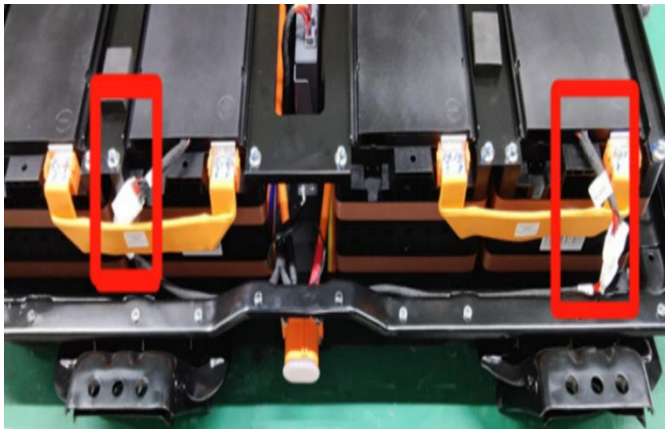
Torque： 8~9Nm.As shown in the red box in Figure 1.

6. Disconnect the module sampling line plug-in connected to the low-voltage control wiring harness.

7.Remove the insulation cover of the module.

8. Remove the overall positive and negative terminals, series connections, and copper soft connections of the module, and ensure proper insulation protection. Use M5*12mm stainless steel screws.

Torque：4.5Nm.



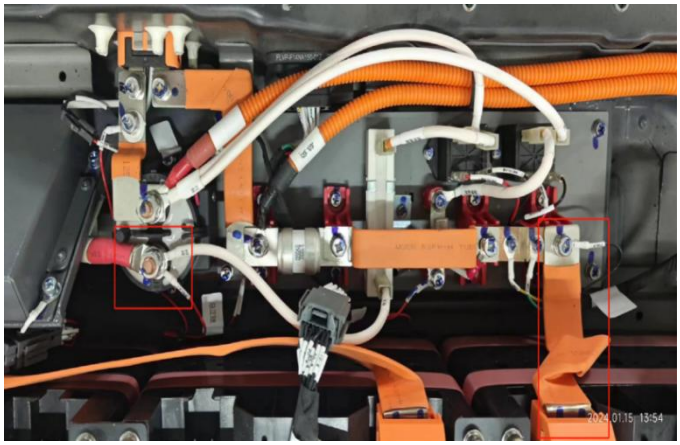
Installation:

Proceed in the reverse order of the disassembly steps.

Torque：4~5Nm

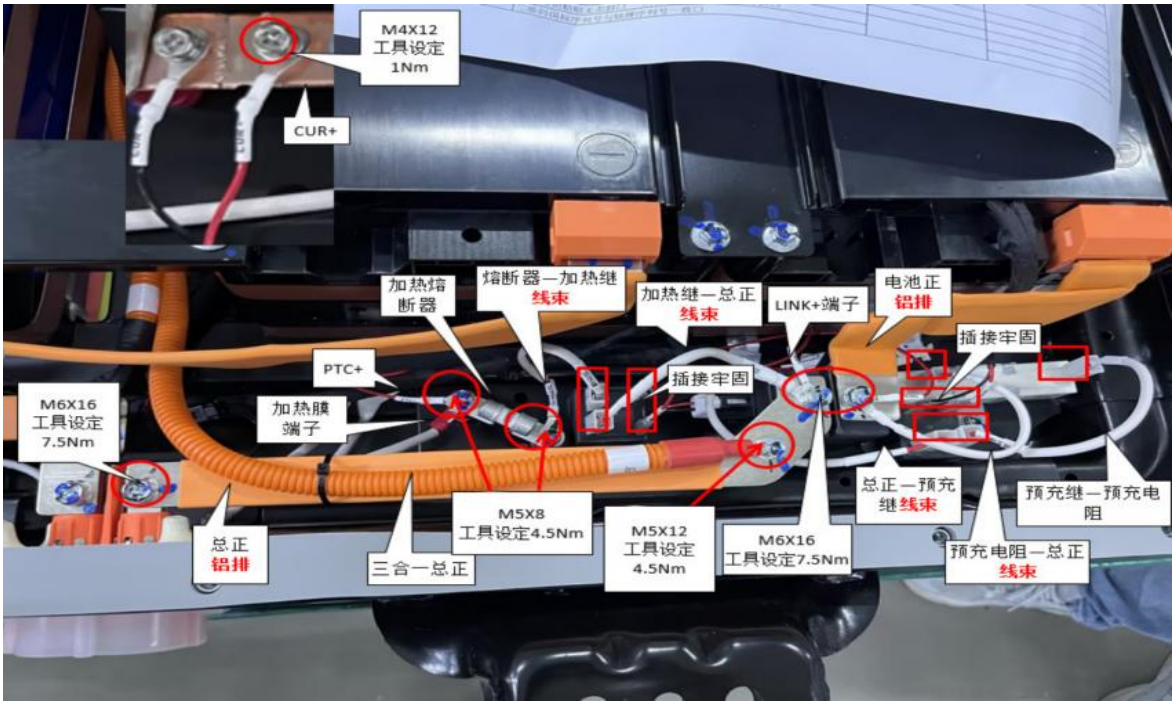
Warning:

- Before disassembling the module, first disconnect the connection between the BMS and the sampling harness.
- Confirm that the insulation protection of the tools is in place. Wear labor protection equipment correctly.
- After disassembling the copper flexible outputs of the total positive and total negative on the module, they should be wrapped and protected with insulating tape. The wrapping standard is that there should be no exposed metal.



3.7.7.4 Disassemble the electrical socket

1. To disassemble the battery system assembly onto the working platform, refer to "Disassembling the Battery Pack Assembly".



2. Remove the box cover fixing bolts, a total of 36 M5*20 hexagonal flange bolts.

3. Unplug the low-voltage communication control wiring harness and then disconnect the electrical connection terminals in sequence.

Torque:The disassembled electrical connection terminals need to be wrapped and protected with protective tape.

4. Place the disassembled copper bars and fasteners respectively in the designated material boxes.

5. Replace the new accessories, tighten the bolts, connectors and wire harness connectors.

Installation:

Proceed in the reverse order of the disassembly steps.
Torque： As shown in the right picture

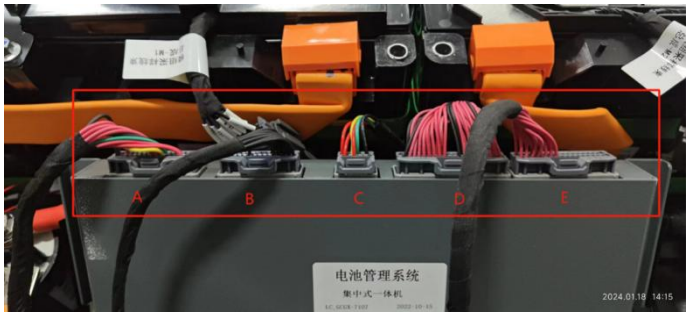
Warning:

- Before replacing the electrical appliances, first disconnect all
- the wiring harnesses connected to the BMS motherboard.
- After the electrical connection terminals are removed, they should be immediately wrapped with protective tape for protection. The wrapping standard is that there should be no exposed metal.
- All the fixing bolts of the disassembled parts for maintenance should be marked with a paint pen after the maintenance is completed

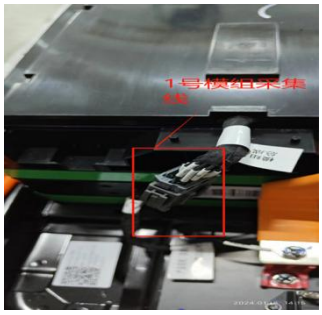
3.7.7.5 Disassemble the wiring harness

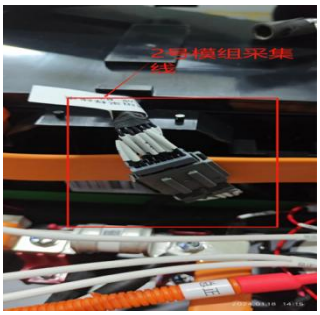
1. To disassemble the battery system assembly onto the working platform, refer to "Disassembling the Battery Pack Assembly".

2. Remove the box cover fixing bolts, a total of 36 M5*20 hexagonal flange bolts.

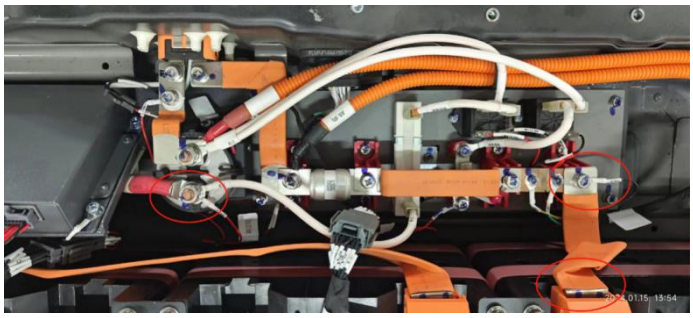


3. Disconnect the low-voltage control lines and module acquisition harnesses connected to the BMS assembly.



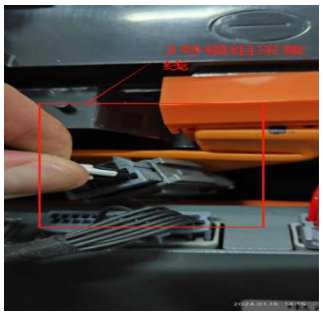


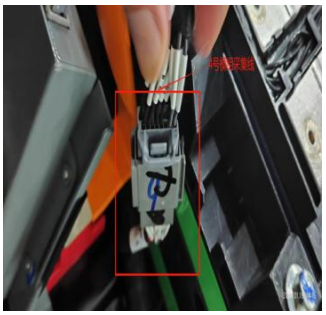
4. Disconnect the main positive and main negative copper plugs of the battery connected to the relay and take good insulation protection measures.



Installation:

Proceed in the reverse order of the disassembly steps.
Torque: As shown in the right picture





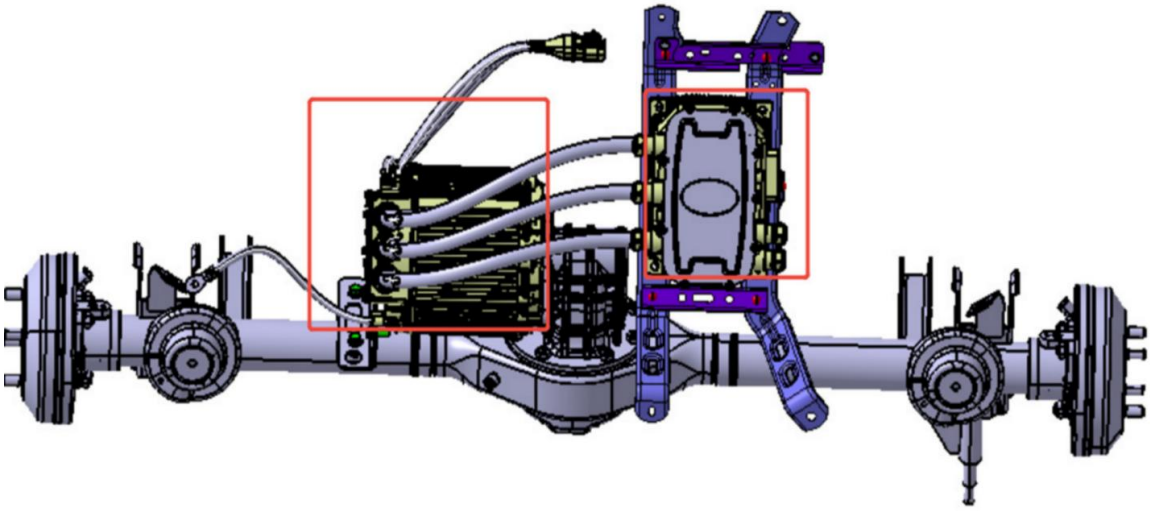
Warning:

- The modules are numbered 1# to 4# from left to right. The sampling line labels and the module end socket numbers must correspond one by one.
- Do not pull the wiring harness during the disassembly process.

3.8 Motor drive system

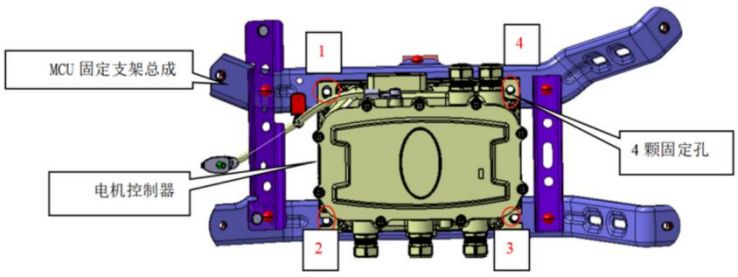
3.8.1 Component drawing

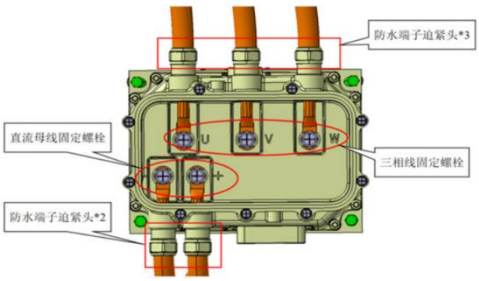
3.8.1.1 L6 Position diagram of the motor reducer assembly for vehicle models



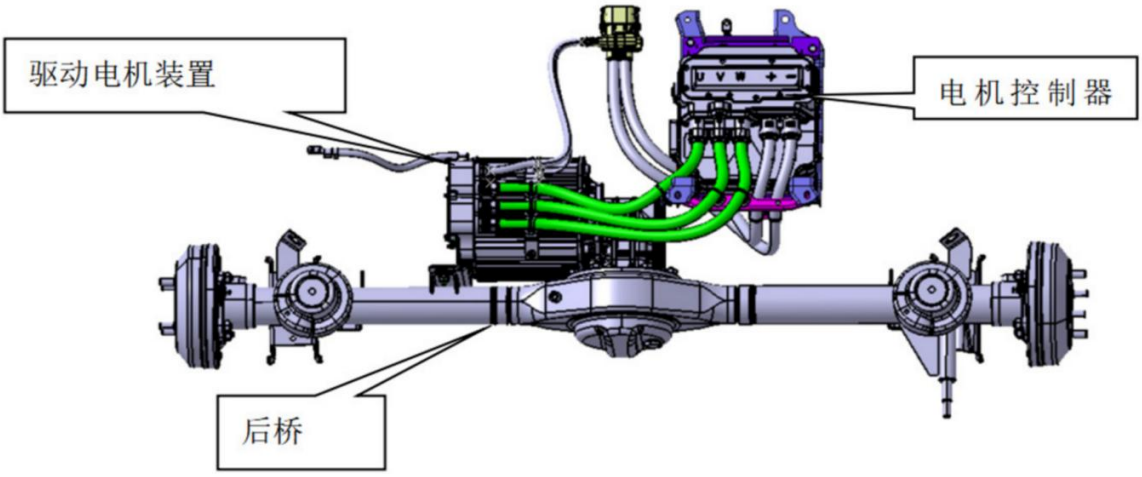
1. Drive motor controller 2. Drive motor

3.8.1.2 Location diagram of the drive motor controller components





3.8.1.3 L7 Component diagram of the motor drive system



3.8.2 Function description

The motor system is the core power component of an electric vehicle, consisting of a drive motor controller, a drive motor and related accessory systems. The vehicle converts the electrical energy of the power battery into mechanical energy to drive the vehicle through the motor system. Meanwhile, during the braking and coasting of the vehicle, the mechanical energy is converted into electrical energy through the motor system to charge the power battery.

❖ Motor control function

The L6 model drive motor controller (MCU) receives hard wire signals such as throttle and brake, intelligently analyzes the driver's intention and calculates the required Torque or speed of the motor for the entire vehicle. Then, it directly controls the drive motor to output the required Torque or speed for the entire vehicle, thereby achieving functions such as driving the vehicle and recovering braking energy.

The motor controller (MCU) of the L7 model receives instructions from the vehicle controller through CAN communication, controls the drive motor to output Torque or speed required by the vehicle, thereby achieving functions such as driving the vehicle and recovering braking energy. At the same time, the drive motor controller will monitor the working status of the drive motor system in real time and feed back the working status to the vehicle controller through CAN communication. When the drive motor system shows Abnormal conditions, the drive motor controller will quickly take fault protection actions

. The drive motor of this model adopts permanent magnet synchronous motor (PMSM). The drive motor is controlled by the MCU and can output forward and reverse Torque according to the vehicle's requirements (the vehicle's forward direction is forward).

❖ Vehicle fault protection

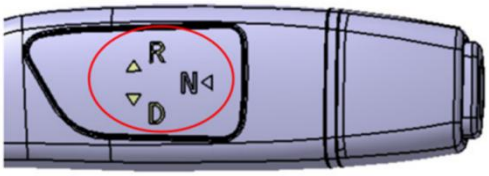
The MCU can diagnose in real time the fault status of the motor system, power supply system, battery system, braking system, accelerator pedal, gear shifting system, instrument panel, etc. When the entire vehicle shows Abnormal conditions, the MCU will quickly take fault protection actions.

❖ Analysis of Throttle Signal

The voltage value of the accelerator pedal 1 is between 1V and 4.1V, corresponding to an accelerator opening of 0 to 100%.

The voltage value for throttle opening 2 is between 0.5V and 2.05V, corresponding to a throttle opening of 0 to 100%.

❖ Gear identification



When shifting gears, two actions are required: first, apply the brake, and then shift gears. Otherwise, the shift action will not be responded to. However, if the vehicle speed is greater than 10km/h (TBD), you can shift gears directly to D without applying the brake. When applying the brake to shift gears, if the vehicle speed is too high, the shift is not allowed and the current gear is maintained. If the vehicle speed is too low and the shift conditions are not met, the N gear should be entered.

Gear identification	Gear shift switch 2	Gear shift switch 3	Gear shift switch 4	N Gear toggle switch	Remarks
R	×	×	√	×	
Init	×	√	×	×	By default, the initial position will be set after shifting gears
D	√	×	×	×	

❖ Driving mode

Gear position	Drive mode	Recycling mode
"D gear"	Normal	There is recycling.
R gear	Normal	No recycling

❖ Driving control

After the vehicle is Ready, shift gears to D/R, do not step on the accelerator or brake, release the handbrake, and the vehicle can crawl.

When you step on the accelerator, the vehicle can drive normally.

When the vehicle speed exceeds 10km/h and the power battery allows Charging, the vehicle can be recycled after the brake is applied or the accelerator is released.

❖ Ready control

After the entire vehicle is subjected to high voltage, press the brake and KeyStart, and the vehicle can be Ready, or press the brake and keystart, and the vehicle can be Ready within 5 seconds.
If in the Ready state, after KeyOff, the MCU will exit Ready.
If in the Ready state, when the gun is inserted, Charging can be carried out directly and it will automatically enter Ready.
In Charging mode, it is impossible to get Ready.

❖ Driving mode control

The drive motor of this model adopts permanent magnet synchronous motor (PMSM). The drive motor is controlled by the MCU and can output forward and reverse Torque according to the vehicle's requirements (the vehicle's forward direction is forward).
When the vehicle moves forward, positive Torque is the driving force and negative Torque is the feedback.
When the vehicle is reversing, negative Torque is the driving force, and positive Torque is the feedback (there is no feedback when reversing).

❖ Introduction to Drive Motors

The drive motor of this model adopts permanent magnet synchronous motor (PMSM). The drive motor is controlled by the MCU and can output forward and reverse Torque according to the vehicle's requirements (the vehicle's forward direction is forward).

3.8.3 Maintenance Precautions

3.8.3.1 Warnings and Precautions

Warning:

- During the maintenance process, if the operation is not carried out in accordance with the correct procedures, it may lead to serious accidents such as damage to the power battery or electric shock.
- Mistakes during the maintenance process may lead to serious accidents.
- Before carrying out maintenance (including disassembling, assembling, inspecting or replacing parts, etc.), be sure to read the following instructions carefully and operate in accordance with the correct procedures stipulated in the maintenance manual.
- For the maintenance personnel of Linktour vehicles, they must undergo professional training, be familiar with electrical safety knowledge and first aid methods for electric shock, and have a high sense of safety.
- When maintaining high-voltage components, operators must hold relevant qualification certificates to operate.
- Strictly abide by the relevant national laws and regulations on high-voltage system operations.
- When conducting vehicle maintenance, strictly follow the relevant maintenance operation standards of Linktour Automobile Co., Ltd. and set up relevant warning signs.

3.8.3.2 Maintenance Precautions

1. The maintenance of the vehicle's high-voltage system can only be carried out by professionals who have been certified for high-voltage system maintenance. Except for operations such as diagnosis using a diagnostic instrument that must be powered on, All other maintenance and disassembly and inspection operations related to high-voltage systems must be carried out before the standard high-voltage power-off operation (turning off the ignition switch, disconnecting the 12V power supply, disconnecting the high-voltage busbar cable and conducting a voltage test before insulation treatment) is performed. Moreover, during the standard high-voltage power-off operation, insulating labor protection and insulating maintenance tools must be used.

2. When plugging or unplugging high and low voltage plug-ins, be sure to follow the self-locking structure sequence of the plug-ins. Do not forcibly plug or unplug to avoid damaging the plug-ins.

3. The disassembly and assembly of high-voltage components must be carried out in accordance with standard procedures and using dedicated tools to prevent falling accidents during maintenance.

4. There are "warning signs" at both high-voltage and high-temperature areas of the vehicle body. Operate strictly in accordance with the requirements indicated!

5. Before conducting vehicle maintenance, the power-off procedure must be followed first, and safety protective equipment must be worn before operation!

6. When washing the car, do not spray the high-pressure water gun at the Charging port to avoid water entering the Charging port and the risk of electric shock!

7. Use the designated Charging socket and Charging cable. Do not choose Charging devices by yourself!

8. When extinguishing fires in vehicles, the "water pouring method" is strictly prohibited. Use "dry powder" fire extinguishers instead!

9. When maintaining a vehicle, do not operate when the vehicle body is wet or wet!

10. When disassembling and assembling the vehicle, do not operate the positive and negative poles simultaneously!

11. Do not connect the positive and negative poles. Avoid the positive or negative poles being connected to the ground through the human body!

12. The interfaces of the disassembled high-voltage lines should be insulated!

13. Do not touch the connectors of the electronic control parts of the high-voltage components unless necessary to prevent electric shock and damage!

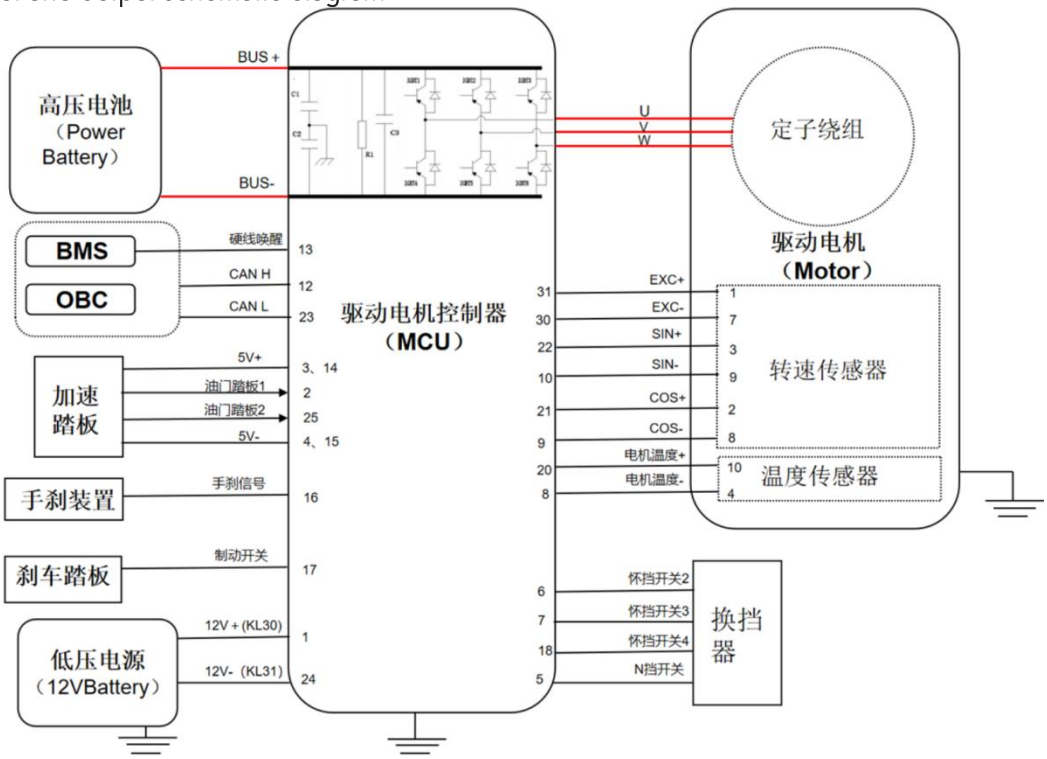
14. Use the specialized tools approved by Linktour Automobile Co., Ltd. for the maintenance operation of high-voltage electric vehicle models!

15. Two-person operation, with one person supervising and the other operating!

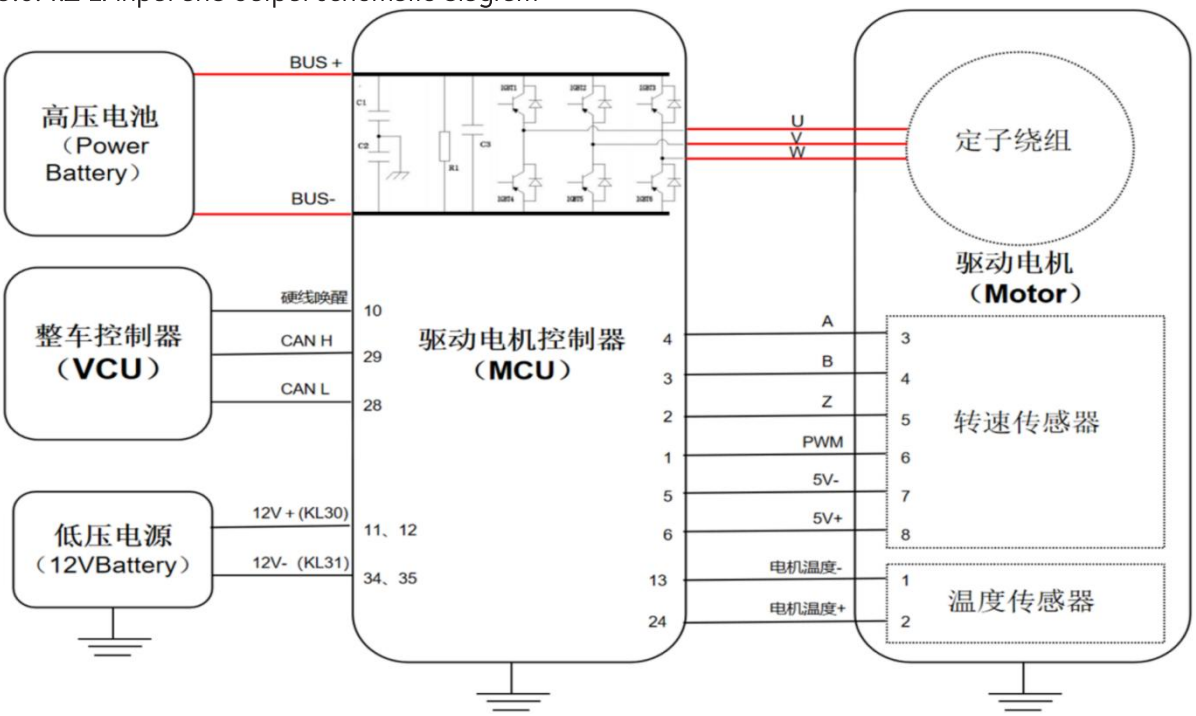
16. During the maintenance process, ensure that no other personnel make mistakes that could cause high voltage to be applied to the entire vehicle, including turning the key and connecting the negative terminal of the 12V battery.

3.8.4The working principle of the system

3.8.4.1 L6Input and output schematic diagram



3.8.4.2 L7input and output schematic diagram



3.8.5 Information on electrical connectors

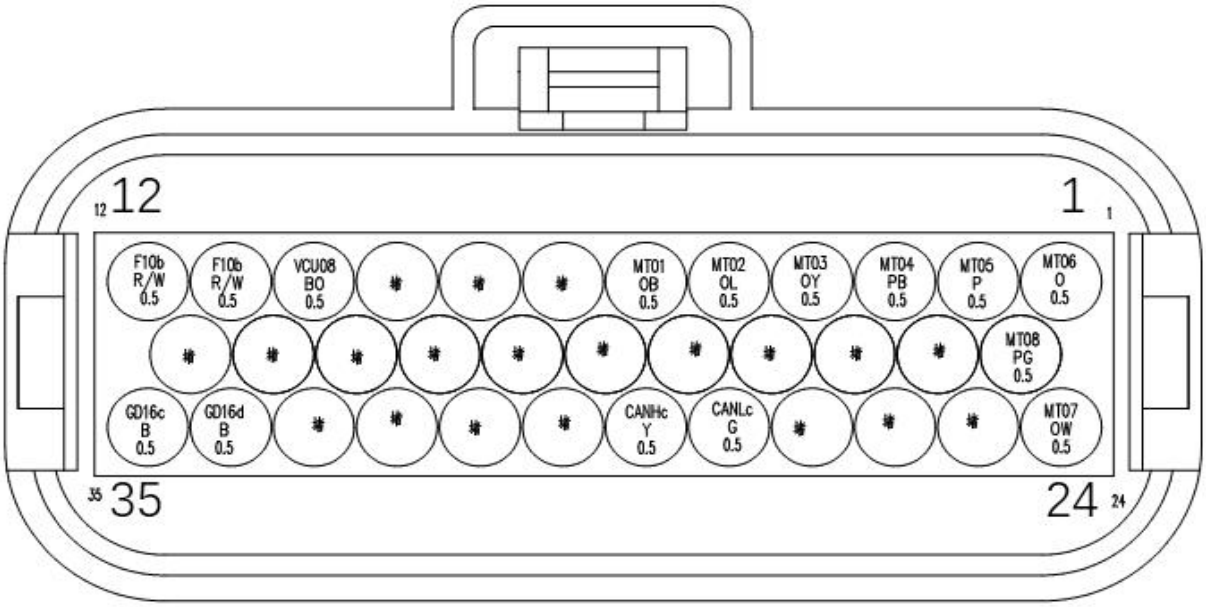
3.8.5.1 MCU-Motor controller（L6)

Pin number	Pin definition	Line color	Wire diameter（mm)
1	Positive input of 12V power supply	RW	0.5
2	Accelerator pedal signal 1	YW	0.5
3	5V power supply for accelerator pedal	O	0.5
4	Ground for accelerator pedal signal	WV	0.5
5	Neutral gear signal (L7) of the rotary shift selector switch	BL	0.5
6	Rotary shift selector switch terminal 2	W	0.5
7	Rotary shift selector switch terminal 3	BW	0.5
8	Negative terminal of motor temperature	PB	0.5
9	Negative terminal of cosine signal	PG	0.5
10	Negative terminal of sine signal	PG	0.5
11	-	-	-
12	CANH	Y	0.5
13	ON-position wake-up signal / MCU wake-up signal (high level)	Y	0.5
14	5V power supply for accelerator pedal	L	0.5
15	Ground for accelerator pedal signal	W	0.5
16	Handbrake signal	BW	0.5
17	Foot brake switch signal input / active high / applicable to both high and low configurations of L6	RY	0.5
18	Rotary shift selector switch terminal 4	GY	0.5
19	-	-	-
20	Motor temperature positive terminal	0	0.5
21	Cosine signal positive terminal	OL	0.5
22	Sine signal positive terminal	OY	0.5
23	CANL	G	0.5
24	Power supply ground	B	0.5
25	Accelerator pedal signal 2	P	0.5
26-29		-	-
30	Excitation coil negative terminal	OW	0.5
31	Excitation coil positive terminal	OB	0.5
32-35	-	-	-

Technical parameters of the motor system assembly			
Parameter item	Unit	Specification index	Remarks
Rated voltage	VDC	96	/
Operating voltage range	VDC	63 ~ 108	/
Operating ambient temperature of the assembly	℃	-40 ~ 55	/
Maximum system efficiency	/	≥ 93%	/
Technical parameters of the drive motor			
Parameter item	Unit	Specification index	note
Motor type	/	Permanent magnet synchronous motor	/
Continuous power	kW	6	/
Peak power @ duration time	kW@s	12@30	/
Continuous torque	N．m	16	/
Peak torque @ duration time	N.m@s	65@30	/
Rated rotational speed	r/min	3500	/
Maximum rotational speed	r/min	6000	/
Maximum efficiency	/	≥ 95%	/
Cooling method	/	Natural air cooling	/
Insulation class	/	H	/
Protection class (or IP rating, if referring to the Ingress Protection standard)	/	IP67	/
Motor weight	kg	16	/
Speed/position sensor	/	Rotary transformer	/
Temperature sensor	/	PT1000	/
Motor winding connection method	/	Y	/

Technical parameters of motor controller				
Serial number	Parameter item	Unit	Specification index	Remarks
1	Rated voltage (battery voltage)	VDC	96	/
2	Operating voltage range	VDC	63 ~ 108	/
3	Continuous operating current	Arms	55	/
4	Peak operating current	Arms@s	190@30	/
5	Cooling method	/	Natural air cooling	/
6	Protection class (or IP rating)	/	IP67	/
7	Weight of electronic control unit	kg	4	/
8	Maximum efficiency	/	≥ 98%	/
9	CAN terminal resistance	/	No terminal resistance	/
10	Low-voltage platform	VDC	12	/
11	Operating voltage range for low-voltage system	VDC	9 ~ 16	/

3.8.5.2 MCU-Motor controller（L7)



Pin number	Pin definition	Line color	Wire diameter（mm)
1	1. PWM signal	O	0.5
2	2. Z signal	P	0.5
3	3. B signal	PB	0.5
4	4. A signal	GO	0.5
5	5. ABZ sensor power ground / VSS	OL	0.5
6	6. PWM signal	OB	0.5
7-9	-	-	-
10	1. Motor temperature negative terminal	BN	0.5
11	KL30	RW	0.5
12	KL30	RW	0.5
13	Motor temperature negative	PG	0.5
14-23	-	-	-
24	The motor temperature is positive.	OW	0.5
25-27	-	-	-
28	CANL	G	0.5
29	CANH	Y	0.5
30-33	-	-	-
34	Power supply ground	B	0.5
35	Power supply ground	B	0.5

Technical parameters of the motor system assembly			
Parameter item	Unit	Specification index	Remarks
1. Rated voltage	VDC	96	/
2. Operating voltage range	VDC	63 ~ 108	/
3. Operating ambient temperature of the assembly	℃	-40 ~ 55	/
4. Maximum system efficiency	/	≥ 93%	/
Technical parameters of the drive motor			

Parameter item	Unit	Specification index	Remarks
5. Motor type	/	Permanent magnet synchronous motor	/
Continuous power	kW	10	/
Peak power @ duration	kW@s	23@30	/
Continuous torque	N . m	28	/
Peak torque @ duration	N.m@s	110@30	/
Rated rotational speed	r/min	3500	/
Maximum rotational speed	r/min	7500	/
Maximum efficiency	/	≥ 95%	/
Cooling method	/	Natural air cooling	/
Insulation class	/	H	/
Protection class (or IP rating)	/	IP67	/
Motor weight	kg	19.6	/
Speed/position sensor	/	ABZ encoder	/
Temperature sensor	/	NTC	100kΩ@25℃
Motor winding connection method	/	Y	/

Technical parameters of motor controller			
Parameter item	Unit	Specification index	Remarks
6. Rated voltage (battery voltage)	VDC	96	/
7. Operating voltage range	VDC	63 ~ 108	/
8. Continuous operating current	Arms	120	/
9. Peak operating current	Arms@s	390@30	/
10. Cooling method	/	Natural air cooling	/
11. Protection grade (or IP rating, depending on the specific standard being referenced)	/	IP67	/
12. Weight of the electronic control unit (or motor controller, depending on context)	kg	4	/
13. Maximum efficiency	/	≥ 98%	/
14. CAN terminal resistance	/	No terminal resistance	/
15. Low-voltage platform	VDC	12	/

3.8.6Fault code

3.8.6.1 L6 DTC fault code for the electric drive system

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
1	P160000	"MCU Phase Current Software Over current Fault (With U/V/W Over current diagnostics available, this fault item is unnecessary)"	The phase current of the motor controller exceeds 450A (motor peak current) and persists for three consecutive PWM cycles.	"1. Turn off the switches or enter ASC mode, with fault latching (confirm the controller ASC function test in C15). ASC Explanation: By default, the lower bridge executes ASC. When there is a drive fault in the lower bridge, the upper bridge executes ASC. The same applies hereafter."	Power down, enter sleep mode, restart, and ensure that the fault trigger conditions are not met.
2	P160500	MCU Phase Current Hardware Over current Fault	The phase current of the motor controller exceeds 666A (motor peak current), triggered by hardware.	The MCU turns off the switches or enters ASC mode, with fault latching.	Power down, enter sleep mode, restart, and ensure that the fault trigger conditions are not met.
3	P160600	VCE Short-Circuit Over current (Desat Protection))	The input voltage at the Desat port of the drive chip exceeds xxV (9V), and the fault pin level of the drive IC is low.	The MCU turns off the switches or enters ASC mode, with fault latching.	Power down, enter sleep mode, restart, and ensure that the fault trigger conditions are not met.
4	P160700	Controller Overload Protection (Protects DC-LINK and Busbars)	"1. Triggered when output current exceeds 1.5× rated current (276A) for 3600 seconds; 2. Triggered when output current exceeds 1.7× rated current (313A) for 540 seconds; 3. Triggered when output current exceeds 1.9× rated current (350A) for 120 seconds; 4. Triggered when output current exceeds 2.0× rated current (367A) for 60 seconds; 5. Triggered when output current exceeds 2.15× rated current (395A) for 5 seconds." The MCU reduces torque and its upper limit to 50% of the rated characteristic torque at a rate of 500 N.m/s; "	The MCU reduces torque and its upper limit to 50% of the rated characteristic torque at a rate of 500 N.m/s.	When output current drops below 1.2× rated current, the torque upper limit increases to 100% of the rated characteristic torque at a rate of 500 N.m/s, and the fault is recovered.
5	P160800	Operation Phase Loss Protection	"(1) Not in hill-holding mode, with rotational speed greater than 100 rpm, the ratio of the maximum to minimum phase current RMS values exceeds 8, and one phase current is less than 10A;	The MCU shuts down the switches or enters ASC mode, with fault latching.	Power down, enter sleep mode, restart, and ensure that the fault trigger conditions are not met.

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
			(2) Phase current is less than 10A, phase voltage is greater than 80% of the bus voltage, rotational speed is less than 100 rpm, and the system is in operation; Either condition (1) or (2) is satisfied."		
6	P160900	Stall Protection	"(1) Rotational speed is less than 100 rpm; (2) The absolute value of the MCU output torque exceeds 90% of the peak torque, lasting for a duration of ≥5 seconds. Both conditions (1) and (2) must be met."	The MCU reduces the torque and its upper limit to 30% of the rated characteristic torque (corresponding to 19 Nm) at a rate of 100 N.m/s.	"1. Automatic recovery occurs immediately when the motor speed exceeds 200 rpm. 2. Automatic recovery also occurs if the executed torque is less than or equal to the rated torque of 16 Nm for a duration of 5 seconds. Recovery is triggered when either condition 1 or 2 is satisfied."
7	P161600	"V-Phase Current Sampling Over limit Fault"	"1. The AD value of U-phase current sampling exceeds 3047. 2. The AD value of U-phase current sampling is less than 1047. Either condition (1) or (2) is satisfied."	MCU shutdown or ASC, fault lock	After power-off and hibernation restart, the fault trigger conditions are not met
8	P161800	V-Phase Current Sensor Zero Offset Fault	When the IG BTs are in the off state, 200 samples of V-phase current are taken, and the average value is calculated for offset diagnosis. A zero offset of the V-phase current sensor ≥ the threshold (10A) is detected.	MCU shutdown or ASC, fault lock	After power-off and hibernation restart, the fault trigger conditions are not met
9	P161900	"W-Phase Current Sampling Over limit Fault"	"1. The AD value of W-phase current sampling exceeds 3047. 2. The AD value of W-phase current sampling is less than 1047. Either condition (1) or (2) is satisfied."	MCU shutdown or ASC, fault lock	After power-off and hibernation restart, the fault trigger conditions are not met
10	P162100	"W-Phase Current Sensor Offset Fault"	When the IGBTs are in the off state, 200 samples of W-phase current are taken, and the average value is calculated for offset diagnosis. A zero offset of the W-phase current sensor ≥ the threshold (10A) is detected.	MCU shutdown or ASC, fault lock	After power-off and hibernation restart, the fault trigger conditions are not met
11	U007300	BusOff Fault	When the cumulative value of the CAN controller's Transmission Error Counter (TEC) exceeds 255, the MCU enters the Bus Off state,	The MCU reduces torque and its upper limit to 0 N.m at a rate of 2 N.m/ms.	The Bus Off counter is cleared and the fault is recovered (converted to a historical fault)

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
			and the BusOff_Counter increments by 1. When the BusOff_Counter reaches or exceeds 5, a BusOff fault is reported.When the BusOff_Counter is less than or equal to 5, the ECU performs a fast recovery by resetting every 100ms.When the BusOff_Counter reaches 6, the ECU performs a slow recovery by resetting every 1000ms, and the BusOff_Counter remains at a constant value of 6 until the BusOff fault recovery counter is cleared."		when the MCU successfully sends a frame of message.
12	U250082	CAN AliveCounter Abnormal Fault	The AliveCounter in the BMS message (0x13E) fails to update for 10 consecutive frames, with a reset of the fault counter upon a Normal condition.	Within 10 cycles of AliveCounter abnormality, the MCU maintains the torque output at the last VCU target torque value during the Normal condition. If the AliveCounter abnormality persists after 10 cycles, the MCU reduces torque and its upper limit at a step size of 2 N.m/ms until they reach 0 N.m.	The fault recovers automatically when the AliveCounter in the VCU critical message is detected to be incrementing sequentially within the range of 0~15.
13	U240081	CAN CheckSum Validation Error Fault	The Checksum in the BMS message (0x13E) fails validation 10 consecutive times, with a reset of the fault counter upon a Normal condition.	Within 10 cycles of checksum validation errors, the MCU maintains the torque output at the last VCU target torque value during the Normal condition. If checksum abnormalities persist after 10 cycles, the MCU reduces torque and its upper limit at a step size of 2 N.m/ms until they reach 0 N.m.	The fault recovers automatically when the Checksum in the VCU critical message is validated correctly.
14	B111716	KL30 Power Supply under voltage Fault	"Condition (1): When the MCU is in the off state, the KL30 power supply voltage is ≤ 8V for a duration of 1000ms. Condition (2): When the MCU is in the on state, the KL30 power supply	The MCU turns off the switches or enters ASC mode, with self-recovery capability.	The fault recovers when the KL30 power supply voltage is ≥ 9V.

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
			voltage is ≤ 8V for a duration of 20ms. Either condition (1) or (2) is satisfied."		
15	B111717	KL30 Power supply Overvoltage Fault	The KL30 power supply voltage is ≥ 18V.	The MCU turns off the switches or enters ASC mode, with self-recovery capability.	The fault recovers when the KL30 power supply voltage is < 17V (recovery threshold).
16	P162500	Fault in the bus voltage sampling Circuit	" The sampled value of the bus voltage is greater than the effective upper limit of 250V (The sampling Circuit is short-Circuited to the VCC)"	MCU shutdown or ASC, fault lock	After power-off and hibernation restart, the fault trigger conditions are not met
17	P162700	The software detects overvoltage faults on the busbar	The bus voltage is detected to be ≥ 135V	MCU shutdown or ASC, fault lock	The bus voltage was detected to be less than 125V
18	P162800	Busbar overvoltage alarm	It was detected that 125V ≤ bus voltage <135V	"125-135V linear Torque reduction characteristic, corresponding to (100% - 0%) : After a fault is triggered, the maximum allowable output Torque = external characteristic Torque × [1- (V current -125)] "/10) 】	The bus voltage is detected to be less than 120V
19	P162900	Busbar under-voltage fault	The bus voltage value was detected< 55V	When the MCU is turned off or the ASC is inserted, it can self-recover	The bus voltage is detected to be ≥ 60V
20	P163000	" Busbar under-voltage alarm "	The bus voltage value was detected<60V	Linear external characteristic Torque of 60~55V, corresponding to (100%~0%) : After a fault is triggered, the maximum allowable output Torque = external characteristic Torque × [1- (current 60 -V) /20)].	The bus voltage is detected to be ≥ 65V
21	P163100	Open Circuit fault of the motor winding temperature sensor in	"The AD sampling value of the motor temperature in Channel 1 is ≤ the AD value 900 when the sensor is short-Circuited"	The upper limit of MCU Torque is reduced by a slope of 100 n.m /s to 30% external characteristic Torque.	" The AD sampling value of the motor temperature in Channel 1 is ≤ 3810

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
		Channel 1			(recovery threshold)"
22	P163200	Short Circuit fault of the motor winding temperature sensor in Channel 1	The AD sampling value of the motor temperature in Channel 1 is greater than or equal to the AD value 3900 when the sensor is open-Circuited		"The AD sampling value of the motor temperature in Channel 1 is ≥ 990 (recovery threshold)"
23	P163500	Motor Winding Over-Temperature Fault	If the temperature of any motor winding exceeds 150°C:	"If the temperature of any motor winding exceeds 150°C: "	Automatic recovery occurs when the temperatures of both motor windings drop to ≤ 135°C.
24	P163600	Motor Winding Over-Temperature Warning	If the temperature of any motor winding exceeds 135°C:	The MCU linearly derates the torque limit from 100% to 0% of the rated characteristic torque..	Automatic recovery occurs when the temperatures of both motor windings drop to ≤ 130°C.
25	P163900	Controller NTC Temperature Sensor Fault	All controller NTC sampling signals exceed the valid range (< -50°C or > 120°C).	The MCU reduces the torque limit to 30% of the rated characteristic torque at a rate of 100 N.m/s.	Recovery occurs when all three controller NTC sampling temperatures are within the valid range (-40°C to 145°C; threshold to be confirmed).
26	P164000	Controller NTC High-Temperature Warning	Any controller NTC sampling temperature ≥ 80°C.	MCU Response (80°C–90°C): The MCU linearly derates the torque limit from 100% to 0% of the rated characteristic torque.	The sampling temperature values of the three NTC channels of the controller are all ≤ 75℃
27	P164100	Fault of excessively high sampling temperature of the controller NTC	The NTC sampling temperature of any one controller is ≥ 90℃	" Higher than switch speed: MCU 0 Torque output; Less than or equal to the turn-off speed: MCU turn-off"	The sampling temperature values of the three NTC channels of the controller are all ≤ 80℃
28	P164400	An alarm is triggered when the motor speed is too high	"(1) The speed of the drive motor in D gear is ≥ 6500rpm; (2) The speed of the R gear drive motor is ≤ -6500 RPM. Satisfy (1) or (2) "	"The maximum electric torque of the MCU drops to 0 n.m at a skew rate of 100 n.m /s. Maximum power generation Torque Unlimited system (maintain external characteristics.) "	| Drive motor speed < 6000rpm
29	P164500	Motor overspeed fault;	| Drive motor speed: ≥ 7000rpm	" The MCU first executes the ASC. When the motor speed is ≤ 7000rpm (can be marked), it performs the	| Drive motor speed | ≤ 6500rpm

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
				turn-off. Self-recoverable "	
30	P164700	Abnormal rotation fault	Hard decoding detects the LOT, and the DOS signal takes effect	" When the MCU executes the ASC, a fault triggers a timing of 60 seconds or a low level of KL15, the ASC exits and enters the shutdown mode Note: If both the internal MCU and the message reporting speed are 0, the fault will be locked "	The MCU wakes up to power off (associated with the falling edge of the hard wire signal), performs fault recovery operations, and the fault trigger conditions are not sufficient
31	P166900	The active discharge has exceeded the time limit and malfunctioned	In the active discharge state, after the MCU performs active discharge for 3 seconds, the bus voltage is greater than 36V.	Report the DTC and flag bit, and there is no internal output capacity limit	After power-off and hibernation restart, the fault trigger conditions are not met
32	P167200	EEPROM Error	"(1) If the continuous read time of the EEPROM is greater than 1000ms, it is unsuccessful. (2) If the continuous write time of the EPROM is greater than 1000ms, it is unsuccessful. Satisfy (1) OR (2 Failure of write, read, and erase operations during initialization or power-on storage procedures due to hardware failures. "	Report the DTC and flag bit, and there is no internal output capacity limit	Power off, sleep, restart, and perform write, read, and erase operations normally
33	P170100	The accelerator pedal opening signal 1 has exceeded the upper limit	Accelerator pedal 1 voltage > 4.8V (corresponding to 2.4V for MCU sampling)	Report the DTC and flag bit, and there is no internal output capacity limit	The voltage of accelerator pedal 1 is ≤ 4.8V
34	P170200	The accelerator pedal opening signal 1 exceeds the lower limit	The voltage of accelerator pedal 1 is less than 0.5V (corresponding to 0.25V for MCU sampling).	Report the DTC and flag bit, and there is no internal output capacity limit	Voltage of accelerator pedal 1≥ 0.5V
35	P170300	The accelerator pedal opening signal 2 has exceeded the upper limit	The voltage of accelerator pedal 2 is greater than 2.5V (corresponding to 1.25V for MCU sampling).	Report the DTC and flag bit, and there is no internal output capacity limit	The voltage of accelerator pedal 1 is ≤ 2.5V
36	P170400	The accelerator pedal opening signal 2 exceeds the	The voltage of accelerator pedal 1 is less than 0.2V (corresponding to 0.1V for MCU sampling)	Report the DTC and flag bit, and there is no internal output capacity limit	The voltage of accelerator pedal 1 is ≥ 0.15V

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
		lower limit			
37	P170500	The ratio of the two accelerator pedals exceeded the limit	Accelerator pedal 1 voltage /2-Accelerator Pedal 2 > 0.12V	Report the DTC and flag bit, and there is no internal output capacity limit	Accelerator pedal 1 voltage /2-Accelerator Pedal 2 ≤ 0.2V
38	P170600	Both accelerator pedals are faulty	"1. The throttle pedal 1 has exceeded the upper limit 2. The throttle pedal 1 exceeds the lower limit 3. The throttle pedal 2 has exceeded the upper limit 4. The throttle pedal 2 exceeds the lower limit Satisfy (1/2) && (3/4)"	Report DTC and flag position, limping, limit power and speed	"1. Accelerator pedal 1 exceeds the upper limit. 2. Accelerator pedal 1 exceeds the lower limit 3. The throttle pedal 2 exceeds the upper limit 4. Overpress the accelerator pedal 2 limit Not satisfied (1/2) && (3/4)"
39	P170700	Low brake fluid level	"1. When the motor speed is less than 200rpm, the ICM sends a low brake level, and the confirmation time is 1 second 2. The motor speed is ≥ 200 RPM. The ICM transmission brake liquid level is low, and the confirmation time is 10 seconds Satisfy 1"	Report DTC and flag position, limping, limit power and speed	"1. Motor speed At less than 200rpm, the ICM did not send the brake level, and the confirmed time was 1 second 2. Motor speed ≥ 200rpm, ICM does not send the brake level is low, and the confirmed time is 10 seconds Satisfy 1:2"
40	U011100	BMS Lost communication	"The BMS message (0x13C, 0x13E, 0x13F) was persistently lost for 300ms Note: When the 28/85 communication ban/DTC ban command is received, the MCU application layer also needs to stop diagnosing communication faults "	The MCU selects to execute turn-off and ASC based on the rotational speed, and it can self-recover	After power-off and hibernation restart, the fault trigger conditions are not met
41	U015500	ICM Lost communication	The 0x508 (ICM1) message was not received	Report DTC and flag position, limping, limit power and speed	Received the 0x508 (ICM1) message
42	P170800	Gear Fault	The Gear shift switch combination does not satisfy the truth table combination	" Report the DTC and flag bit, and clear 0 with Torque. The MCU will execute ASC or turn off the transistor based on the rotational speed. The fault can be self-	The Gear shift switch combination satisfies the initial state arrangement

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
				recovered. If the transistor is not turned on, it is not allowed to be turned on"	

3.8.6.2 L7 DTC fault code for the electric drive system

Serial number	DTC Display code	DTCMeaning	Mature conditions for faults	System performance	Conditions for fault resolution
1	P160200	Hardware V-phase overcurrent	" Zero drift fault of no V-phase current sensor; Phase V current ≥ 700A, t ≥ 0.1ms"	MCU shutdown or ASC, fault lock, Record DTC	Power off, sleep and restart
2	P160300	Hardware W-phase overcurrent	Refer to the hardware V-phase overcurrent	Refer to the hardware V-phase overcurrent	"Support the U-DS order to be cleared; Clear after 40 driving cycles
3	P160600	Hardware sealing tube failure	Refer to the hardware V-phase overcurrent、Hardware busbar overvoltage	Refer to the hardware V-phase overcurrent、Hardware busbar overvoltage	"Support the U-DS order to be cleared; Clear after 40 driving cycles
4	P160700	The software phase current is overcurrent	Refer to the hardware V-phase overcurrent	Refer to the hardware V-phase overcurrent	"Support the U-DS order to be cleared; Clear after 40 driving cycles
5	P160800	Phase loss protection during operation	"1.The three-phase lines of the motor are open-Circuited and have poor contact 2. Winding and short Circuit of the casing 3. Abnormal drive Circuit "	"1.1. Check whether the AC cable is securely installed or replace it. 2. Check if the motor is disconnected and measure the insulation resistance. 3. Replace the controller"	"Support the U-DS order to be cleared; Clear after 40 driving cycles
6	P160900	Rotor blocking protection	"1.The external transmission system is stuck, causing the motor to operate innormally. 2. Mechanical failure of the motor rotor and stator leads to significant friction between the two or the rotor gets stuck after sweeping the chamber. 3. The initial zero Angle of the motor is incorrect or the ABZ wiring is abnormal "	"1 Collect data to confirm the process of the occurrence of the obstruction. 2. Try to use a tool to drive the motor shaft to confirm whether there is any jamming in the mechanical structure ; "	"Support the U-DS order to be cleared; Clear after 40 driving cycles
7	P161800	Zero drift fault of V-phase current sensor	"1. Abnormal connection of the sensor itself or signal; 2. The current signal is disturbed; 3. Abnormality in the current sampling Circuit;"	"1.Reset to low pressure. After restarting, confirm whether the problem reappears or not. 2. Replace the controller."	"Support the U-DS order to be cleared; Clear after 40 driving cycles

8	P162100	Zero drift fault of W-phase current sensor	Refer to the zero drift fault of the V-phase current sensor	Refer to the zero drift fault of the V-phase current sensor	"Support the U-DS order to be cleared; Clear after 40 driving cycles
9	U012200	The VCU node is lost	"1The main line hardware is faulty 2. External environmental interference 3. Poor bus communication quality"	Check for communication abnormalities such as ECU, bus terminal resistance, whether the CAN line is broken, whether the connectors have poor contact, power supply status, EMC, etc	"Support the U-DS order to be cleared; Clear after 40 driving cycles
10	U007300	BusOff fault	"1The communication quality of the main line is poor. 2. C a n signal interference 3. Short Circuit in the CAN line "	Check the bus hardware, wiring harness, or EMC	"Support the U-DS order to be cleared; Clear after 40 driving cycles
11	U250082	CAN Alive Counter malfunctions	"1. Error in sending V C U 2 Poor bus communication quality and CAN interference;"	"1.Check the terminal resistance of the main line, the insulation of the wire harness, and EMC. 2. Check whether the software versions of VCU and MCU are correct "	"Support the U-DS order to be cleared; Clear after 40 driving cycles
12	U240081	CAN Check Sum checks error faults	Refer to the examination of abnormal faults in CAN ALive Counter	Take the CAN Live Counter exam for abnormal malfunctions	"Support the U-DS order to be cleared; Clear after 40 driving cycles
13	B111716	Under-voltage fault of KL30 power supply	" 1. DC DC is faulty 2. The battery is depleted or the voltage fluctuates greatly 3. The low-voltage power supply harness of the MCU has poor contact or pins have fallen off 4. Fault in the MCU power supply voltage sampling Circuit"	"1. Check if the battery voltage is abnormal 2. Check the state of the MCU power supply harness 3. Check the status of DCDC "	"Support the U-DS order to be cleared; Clear after 40 driving cycles
14	B111717	Overvoltage fault of KL30 power supply	"1. Abnormal DCDC output 2. Fault in the MCU power supply voltage sampling Circuit "	Check if the DCDC is abnormal. When the DCDC is in operation, measure whether the low-voltage voltage state is stable	"Support the U-DS order to be cleared; Clear after 40 driving cycles
15	P162600	Hardware busbar overvoltage	"1.The main relay is abnormally disconnected, and the positive and negative contacts of the busbar are poor. 2. There is a malfunction inside the electrode cell 3. In the no-load condition, the MCU does not perform the ASC"	"1.Check the status of the main relay and the positive and negative busbars 2. Check whether the dynamic power cell is faulty 3. Check whether the entire vehicle has triggered an emergency power-off fault and whether the MCU has an ASC function or a drive fault "	"Support the U-DS order to be cleared; Clear after 40 driving cycles

16	P162700	Software busbar overvoltage fault	Refer to overvoltage of the hardware bus	Refer to overvoltage of the hardware bus	"Support the U-DS order to be cleared; Clear after 40 driving cycles
17	P162800	Software busbar overvoltage alarm	Refer to overvoltage of the hardware bus	Refer to overvoltage of the hardware bus	"Support the U-DS order to be cleared; Clear after 40 driving cycles
18	P162900	Software busbar under-voltage fault	"1.The voltage of the high-voltage cell group is low. 2. The high-voltage relay or fuse malfunctions; 3. The high-voltage connector has fallen off or malfunctioned 4. Fault in the bus voltage sampling Circuit;"	Check the battery voltage, the status of the high-voltage connector, the status of the high-voltage fuse and the relay. If all are normal, replace the MCU	"Support the U-DS order to be cleared; Clear after 40 driving cycles
19	P163000	Software busbar under-voltage alarm	Refer to the software busbar under-voltage fault	Refer to the software busbar under-voltage fault	"Support the U-DS order to be cleared; Clear after 40 driving cycles
20	P163100	Open Circuit fault of the motor temperature sensor	"1. Open Circuit of the motor temperature sampling Circuit. 2. Fault of the motor temperature sensor body "	"1. Check whether the temperature Circuit of the motor is aged, damaged, has water or oil ingress. 2. Replace the spare temperature resistor or motor "	"Support the U-DS order to be cleared; Clear after 40 driving cycles
21	P163200	Short Circuit fault of the motor temperature sensor	"1.Short Circuit in the motor temperature sampling Circuit 2. Fault of the motor temperature sensor body"	"1.Check whether the temperature Circuit of the motor is aged, damaged, has water or oil ingress. 2. Replace the spare temperature resistor or motor "	"Support the U-DS order to be cleared; Clear after 40 driving cycles
22	P163500	Motor over-temperature fault	"1The cooling water pump is not working or the water flow is insufficient; 2. The cooling water temperature is too high (the fan is not working); 3. Water and oil are introduced into the motor temperature sampling line 4. Fault of the motor temperature sensor body 5. Abnormal temperature sampling Circuit"	" 1. Check the cooling system 2. Check the temperature sampling Circuit of the motor 3. Replace the temperature resistor or motor of the spare motor 4. Replace the MCU or control board and check whether the sampling Circuit design is reasonable (filter coefficient)	"Support the U-DS order to be cleared; Clear after 40 driving cycles
23	P163600	Motor over-temperature alarm	Refer to the motor over-temperature fault	Refer to the motor over-temperature fault	"Support the U-DS order to be cleared; Clear after 40 driving cycles

24	P163900	The temperature sensor of the controller NTC is faulty	"1. The NTC temperature sensor of the controller itself is damaged. 2. The acquisition Circuit of the control board is damaged."	"1. Reset to low pressure. After restarting, confirm whether the problem reappears or not. 2. Replace the controller."	"Support the U-DS order to be cleared; Clear after 40 driving cycles
25	P164000	The NTC controller issues an alarm when the sampling temperature is too high	"1. The cooling water pump is not working or the water flow is insufficient 2. The cooling water temperature is too high (the fan is not working); 3. The accuracy of the temperature sampling Circuit has deteriorated due to faults 4. There is gas in the waterway or the waterway is blocked "	"1. Check whether the cooling fluid circulation is working normally, whether the cooling fluid is sufficient, and whether the flow rate meets the standard 2. Release air from the waterway 3. Replace the MCU or control board "	"Support the U-DS order to be cleared; Clear after 40 driving cycles
26	P164100	The sampling temperature of the controller NTC is too high, causing a malfunction	Alarm for excessively high sampling temperature of the reference controller NTC	The reference controller NTC issues an alarm when the sampling temperature is too high	"Support the U-DS order to be cleared; Clear after 40 driving cycles
27	P164400	Alarm for excessively high motor speed	"1. The sudden change of load leads to the rapid rise of the motor speed, exceeding the protection value; Or the entire vehicle goes downhill at excessive speed; 2. Abnormal ABZ signal, such as poor contact or interference of the wire bundle, affects the calculation results of the rotational speed. 3. Abnormal ABZ acquisition Circuit."	"1. Collect data and confirm the operating conditions before and after the failure; 2. Reinsert and reinsert the ABZ wire bundle to check if the fault can be reproduced. 3. Replace the controller."	"Support the U-DS order to be cleared; Clear after 40 driving cycles
28	P164500	Motor overspeed fault	Refer to the alarm for excessively high motor speed	Refer to the alarm for excessively high motor speed	"Support the U-DS order to be cleared; Clear after 40 driving cycles
29	P164700	The ABZ position sensor is faulty	" 1.12V power supply is abnormal 2. The 5V output of the controller is abnormal 3. Abnormality of the controller 4. Abnormal position of the sensor in the ABZ position 5. Abnormal wiring harness of the ABZ position sensor "	"1. Inspect the wiring 2. Check the ABZ position sensor 3. Check the motor 4. Replace the controller"	"Support the U-DS order to be cleared; Clear after 40 driving cycles
30	P166000	The zero point position not being consistent leads to faults	The MCU program is incorrect, and the supplier's upper computer has made a mistake in operation	Check whether the MCU software is correct and whether the parameters of the upper computer are correct	"Support the U-DS order to be cleared; Clear after 40 driving cycles

31	P166500	Drive under-voltage fault	"1. The power supply for driving is faulty. 2. Driver chip failure;"	"1. Confirm that 12V power supply is normal. 2. Replace the MCU, control board or driver board "	"Support the U-DS order to be cleared; Clear after 40 driving cycles "
32	P166600	The entire vehicle suffered an emergency power-off failure	'1. The entire vehicle generates a collision. 2. The VCU falsely reports a collision signal.	Check if the vehicle has been involved in a collision. It can be restored by cutting off the power and restarting	"Support the U-DS order to be cleared; Clear after 40 driving cycles
33	P166900	Active discharge timeout fault	1. Adhesion of high-voltage relay 2 "Motor controller failure"	Check the instruction logic, the status of the main relay or replace the controller	"Support the U-DS order to be cleared; Clear after 40 driving cycles
34	P167200	EEPROM error	A hardware failure occurred when the microprocessor was reading and writing memory	If the fault is still reported after power-off and restart, replace the control board	"Support the U-DS order to be cleared; Clear after 40 driving cycles
35	P167400	Abnormalvoltageutilization	"1 . The angular signal suddenly changes 2. There was an error in the current sampling 3. The loop parameters are set unreasonably "	" 1. Inspect the wiring 2. Check the ABZ position sensor 3. Check the MCU version 4. Check the motor 5. Replace the controller "	"Support the U-DS order to be cleared; Clear after 40 driving cycles

3.8.8 Disassembly and Installation

3.8.8.1 Drive Motor Controller Disassembly and Assembly

L6 Drive Motor Controller (MCU) Disassembly

1、 Turn the vehicle key switch to the OFF position, disconnect the negative terminal of the 12V battery after 1 minute, and wait for 5 minutes;

图A LL01 装配完成示意图

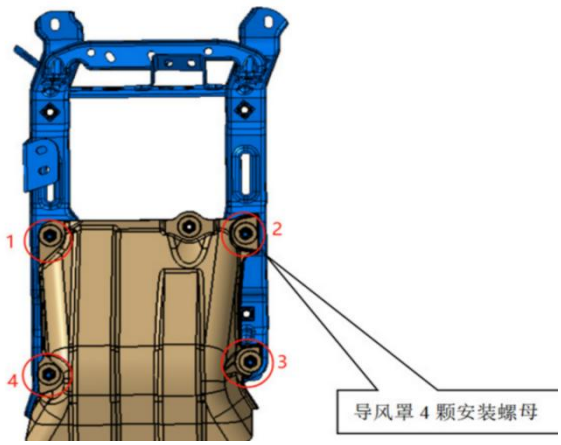
第一步 打开CPA

2、Lift the vehicle as shown in the figure, and unplug the connector between the MCU and the battery pack; Unplug the MCU from the battery pack connector.

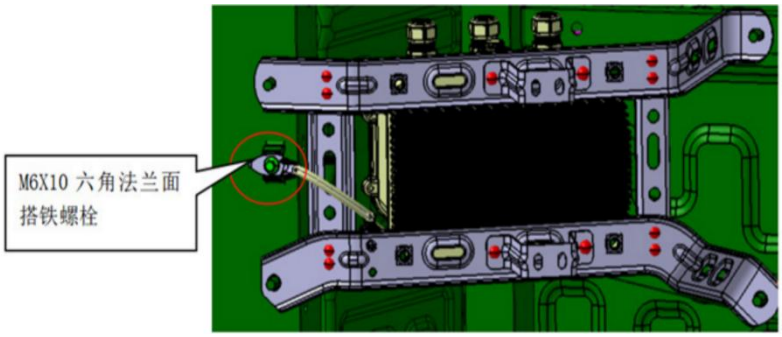
第二步 转动拉杆,至90°位置

第三步 拔出接插件

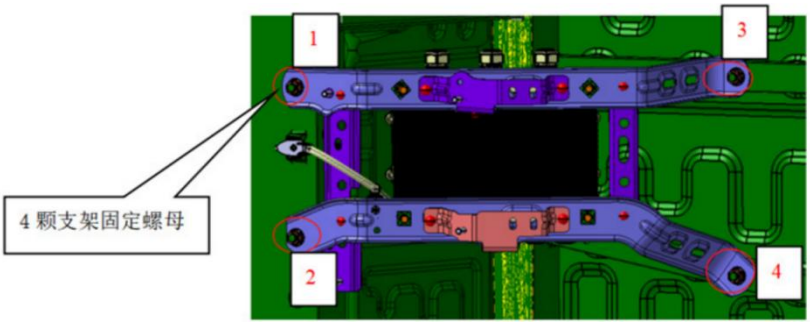
3、 Use an M10 socket to rotate counterclockwise to remove the installation nuts 1, 2, 3, and 4 on the air guide cover, and then take off the air guide cover;



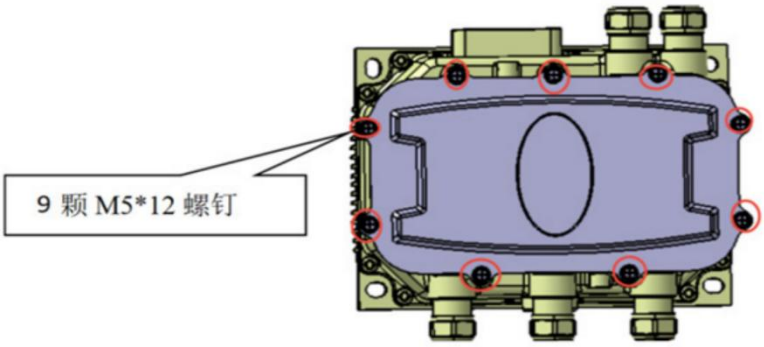
4、Disassemble the MCU and secure the iron wire with M6X10 bolts (99000000808),
Installation torque 9±2N
Separate the grounding wire from the car body grounding block.



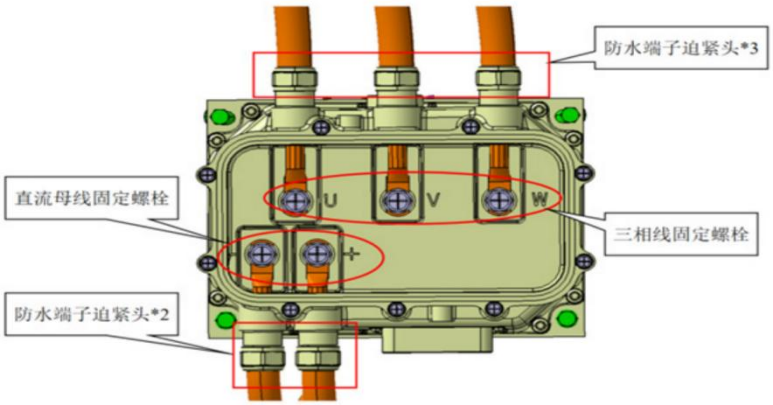
5、Remove the four hex flange M8 nuts (Q32008F61) of the MCU mounting bracket, with an installation torque of 25±3 N·m, and slowly lower the MCU and the mounting bracket.



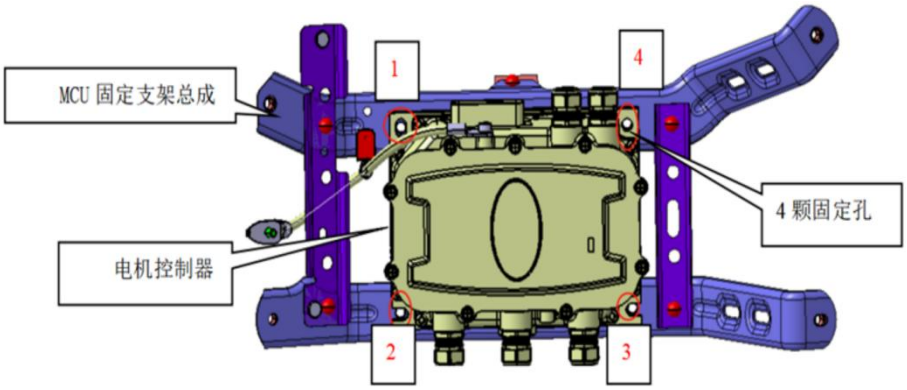
6、After removing the MCU, unscrew the 9 M5*12 screws securing the MCU junction box, and install the MCU junction box cover with a torque of 4-6N.



7、First, use a 24mm open-end wrench to remove the wiring waterproof compression head (8-10 N·m), Disassemble the remaining 5 M8*16 hex head bolts securing the high-voltage terminals,(Install torque 11~15 N·m), remove 5 high-voltage wiring harnesses.



8、Remove the 4 M8×30 bolts (Q1840830F61) securing the MCU to the bracket.，
Install the torque at 25±3 N·m, then remove the MCU.



L7 Drive Motor Controller (MCU) Disassembly

1、Turn the vehicle key switch to the OFF position, disconnect the negative terminal of the 12V battery after 1 minute, and wait for 5 minutes;

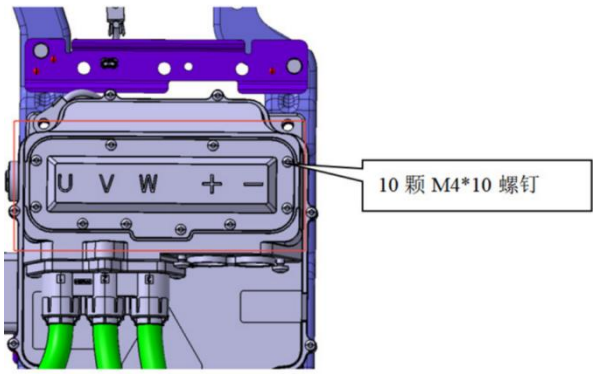
图A LL01 装配完成示意图

第一步 打开CPA

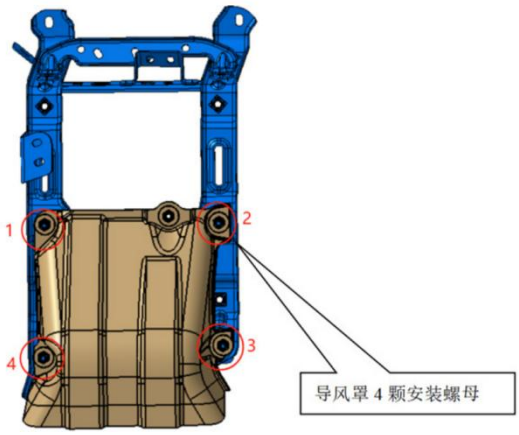
第二步 转动拉杆,至90°位置

第三步 拔出接插件

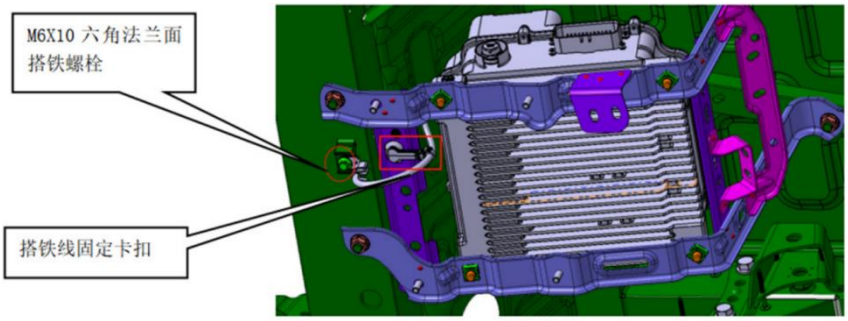
2、 Lift the vehicle as shown in the figure and remove the connector connecting the MCU and the battery pack. Unplug the connection plug between the MCU and the battery pack.



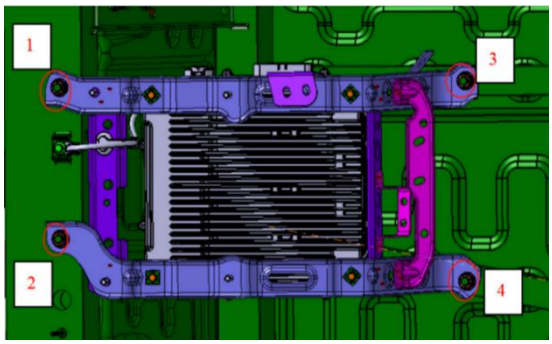
3、Use an M10 socket to turn counterclockwise and remove the installation nuts 1, 2, 3, and 4 on the air guide cover, then take off the air guide cover;



4、Remove the MCU and the ground wire, secure it with M6X10 bolts (99000000808), tightening torque 9±2 N·m, and separate the ground wire from the vehicle body grounding block.

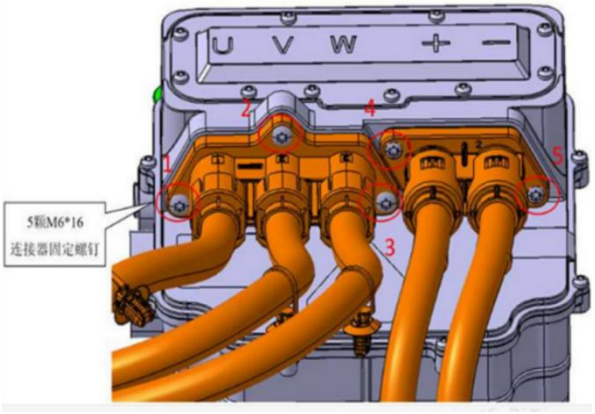


5、Remove the four hex flange M8 nuts (Q32008F61) of the MCU mounting bracket, with an installation torque of 25±3 N·m, and slowly lower the MCU and the mounting bracket;

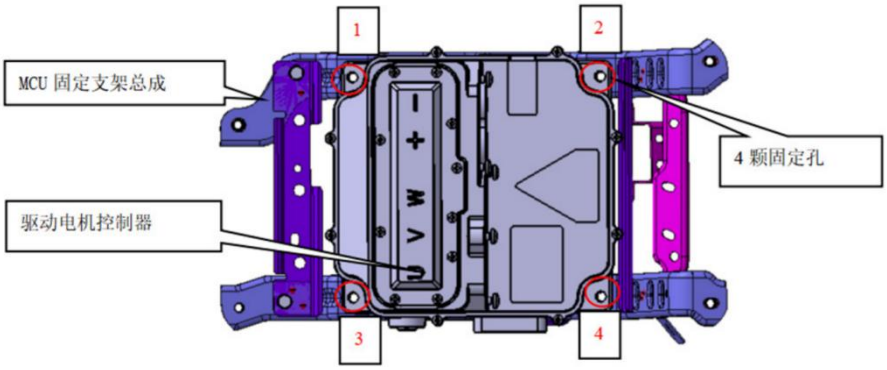


6、After removing the MCU, disassemble the 10 M4*10 screws securing the MCU junction box, with an installation torque of 2.5±0.1, and remove the MCU junction box cover plate;

7、Remove the 5 high-voltage terminal fixing bolts (M8*18), with an installation torque of 12±0.5 N·m. Then remove the 5 through-hole connector fixing bolts (M6*16 hexalobular pan head screws), with an installation torque of 6.5±0.2 N·m, and pull out the 5 high-voltage harnesses.



8、Remove the 4 M8×30 bolts (Q1840830F61) that secure the MCU to the bracket, with an installation torque of 25±3 N·m, and remove the MCU.



Drive motor controller installation

The installation of the drive motor control should be carried out in the reverse order of the disassembly steps.

※ Note:

◆The wiring harness connector is well connected to the socket on the motor controller, with no looseness.

◆The wiring harness fastening tape needs to be restored.

◆The motor controller makes good contact with the powertrain bracket assembly.

◆Install it firmly and reliably; it must not be loose.

3.8.8.2 Drive motor disassembly and assembly

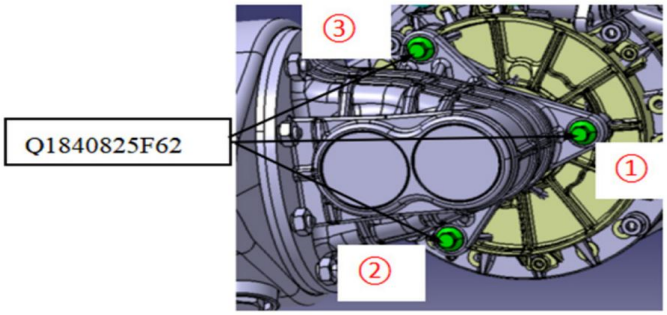
L6 drive motor disassembly

The first 6 steps are completely the same as disassembling the drive motor controller.

1、Turn the vehicle key switch to the OFF position, disconnect the negative terminal of the 12V battery after 1 minute, and wait for 5 minutes;

2、Lift the vehicle and unplug the connector between the MCU and the battery pack;

3、Use an M10 socket to turn counterclockwise to remove the installation nuts 1, 2, 3, and 4 on the air guide cover, and then take off the air guide cover;

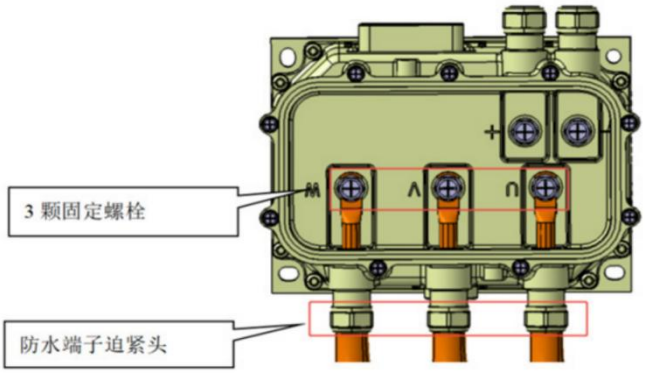


4、Remove the M6X10 bolt (99000000808) securing the MCU ground wire, and disconnect the ground wire from the vehicle body ground block;

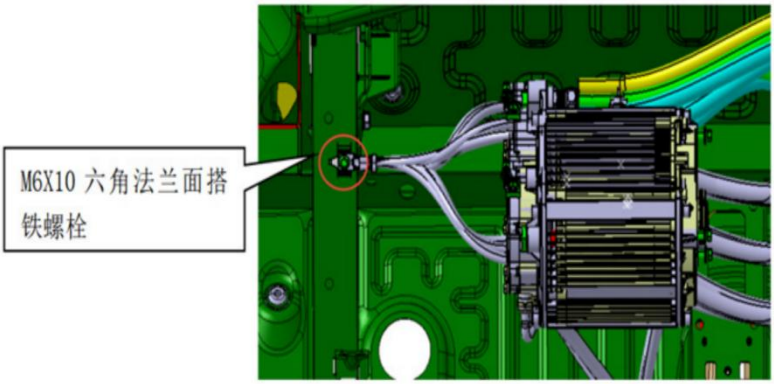
5、Remove the four hex flange M8 nuts (Q32008F61) securing the MCU bracket, and slowly lower the MCU and the bracket;

6、After removing the MCU, unscrew the 9 M5*12 screws on the electronic control junction box and remove the junction box cover;

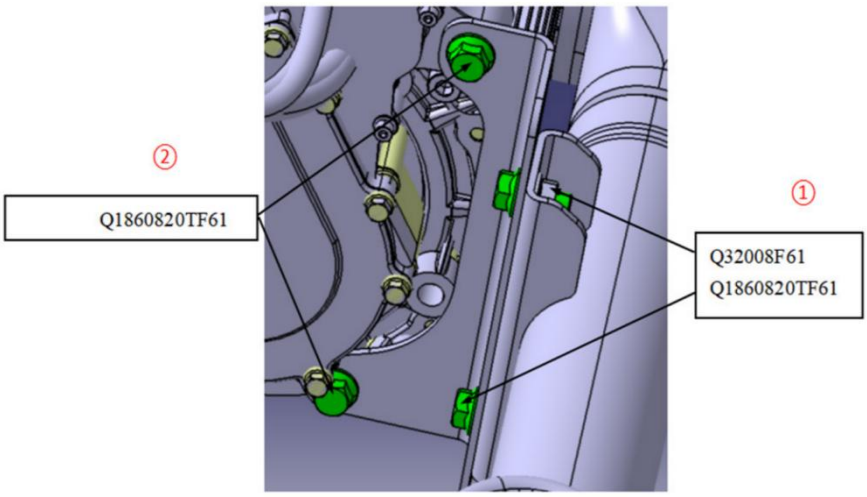
7、 Use a 24mm open-end wrench to remove the waterproof tightening head of the three-phase wires (8-10 N·m), then remove the three M8*16 hex head bolts securing the three-wire terminals (installation torque 11~15 N·m), and pull out the three three-phase wire harnesses;



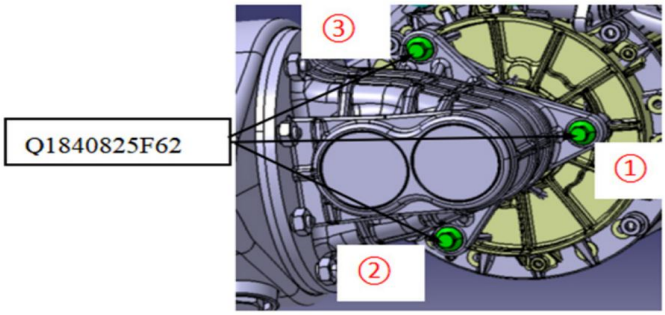
8、Remove the M6×10 hex flange grounding bolt that secures the motor grounding wire, and
separate the motor grounding wire from the car body grounding block.



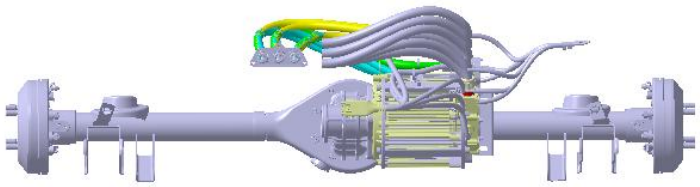
9、 First, remove the two Q1860820TF61 hex flange bolts and the two Q32008F61 nuts that secure the motor mounting bracket to the rear axle，
Installation torque 25±3N
Remove the 2 bolts (Q1860820TF61) securing the motor mounting bracket to the rear cover of the motor，
Installation torque 25±3N



10、Hold the motor body and remove the three Q1840825F62 hex flange bolts that secure the motor front cover and rear bridge assembly, with an installation torque of 25±3 N·m;



11、Hold the motor from below and slowly rotate it around its circumference, then pull the motor outward along the axis to remove the motor with the three-phase wires attached;



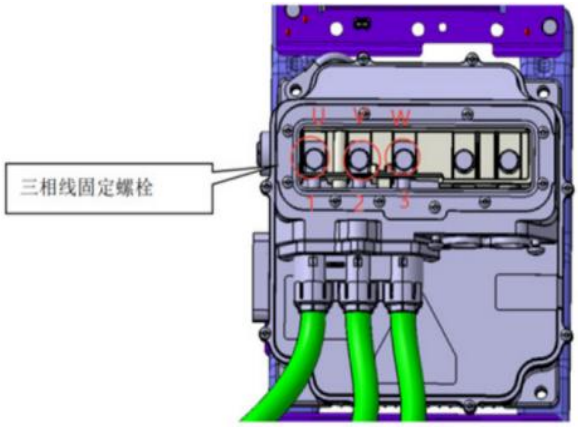
L7 Drive Motor Disassembly

The first 6 steps are completely consistent with disassembling the drive motor controller.

1、 Turn the vehicle key switch to the OFF position, disconnect the negative terminal of the 12V battery after 1 minute, and wait for 5 minutes;

2、Lift the vehicle and unplug the connector between the MCU and the battery pack;

3、Use an M10 socket to turn counterclockwise and remove the installation nuts 1, 2, 3, and 4 on the air guide cover, then remove the air guide cover;

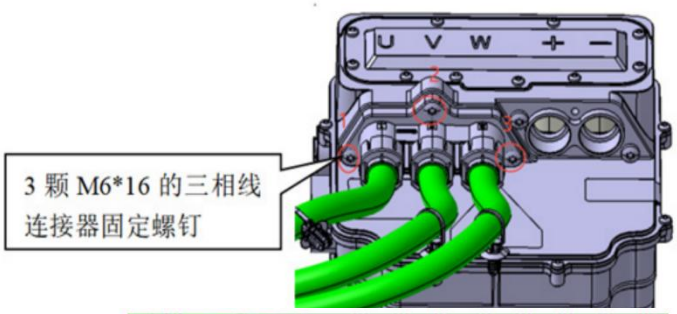


4、Remove the M6X10 bolt (99000000808) that secures the MCU ground wire, and disconnect the ground wire from the vehicle body ground block;

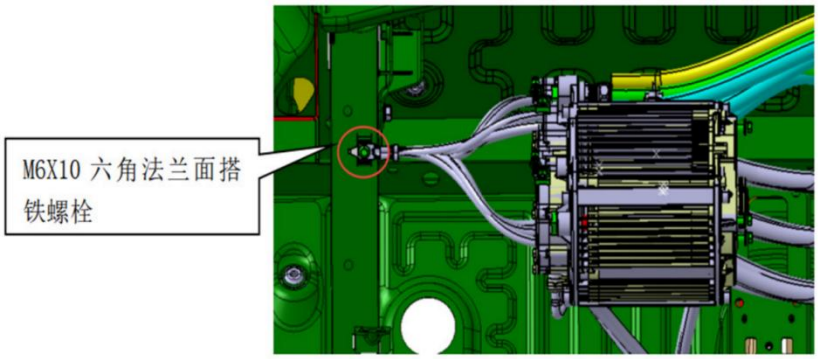
5、Remove the four M8 hex flange nuts (Q32008F61) of the MCU mounting bracket, and slowly lower the MCU and the mounting bracket;

6、After removing the MCU, unscrew the 10 M4*10 screws on the electronic control junction box and take off the junction box cover plate;

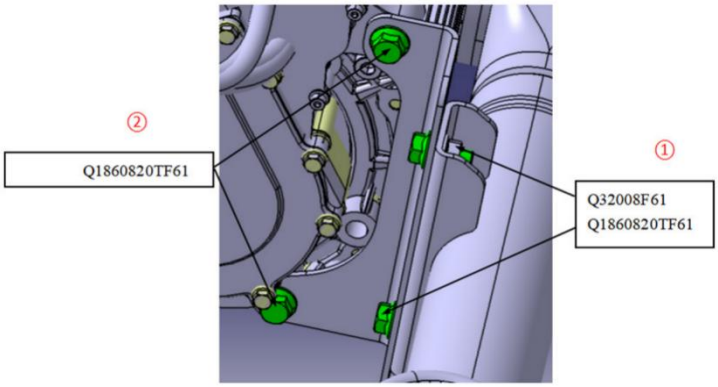
7、Remove the 3 bolts securing the three-phase wire terminals (M8*18 external hex head bolts) and the 3 bolts securing the three-phase wire connectors (M6*16 internal hexalobular pan head screws), then pull out the 3 three-phase wire harnesses.



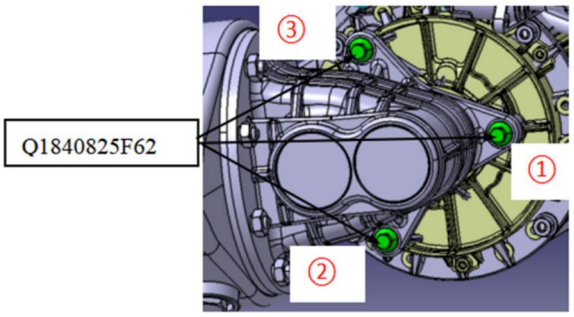
8、Remove the M6×10 hex flange grounding bolt that secures the motor grounding wire, and disconnect the motor grounding wire from the vehicle body grounding block;



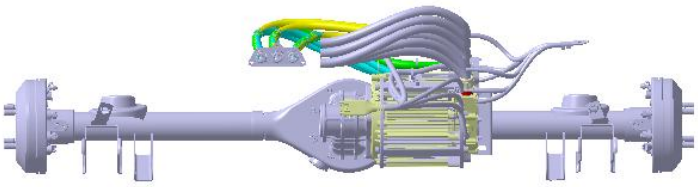
9、First, remove the two Q1860820TF61 hex flange bolts and two Q32008F61 nuts that secure the motor mounting bracket to the rear axle, with a torque of 25±3 N·m; then remove the two bolts (Q1860820TF61) securing the motor mounting bracket to the rear end cover of the motor, with a torque of 25±3 N·m;



10、Hold the motor body, remove the 3 Q1840825F62 hex flange head bolts securing the motor front end cover and rear bridge assembly, installation torque 25±3 N·m；

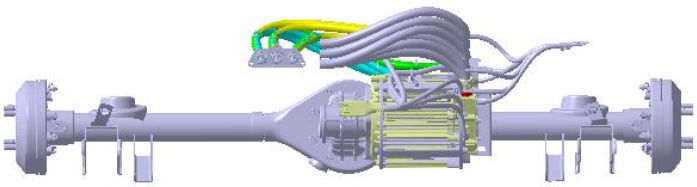


11、Hold the motor from below, slowly rotate the motor around its circumference,
12、 then pull the motor outward along the axis to remove the motor with the three-phase wires attached;

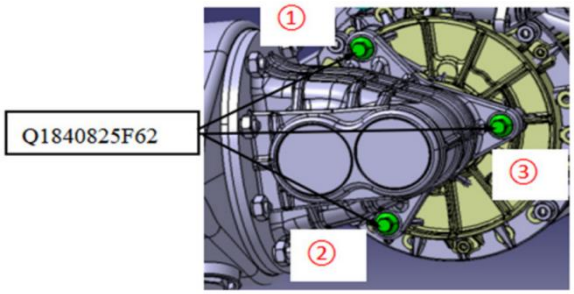


L6 Drive Motor Installation

1、Apply an even layer of high-temperature grease, about 10 grams, to the splines inside the drive motor Then align the motor's internal splines with the external splines of the rear axle and slowly rotate the motor along its axis to engage the motor's internal splines with the rear axle's external splines, as shown in Figure (I). Next, push the motor inward along the axis so that the motor's stop fits into the rear axle's stop, as shown in Figure (II). Avoid damaging the rear axle splines throughout the entire process.



2、After the motor is installed in place, the motor front end cover and the rear axle assembly are assembled using three Q1840825F62 hex flange bolts. The tightening sequence is the motor upper bolt, the lower bolt, and the middle bolt (the upper bolt is tightened first to absorb the weight of the motor and ensure that the motor input shaft and the rear axle output shaft are coaxial), as shown in the figure, that is, tighten in the order ①, ②, ③ and mark it. The torque is 25±3 N·m.



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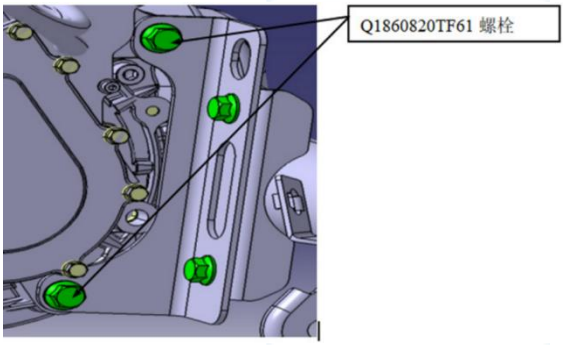
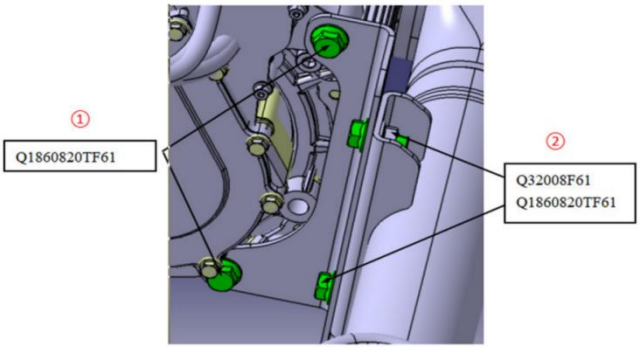
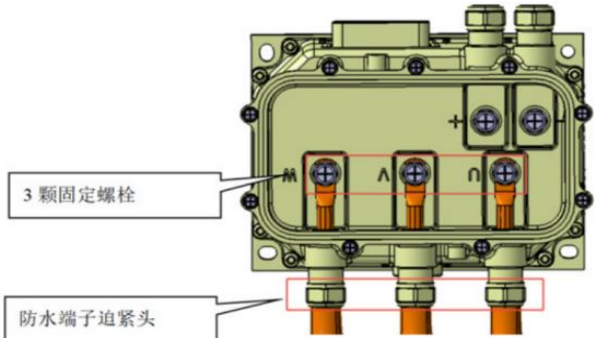
3、Install the motor mounting bracket onto the threaded holes of the motor rear end cover as shown in the figure below, using two Q1860820TF61 bolts. Pre-tighten the bolts temporarily; there is no need to fully tighten them yet. Wait until the motor mounting bracket and rear axle assembly are completed before fully tightening.



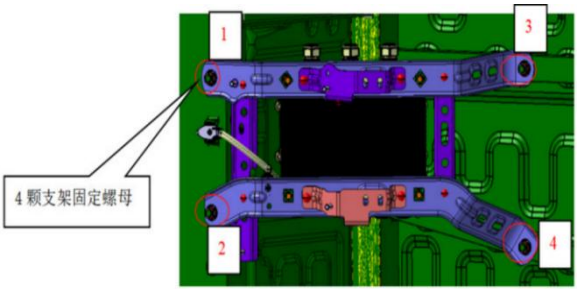
4、The motor mounting bracket is assembled with the rear axle using two Q1860820TF61 hex flange bolts and two Q32008F61 nuts. First, tighten the bolts Q1860820TF61 that secure the motor mounting bracket to the motor rear end cover, and then tighten the bolts that secure the motor mounting bracket to the rear axle, as shown in the figure below.
Tighten the bolts in the sequence ①, ② and mark them.
The torque is 25±3 N·m.



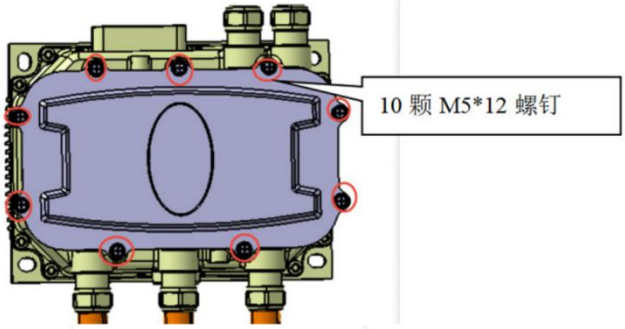
5、Install the MCU three-phase wires on the lifting tray, insert the motor U, V, W three-phase wires into the corresponding controller U, V, W phase sequence holes, and secure the motor three-phase terminals with the three M8*16 external hex head bolts provided by the manufacturer (torque 11-15 N·m); tighten the three-phase wire waterproof gland (8-10 N·m);



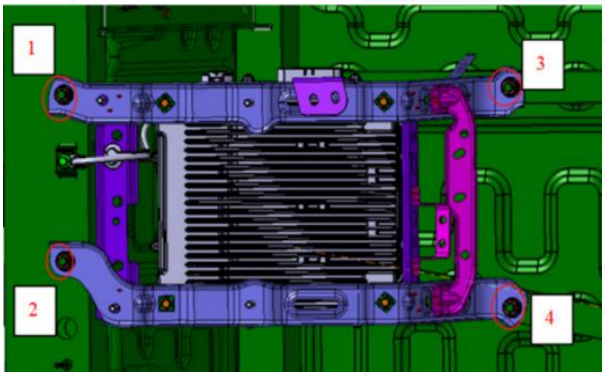
(If there is no lifting pallet on site, you can first pre-install the two nuts on the MCU front bracket (as shown in the picture, nuts 1 and 2), leaving the bolt threads exposed. Using the pre-installed bracket nuts as support, you can loosen the MCU and bracket; then install the MCU three-phase wires.)



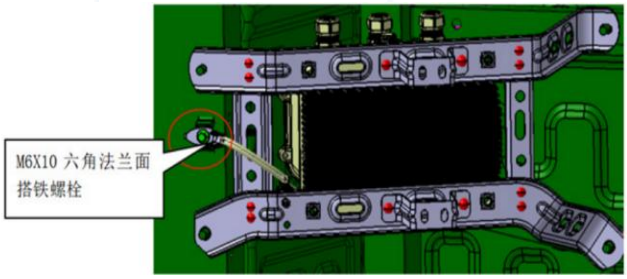
6、Install the controller wiring cover and tighten the 10 M5*12 screws (torque 4-6 N·m);

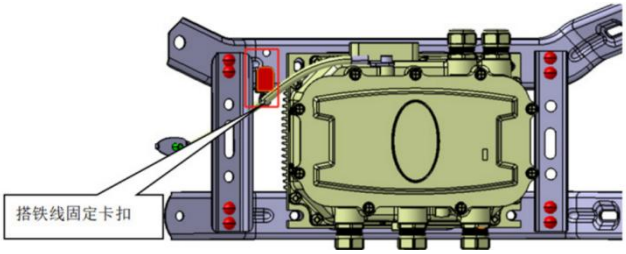


7、After the controller junction box cover is installed, pre-install the 4 nuts on the rear end of the MCU bracket, then torque-tighten the 4 M8 hex flange nuts (Q32008F61) on the MCU bracket, with an installation torque of 25±3 N·m;

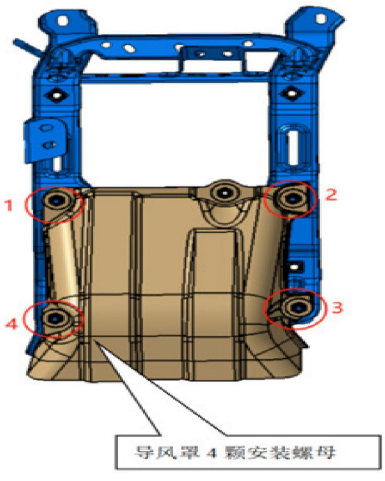


8、 Connect the MCU ground wire to the bracket assembly as shown in the figure. The ground end is secured to the vehicle body ground block using an M6X10 hex flange ground bolt (99000000808), with an installation torque of 8±1 N·m; secure the MCU ground wire clip.





9、 MCU cooling air guide installation: The air guide is installed on the four mounting bolts of the L7 MCU bracket. Install the four mounting nuts onto studs 1, 2, 3, and 4, and press them down manually until they reach the bottom.



10、Install the positive and negative high-voltage wires connecting the MCU and the battery pack into the connector. The specific installation steps are as shown below.

图1 插件到件状态

第一步 打开CPA

第二步 打开拉杆

第三步 插件插入插头

第四步 转动拉杆

第五步 拉杆转动到位后，推入CPA

图2 CPA装配完成状态

图3 LL01 装配完成示意图

※ Note:

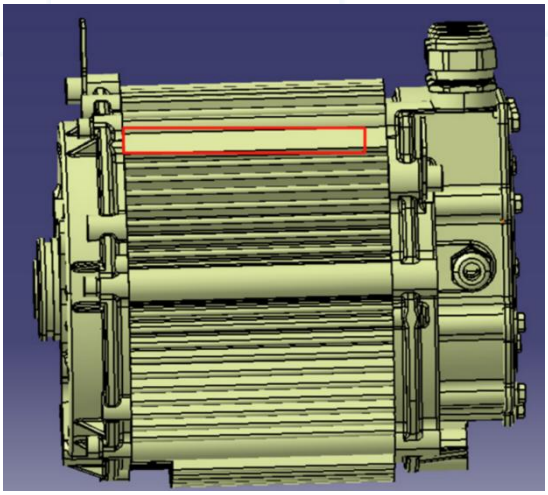
◆The wiring harness fastening tape needs to be restored.

◆Ensure that the MCU bracket and the routing of the three-phase wires are consistent with their positions before disassembly.

◆The motor comes with three-phase wires when leaving the factory. To ensure the motor's air tightness, after-sales personnel should avoid disassembling the motor end cover whenever possible.

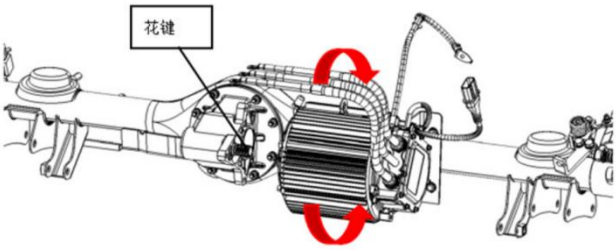
◆Install it firmly and reliably; it must not be loose.

Drive motor steel stamping position

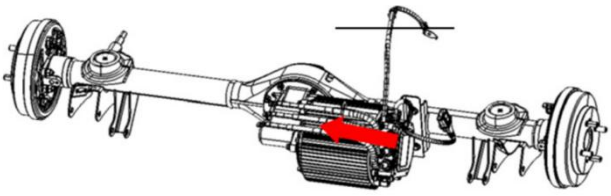


L7 Drive Motor Installation

1、Evenly apply about 10 grams of high-temperature resistant grease on the splines inside the drive motor. Then align the internal splines of the motor with the external splines of the rear axle, and slowly rotate the motor along its axis to engage the motor's internal splines with the rear axle's external splines as shown in Figure (I). Next, push the motor inward along the axis so that the motor's flange fits into the rear axle's flange, as shown in Figure (II). During the entire process, avoid damaging the rear axle splines.

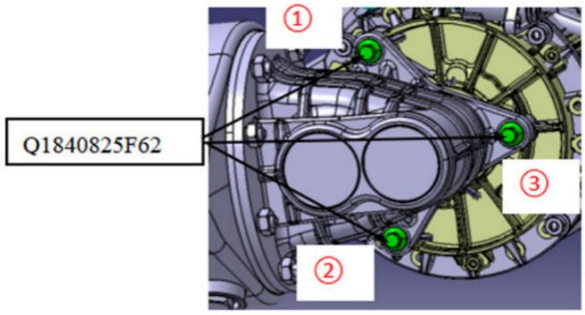


（I） 电机绕轴线方向小幅转动，花键啮合



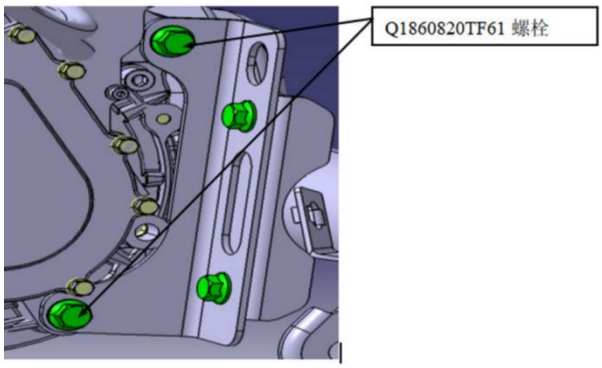
（II） 电机沿轴线推入，止口啮合

2、After the motor is installed in place, the front end cover of the motor and the rear axle assembly are assembled using three Q1840825F62 hex flange bolts. The tightening sequence is the upper bolt of the motor, the lower bolt, and then the middle bolt (the reason for tightening the upper bolt first is to bear the weight of the motor and ensure that the motor input shaft and rear axle output shaft are coaxial), as shown in the figure below. Tighten in the order of ①, ②, ③ with the specified torque, and mark them, with a torque of 25±3 N·m.

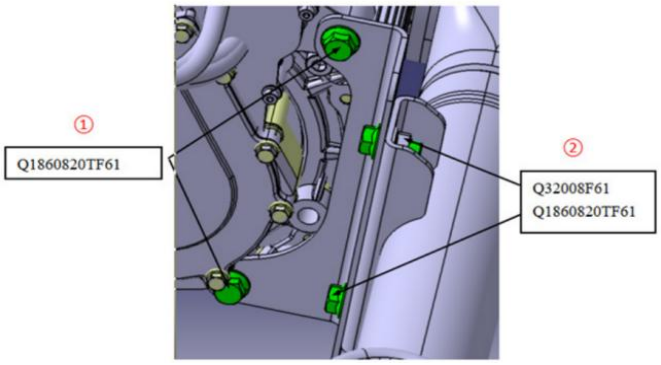


打紧电机螺栓

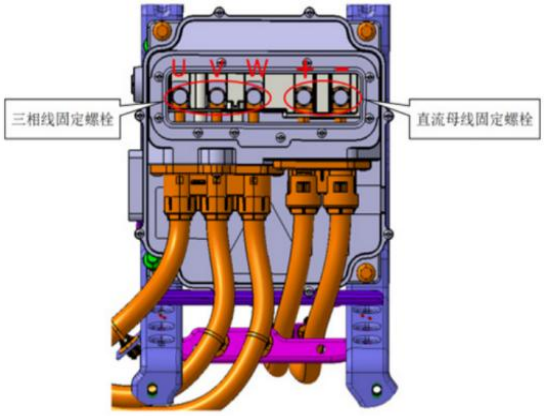
3、 Install the motor mounting bracket to the threaded holes on the motor rear end cover as shown in the figure below, using two Q1860820TF61 bolts. Pre-tighten the bolts, but do not fully tighten them yet; wait until the motor mounting bracket and rear axle assembly are complete before fully tightening.

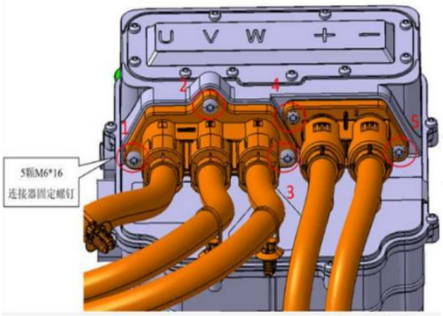


4、Assemble the motor mounting bracket with the rear axle using two Q1860820TF61 hex flange bolts and two Q32008F61 nuts. First, tighten the bolts Q1860820TF61 that fix the motor mounting bracket to the motor rear cover, then tighten the bolts that fix the motor mounting bracket to the rear axle, as shown in the figure below. Follow the order ①,② to tighten the bolts and mark them.
The torque is 25±3 N·m.

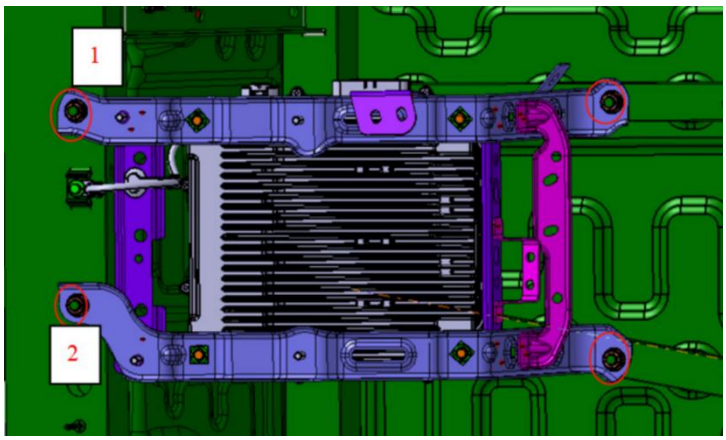


5、Install the MCU three-phase wires on the lifting tray, remove the controller wiring cover, and insert the UVW three-phase wires into the corresponding UVW phase sequence holes of the controller. Use the three M8*18 external hex head bolts provided by the manufacturer to secure the motor three-phase wiring terminals, tightening them to a torque of 12±0.5 N·m. Then install the through-hole connector fixing bolts, using three M6*16 internal hexalobular pan head screws, with an installation torque of 6.5±0.2 N·m.

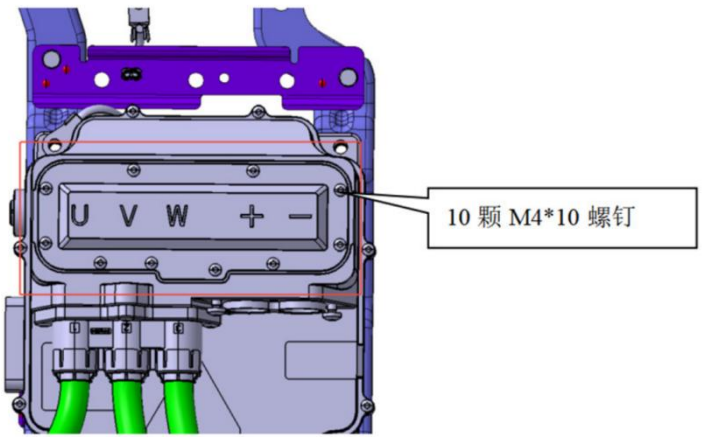




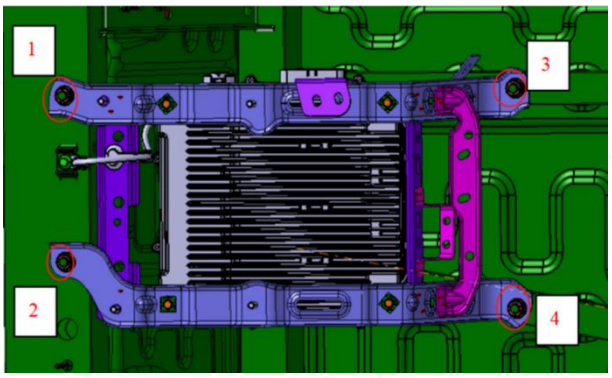
(If there is no lifting pallet on site, you can first pre-install two nuts on the MCU front bracket (as shown in the figure, nuts 1 and 2), leaving the bolt threads exposed. The pre-installed bracket nuts can be used for support, allowing the MCU and bracket to be loosened; then install the MCU three-phase wires.)



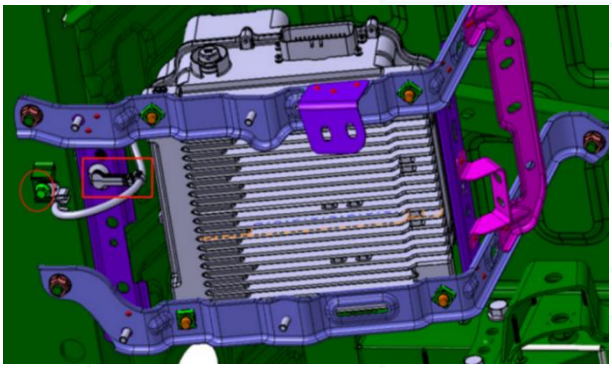
6、Install the controller wiring cover and tighten 10 M4*10 internal hexagon pan head screws (torque 2.5±0.1 N·m);



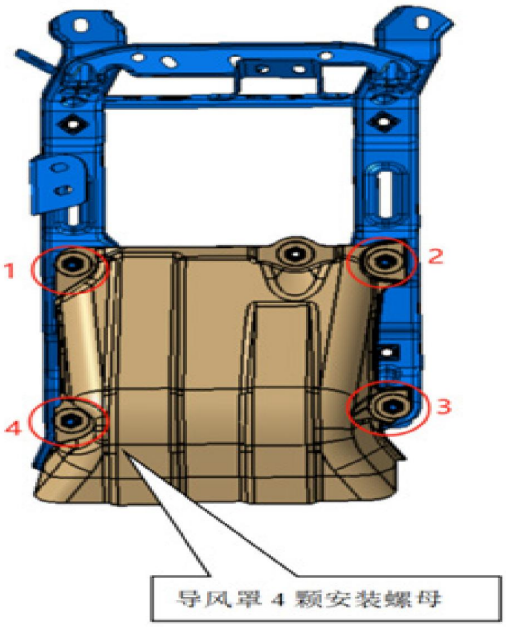
7、 After the controller junction box cover is installed, pre-install the 4 nuts on the MCU bracket, then torque-tighten the 4 hex flange M8 nuts (Q32008F61) on the MCU bracket with an installation torque of 25±3 N·m;



8、 Connect the MCU ground wire to the bracket assembly as shown in the figure. The grounding end uses an M6X10 hex flange grounding bolt (99000000808) to secure it to the vehicle body grounding block, as illustrated below.



9、 MCU heat dissipation air guide installation: The air guide is installed on the four fixing bolts of the L7 MCU bracket. Place the four installation nuts onto studs 1, 2, 3, and 4 respectively, and press them manually all the way to the bottom.



10、Install the positive and negative high-voltage wires connecting the MCU and the battery pack to the connector. The specific installation steps are as shown below.

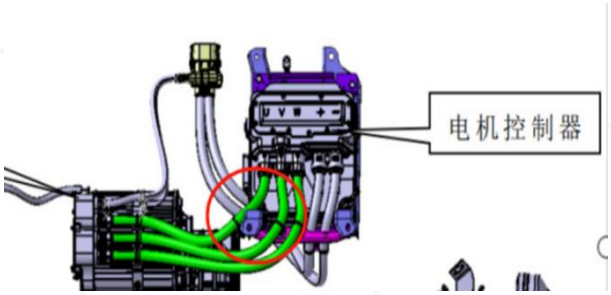
※ Note:

◆ The wiring harness fastening tape needs to be restored

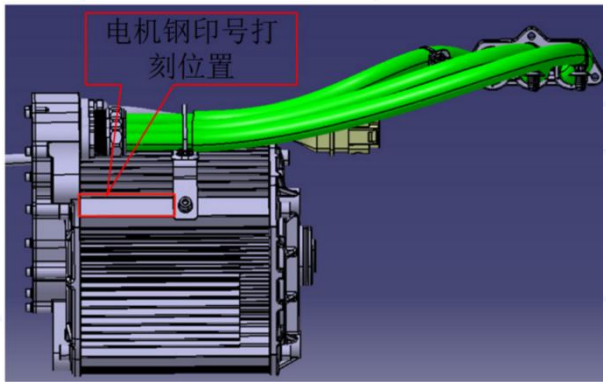
◆ The electrical protection MCU bracket and the routing of the three-phase wires are the same as before disassembly.

◆ The motor comes with three-phase wires when leaving the factory. To ensure the motor's airtightness, after-sales personnel should avoid disassembling the motor end cover whenever possible.

◆ Install it firmly and reliably; it must not be loose.

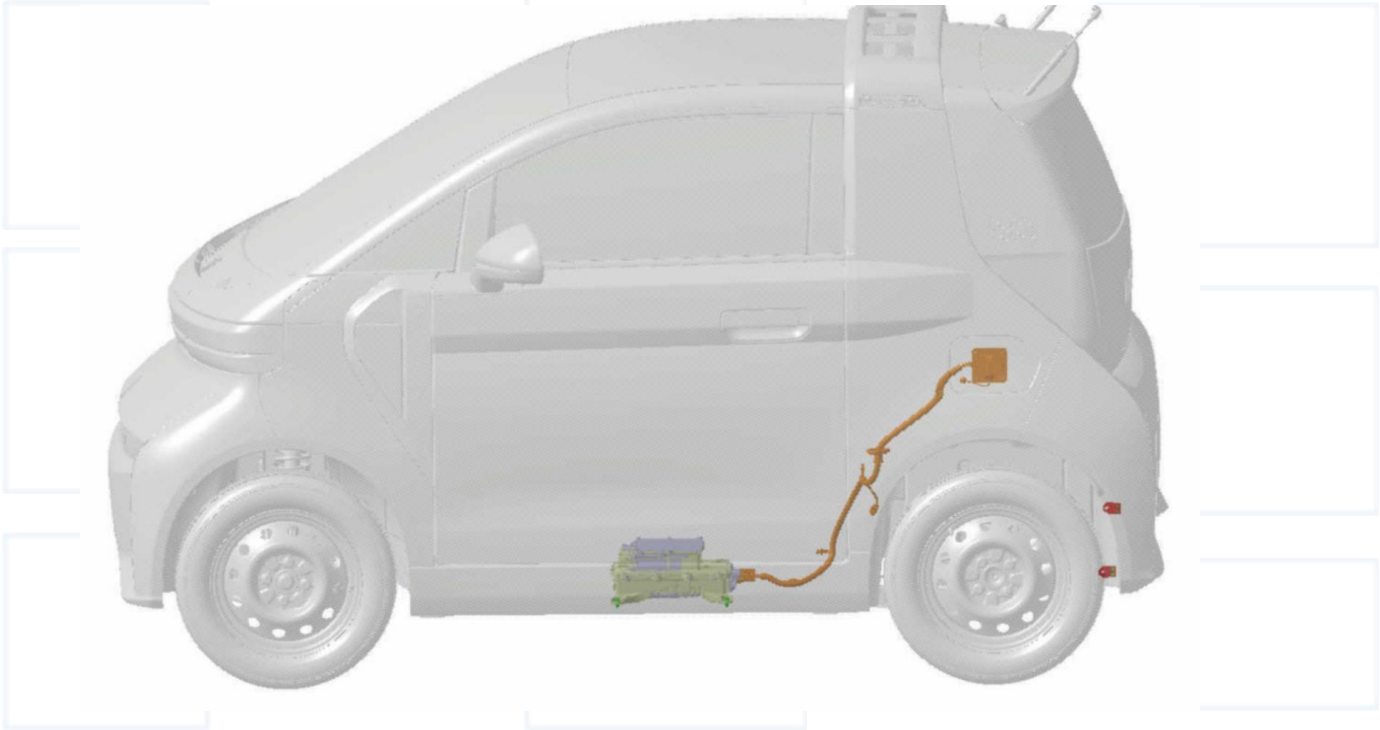


Drive motor steel stamping position



3.9 Vehicle charging system

3.9.1 Car Charger Location Diagram



❖ System Overview

The charging and DC-DC power system consists of a charger/DC-DC integrated unit, AC slow charging interface, AC slow charging cable, DC fast charging interface, DC fast charging cable, motor controller (with high-voltage junction box function, including high-voltage fuses for the charger/DC-DC integrated unit), and onboard charging gun (including the charging gun, cable, and control box on the cable), among other components.

The entire system is designed to support both fast and slow charging functions for power batteries, enabling the vehicle to receive supplementary power from the grid; at the same time, it has DC-DC (direct current to direct current) conversion functionality, reducing the high voltage of the high-voltage battery to a low voltage output to supply the vehicle's 12V low-voltage power system.

❖ Functions and Operations

Serial Number	Function Name	Function Description
1	OBC	The OBC converts AC power into high-voltage DC power to charge the traction battery, while simultaneously supplying power to the relevant high-voltage systems.
2	DC/DC	The DC/DC converter converts high-voltage DC into isolated and stable low-voltage DC according to the VCU's instructions, charging the low-voltage battery while supplying power to the vehicle's low-voltage system.
3	PDU	Distribute the high-voltage direct current of the power battery to various high-voltage systems or components through physical Circuits, providing them with high-voltage power supply.
4	PTU Heat	The OBC has an electric heating mode that can convert AC power to DC to supply a resistive load high-voltage electric heater. Before this operating mode is activated, there is

		no battery voltage feedback value. This operating mode should be a constant voltage and constant current output mode.
5	Monitoring	OBC and DC/DC can measure AC input voltage, AC input current, OBC output voltage, OBC output current, battery voltage, DC/DC output voltage, DC/DC output current, standby voltage, etc., in real time and can upload the measurement results.
6	Communication	Equipped with CAN communication functionality that is isolated from AC input and high-voltage DC output, enabling OBC charging and heating control, status information uploading, Boot loader, UDS, and other functions via CAN.

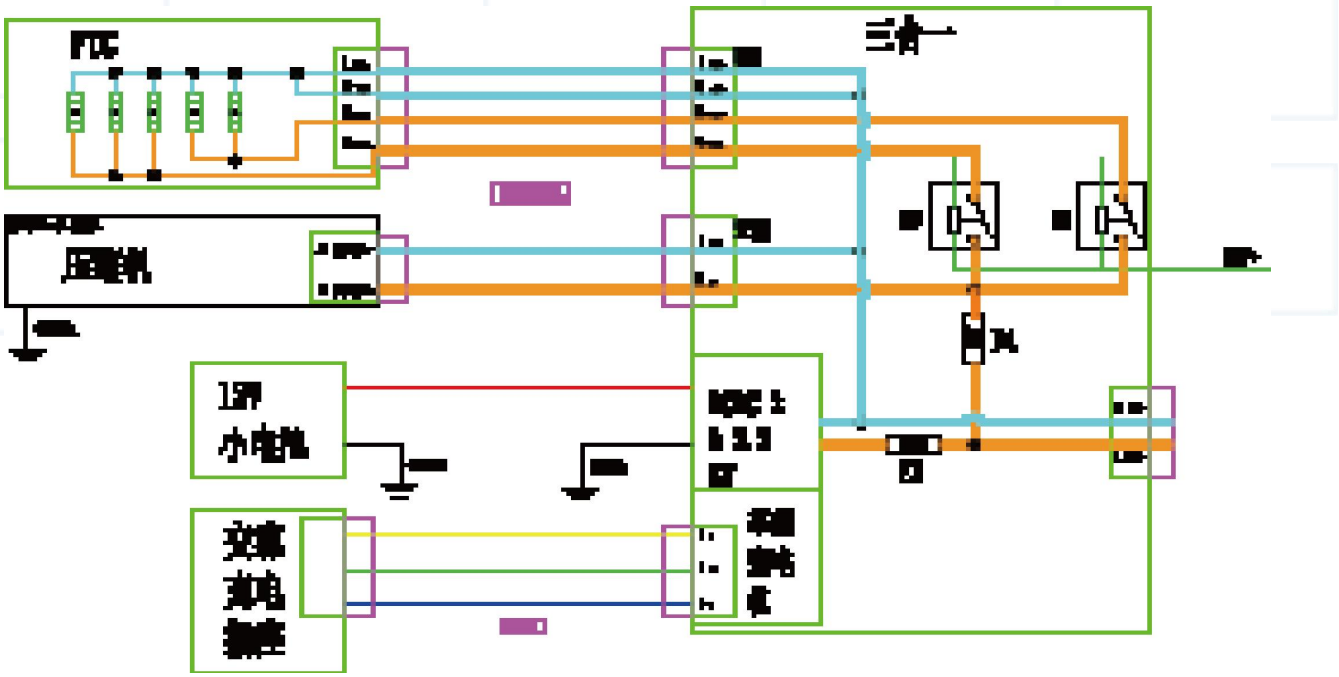
3.9.2 Maintenance Precautions

Warning !

- During the maintenance process, if operations are not carried out according to the correct procedures, it may result in damage to the power battery or serious accidents such as electric shock or electrocution.
- Mistakes during the maintenance process can lead to serious accidents.
- Before performing maintenance (including disassembly, assembly, inspection, or replacement of components), be sure to carefully read the following precautions and follow the correct procedures as stipulated in the maintenance manual.
- Alumi vehicle maintenance personnel must undergo professional training, be familiar with electrical safety knowledge and first aid methods for electric shock, and have a high level of safety awareness.
- When maintaining high-voltage components, operators must hold the relevant qualification certificates before they can operate.
- Strictly comply with the national laws and regulations related to high-voltage system operations.
- When inspecting and repairing vehicles, strictly follow the relevant maintenance operation standards of Lintu Automobile Co., Ltd., and set up the appropriate warning signs.
- Maintenance of the vehicle's high-voltage system can only be carried out by professional personnel certified for high-voltage system maintenance. Except for operations that must be powered on, such as diagnosis using diagnostic equipment, all other maintenance and disassembly operations related to the high-voltage system must be performed only after executing the standard high-voltage power-off procedure (turn off the ignition switch, disconnect the 12V power supply, disconnect the high-voltage bus cable, verify absence of voltage and apply insulation). Additionally, insulated personal protective equipment and insulated maintenance tools must be used during the standard high-voltage power-off procedure.
- When inserting or removing high and low voltage plugs, be sure to follow the self-locking structure sequence of the plug and do not force it in or out to avoid damaging the plug.
- The disassembly and assembly of high-voltage components must follow standard procedures and use specialized tools to prevent accidents during maintenance.
- There are 'warning signs' at places with high voltage or high temperature on the vehicle body; strictly follow the instructions on the signs when operating!
- Before performing vehicle maintenance, you must first follow the power-off procedure and wear safety protective gear before proceeding with the operation!
- When washing the car, do not spray the charging port with a high-pressure water gun to prevent water from entering the charging port and avoid the risk of electric shock!
- Use the specified charging socket and charging cable; do not choose your own charging equipment!
- When extinguishing a vehicle fire, do not use the 'water method'; use a 'dry powder' fire extinguisher!
- When repairing the vehicle, do not operate if the body is wet or damp!
- When dismantling or assembling the vehicle, do not operate the positive and negative terminals simultaneously!
- Do not connect positive and negative terminals directly; avoid having either the positive or negative terminal conduct through the human body to the ground!

- Open high-voltage line connections must be insulated!
- Do not touch high-voltage components or electronic control connectors unless absolutely necessary, to prevent electric shock and damage!
- Use the specialized tools approved by Lintu Automobile Co., Ltd. for high-voltage electric vehicle maintenance operations!
- Operate with two people: one person supervises, one person operates!
- Ensure that other personnel do not operate incorrectly during the maintenance process, causing high voltage to be applied to the entire vehicle, including turning the key or connecting the negative terminal of the 12V battery.

3.9.3 Function Description



❖ Function Description

1.1.1 OBC Function Description: The On-Board Charger (OBC) converts electrical energy from the public power grid into the required DC electricity according to the voltage and current control signals from the VCU or BMS, in order to charge the high-voltage power battery in the vehicle.

1.1.2 DC/DC Function Description: The DC/DC converts the vehicle's high-voltage DC power into low-voltage DC power according to the enable control signals from the VCU or BMS, as well as the voltage control signal from the LBMS, to supply power to the vehicle's electrical loads.

Principles of Input and Output Control

1.2.1 OBC Input and Output Control Principles

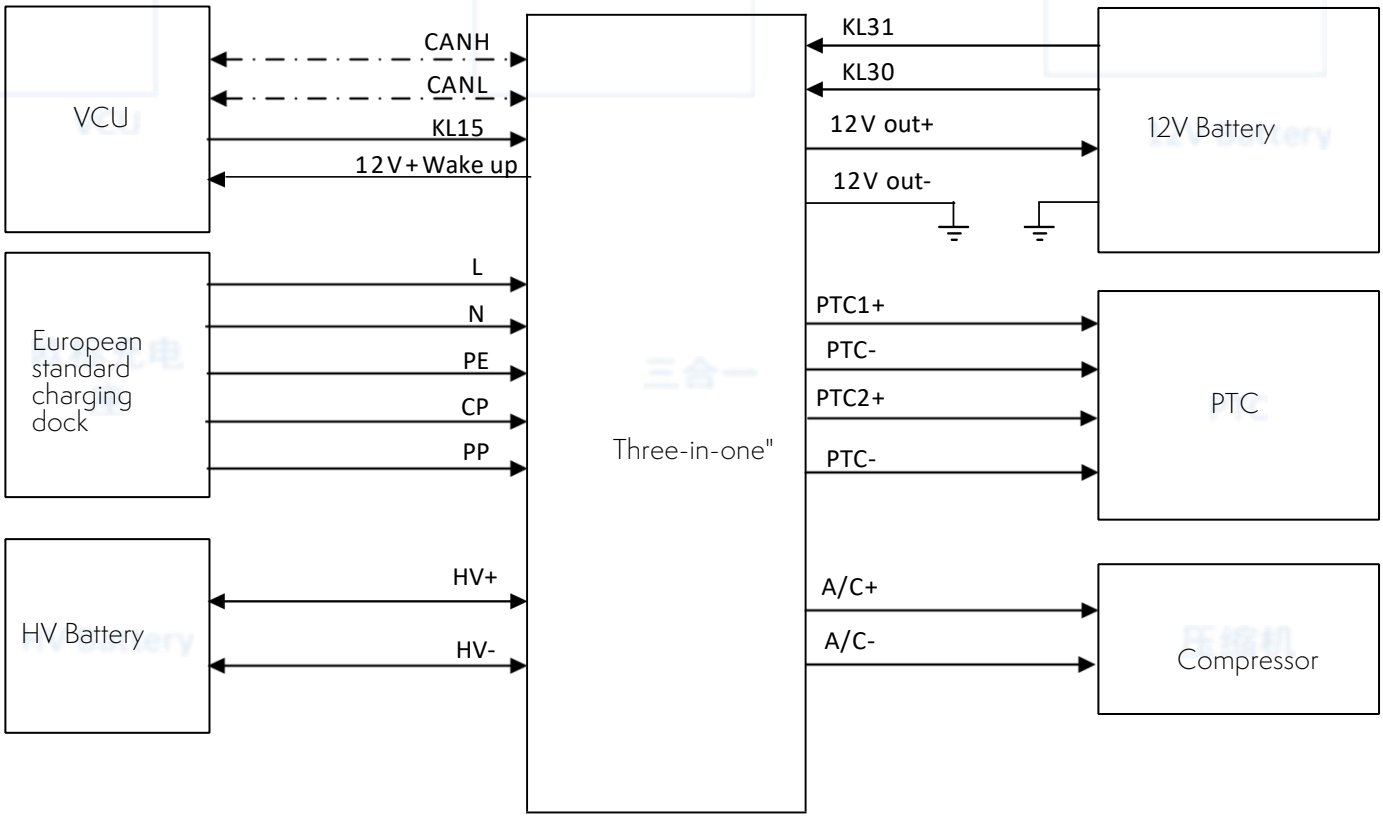
L7 Model: Connect the charging gun, the OBC detects that the PP and CP signals are normal, the OBC is awakened, and after being awakened, the OBC outputs a 12V wake-up signal to wake up the VCU; after the VCU is awakened, it determines whether the vehicle meets the charging conditions and then issues the charge

permission and voltage and current request signals. Upon receiving the signals, the OBC closes the internal S2 switch. The power supply equipment detects the closure of S2 and outputs AC power. The OBC detects that the AC is normal and responds to the requested voltage and current to start output.

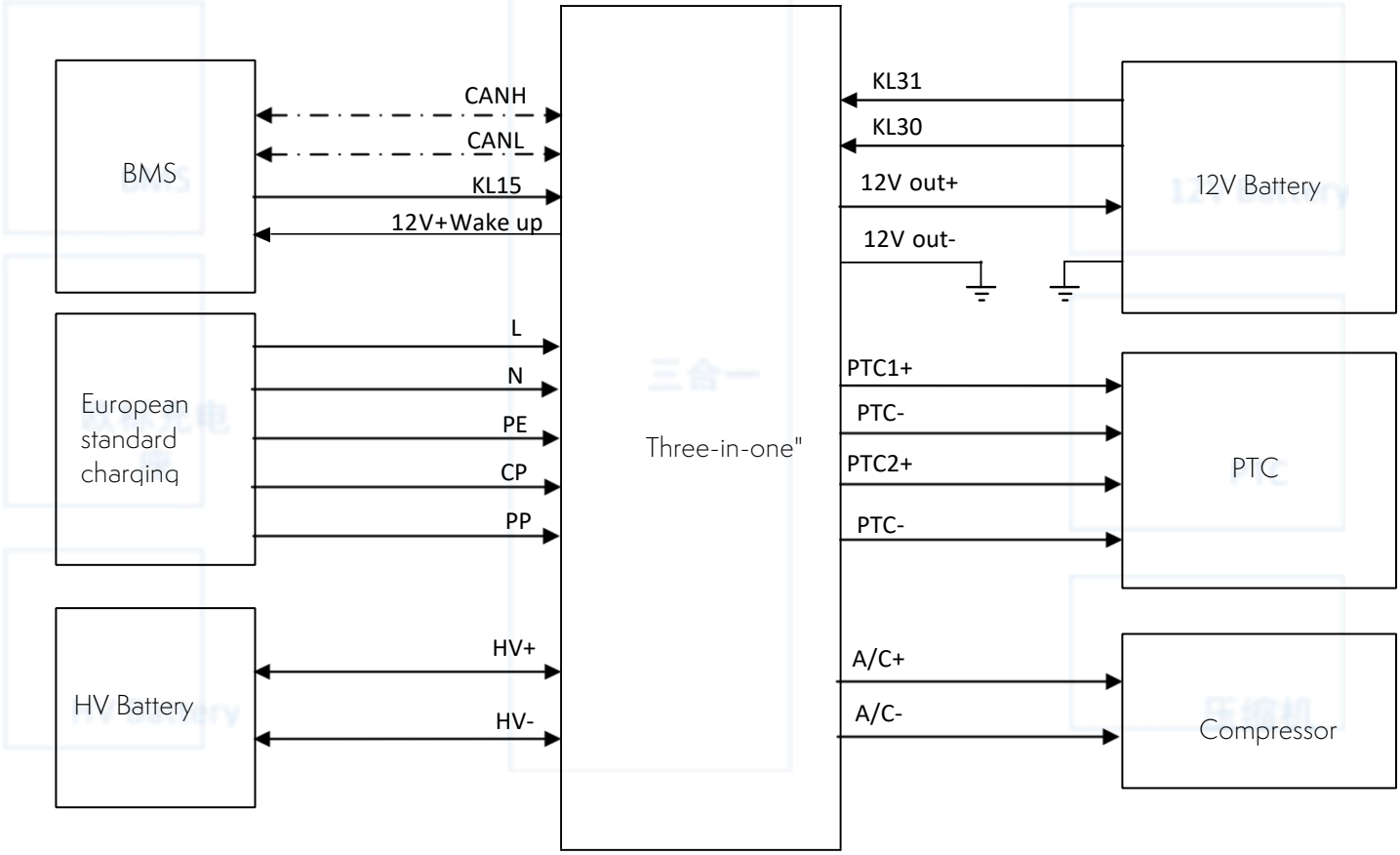
L6 Model: Connect the charging gun, the OBC detects that the PP and CP signals are normal, the OBC is awakened, and after being awakened, the OBC outputs a 12V wake-up signal to wake up the BMS; after the BMS is awakened, it determines whether the vehicle meets the charging conditions and then sends the charge permission and requests voltage and current signals. Upon receiving the signals, the OBC closes the internal S2 switch. The power supply equipment detects the closure of S2 and outputs AC power. The OBC detects that the AC is normal and responds to the requested voltage and current to start output.

❖ DC/DC Input and Output Control Principle

L7 Vehicle model: With the key on, power is supplied, DC/DC is awakened, and when DCDC detects VCU's enable permission, it responds to LBMS by outputting the requested voltage value.

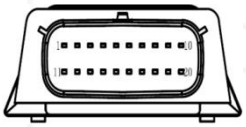
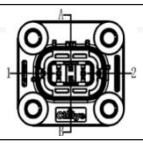
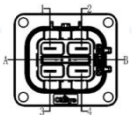


L6 Vehicle model: With the key on, power is supplied, DC/DC is awakened, and when DCDC detects BMS enable permission, it responds to LBMS by outputting the requested voltage value.



3.9.4 Electrical connector information

3.9.4.1 PIN Definition

Port Definition	Pin	Name	Function Description	Connector View
Low voltage signal	1	Output wake-up	12V200mA	
	5	CC	Charging connection confirmed	
	6	CP	Charging connection control guidance	
	7	KL30	AC power input positive	
	9	Relay drive positive	Relay controls the positive power supply	
	10	Input wake-up	DC Wake-up Power	
	11	CANH	/	
	12	CANL	/	
	17	KL31	AC power input negative	
	19	Relay drive control negative 1	PTC1 relay negative control	
	20	Relay drive control negative 2	PTC2 relay negative control	
Battery	1	HV+	Battery positive	
	2	HV-	Battery negative	
Compressor	1	HV+	Compressor positive	
	2	HV-	Compressor negative	
PTC	1	HV-	PTC1-	
	2	HV1+	PTC1+	
	3	HV-	PTC1-	
	4	HV2+	PTC2+	

3.9.4.2 Threshold parameter

L7 Model Three-in-One Electrical Parameters

Complete machine	Operating Temperature	-40-55℃
	Storage Temperature	-40-95℃
	Protection Level	IP67
	Cooling Method	Forced air cooling
	Noise Level	≤ 65dB
OBC	Input Frequency	50±3Hz
	Rated Input Voltage	220Vac
	Input Voltage Range	90-264Vac
	Output rated power	3.3kW
	Output voltage range	55-144Vdc
	Output current range	0-34A
	Protection Functions	Output overvoltage protection, output under voltage protection, output Over current protection, output short-Circuit protection, output reverse connection protection, communication fault protection, over-temperature protection
DC/DC	Input Voltage Range	55-144Vdc
	Rated Output Power	1kW
	Output Current Range	0-72A
	Peak Output Power	1.2kW
	Peak Output Current	86A
	Output Voltage Range	Set according to LBMS request value

	Protection Functions	Input overvoltage protection, input overvoltage recovery, input under voltage protection, input under voltage recovery, output overvoltage protection, output under voltage protection, output open-Circuit protection, over-temperature protection

L6 Model Three-in-One Electrical Parameters

Complete machine	Operating Temperature	-40-55℃
	Storage Temperature	-40-95℃
	Protection Level	IP67
	Cooling Method	Forced air cooling
	Noise Level	≤ 65dB
OBC	Input Frequency	50±3Hz
	Rated Input Voltage	220Vac
	Input Voltage Range	90-264Vac
	Output rated power	2.0kW
	Output voltage range	55-144Vdc
	Output current range	0-20A
	Protection Functions	Output overvoltage protection, output under voltage protection, output Over current protection, output short-Circuit protection, output reverse connection protection, communication fault protection, over-temperature protection
DC/DC	Input Voltage Range	55-144Vdc
	Rated Output Power	1kW
	Output Current Range	0-72A
	Peak Output Power	1.2kW
	Peak Output Current	86A
	Output Voltage Range	Set according to LBMS request value
	Protection Functions	Input overvoltage protection, input overvoltage recovery, input under voltage protection, input under voltage recovery, output over voltage protection, output under voltage protection, output open-Circuit protection, over-temperature protection

3.9.4.3 Vehicle charging speed and charging time under various charging modes

Car model	Charging at an AC charging station	Mode 2 charging with charging gun
L7 Charging Time (h)	4.5h	4.5h
L6 Charging Time (h))	4h (Estimate)	4h (Estimate)

3.9.5 Error Code

Serial Number	DTC Display Code	DTC Meaning	Fault Maturity Conditions	System Performance	Fault Clearing Conditions
1	U007300	BUS_OFF	Interference lasting more than twice consecutively	Record DTC;	If the bus-off condition does not occur again within 10 ms after recovering from bus-off, clear the bus-off counter.
2	U011100	DCDC LOSE_BMS_ERR DCDC lost communication with BMS	DCDC LOSE_BMS_ERR DCDC lost communication with BMS	Record DTC;Stop Working	BMS control message not received for more than 5 seconds
3	U012200	DCDC LOSE_VCU_ERR DCDC lost communication with VCU	Timeout: Receiving VCU control message exceeded 2000ms	Record DTC;Stop Working	No VCU control message received for more than 5 seconds
4	U110087	"DCDCLOSE_LBMS_ERR" lost communication with LBMS	Receiving LBMS control message timed out after 2000ms	Record DTC; DC default output voltage is 12.5V	Received LBMS control message for more than 5 seconds
5	P168317	"AC_VOL_OVER_ERR Charger AC input over voltage"	AC voltage RMS ≥ fault threshold (265V), lasting 2000 ms	Record DTC;Stop Working	AC voltage effective value ≤ recovery threshold (255V), duration 5000ms
6	P168316	AC_VOL_LOW_ERR Charger AC input under voltage	AC voltage RMS ≤ fault threshold (90V), lasting 2000 ms	Record DTC;Stop Working	AC voltage RMS ≥ recovery threshold (95V), lasting 5000ms
7	P16851C	"OBC_VOUT_OVER_ERR Charger DC output over voltage"	DC voltage ≥ fault threshold (145V), lasting 2000ms	Record DTC;Stop Working	DC voltage ≤ fault threshold (140V), lasting 5000ms
8	P168527	"OBC_VOUT_LOW_ERR Charger DC output under voltage "	DC voltage ≤ fault threshold (55V), lasting 2000ms	Record DTC;Stop Working	DC voltage ≥ fault threshold (60V), lasting 5000ms
9	P168419	"AC_IAC_OVER_ERR AC charger AC input Over current "	AC input current ≥ limiting current value (Iset 1) A, duration 2s	Record DTC;Stop Working	AC input current ≤ limiting value (Iset 0.2) A, lasting 5 seconds
10	P16841D	"OBC_IOUT_OVER_ERR Charger DC output Over current "	DC current ≥ limit value (Iset 1)A detected, lasting for 2 seconds	Record DTC;Stop Working	DC current ≤ (Iset 0.2) A detected, lasting for 2 seconds
11	P140605	"OBC_OUT_SHORT_ERR Charger DC output short Circuit"	After detecting a DC voltage <10V and a DC current >1A, sustained for 2000ms	Record DTC;Stop Working	Detected DC voltage ≥ 10V or DC current ≤ 1A, lasting for 5000ms
12	P14024B	"OBC_TEMP_ERR_ERR Charger over-temperature shutdown protection"	The internal temperature of the charger is ≥ 90°C for 2 seconds continuously.	Record DTC;Stop Working	The internal temperature of the charger ≤ 85°C for 5 seconds
13	P14034B	"OBC_TEMP_WARM_ERR Charger derating protection due to over-temperature "	O charger internal temperature ≥ 85°C, lasting for 2 seconds	Record DTC ; Derate Working	The internal temperature of the charger ≤ 80°C for 5 seconds.

14	P141200	"OBC_ 12V_OVER_ERR / OBC_ 12V_LOW_ERR Auxiliary Power Overvoltage and under voltage Protection"	Small battery voltage ≤ 8.5V or small battery voltage ≥ 16.5V, lasting 2 seconds	Record DTC	The small battery voltage is ≥ 9V and ≤ 16.5V for 5 seconds continuously.
15	P141500	"OBC_HBAT_REVERSE_ERR Output Reverse Connection Fault"	The charger output terminal reverse voltage ≤ -5V, lasting 2 seconds	Record DTC;Stop Working	The charger output terminal reverse voltage ≥ -2V, lasting 5 seconds.
16	P191A14	"OBC_CHECKELSF_ERR OBC self-check fault "	Self-check hardware failure	Record DTC;Stop Working	The self-check hardware has no faults.
19	P168117	"DCDC_VIN_OVER_ERR DCDC high-voltage side input overvoltage fault "	DCDC input voltage ≥ 145V, sustained for 2000ms	Record DTC;Stop Working	DCDC input voltage ≤ 140V, sustained for 5000ms
20	P168116	"DCDC_VIN_LOW_ERR DCDC high-voltage side input under voltage fault "	DCDC input voltage ≤ 55V, sustained for 2000ms	Record DTC;Stop Working	DCDC input voltage ≥ 60V, duration 5000ms
21	P168217	" DCDC_VOUT_OVER_ERR DCDC low-voltage output side over-voltage fault"	DCDC output voltage ≥ limit voltage value (Vset 2)V, lasting 2000ms	Record DTC;Stop Working	DCDC output voltage ≤ limit voltage (Vset 1) V, lasting 5000ms
22	P168216	" DCDC_VOUT_LOW_ERR DCDC Low Voltage Output Side under voltage Fault"	DCDC output voltage ≤ under voltage value (Vset)V, sustained for 2s	Record DTC;Stop Working	DCDC output voltage ≥ under voltage value (Vset 1) V, lasting 5000 ms
23	P178619	"DCDC_OUT_SHORT_ERR DCDC low-voltage output side short Circuit fault "	D detects that the DC voltage is <5V and the DC current is >30A, after persisting for 2000ms	Record DTC;Stop Working	DC voltage ≥ 5V or DC current ≥ 0.5A detected for 5 seconds
24	P178713	" DCDC_OUT_BREAK_ERR DCDC low voltage output side open Circuit fault "	Detected DCDC output voltage > 5V and output current < 0.5A for 2 seconds	Record DTC;	DC voltage ≤ 5V or DC current ≥ 0.5A detected, lasting for 5 seconds
25	P168019	" DCDC-IOUT_OVER_ERR DC/DC output Over current "	Output current > current limit value (Inset 1)A, lasting 2 seconds	Record DTC;Stop Working	DCDC output voltage ≤ current limit value (Iset 0.2) A, lasting 5000 ms
26	P17854B	"DCDC-TEMP_WARM_ERR DCDC derating due to over-temperature"	DCDC temperature ≥ 105℃, lasting 2 seconds	Record DTC ; Derate Working	Temperature ≤ 100℃, lasting 5 seconds
27	P17834B	"DCDC_TEMP_ERR_ERR DCDC Over temperature Shutdown "	DCDC temperature ≥ 110℃, lasting 2 seconds	Record DTC ; Derate Working	DCDC temperature ≤ 105℃, lasting 5 seconds
28	P17839B	"DCDC_CHECKELSF_ERR DC Self-check Fault "	Self-check hardware failure	Record DTC;Stop Working	The self-check hardware has no faults.
29	U168000	"OBC LOSE_BMS_ERR OBC lost communication with BMS "	Timeout of 2000ms when receiving BMS control messages	Record DTC;Stop Working	BMS control message not received for more than 5 seconds
30	U168001	" OBC LOSE_VCU_ERR OBC has lost communication with VCU "	Timeout receiving VCU control message after 2000ms	Record DTC;Stop Working	No VCU control message received for more than 5 seconds

3.9.6 Maintenance Guidance for Fault Codes

Serial Number	DTC Display Code	Meaning of DTC	Possible causes of malfunction	Maintenance Recommendations	Fault code self-recovery conditions
1	U007300	BUS_OFF	CAN line short Circuit	Check whether the charger's CAN bus is short-Circuited or open-Circuited.	1. When using the diagnostic service to clear historical faults, after clearing the historical DTC, the historical DTC is cleared; or 2. When the GW KL15 power is cycled 40 times without any new faults, the GW automatically clears the historical DTC.
2	U011100	"DCDC CLOSE_BMS_ ERR DCDC lost communication with BMS"	No messages received for 10 consecutive frames	Monitor whether the BMS messages are normal	1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When there are no subsequent faults after 40 power cycles of GW KL15, the GW automatically clears historical DTCs.
3	U012200	"DCD C LOSE _ V C U _ E R R DCDC lost communication with VCU"	check can bus	"1. Power off and check the CAN terminal resistor value (normal is 60 ± 5 ohms). 2. Check whether the CAN bus load rate is too high (normal ≤ 40%). 3. Inspect the shielding ring of the high-voltage wiring harness. 4. Check if there are a large number of error frames on the bus; remove the front compartment harness fuses one by one to isolate faulty low-voltage electronic components. 5. Check whether the front compartment wiring harness is properly arranged. 6. Check whether the CAN lines are short-Circuited or open.7. Others."	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, the historical DTCs will be cleared; or 2. When no secondary fault occurs after 40 power cycles of GW KL15, the GW will automatically clear the historical DTCs."
4	U110087	" DCD C LOSE _ L B M S _ E R R Lost communication with LBMS "	check can bus	"1. Power off and check the CAN terminal resistor value (normal is 60±5 ohms). 2. Check whether the CAN bus load rate is too high (normal ≤ 40%). 3. Inspect the shielding rings of the high-voltage wiring harness. 4. Check if there are a large number of error frames on the bus; remove the front compartment wiring harness fuses one by one to eliminate faulty low-voltage electronic components. 5. Check whether the front compartment wiring harness is properly arranged. 6. Check whether the CAN wires are short-Circuited or broken. 7. Others."	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, the historical DTCs will be cleared; or 2. When no secondary fault occurs after 40 power cycles of GW KL15, the GW will automatically clear the historical DTCs."

Serial Number	DTC Display Code	Meaning of DTC	Possible causes of malfunction	Maintenance Recommendations	Fault code self-recovery conditions
5	P168317	"AC VOLT OVER ERR on the charger"	Input is unstable	Check whether the input voltage of the charging gun enters the charger or whether the input voltage is normal.	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
6	P168316	" A A C _ V O L _ L O W _ E R R Charger AC input under voltage "	Input is unstable	Check whether the input voltage of the charging gun enters the charger or whether the input voltage is normal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
7	P16851C	"OBC_VOUT_OVER_ERR Charger DC output overvoltage "	Battery overvoltage	Check whether the relay between the charger and the battery is clicking.	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
8	P168527	" OBC VOUT LOW ERR Charger DC output under voltage "	Battery under voltage	Check whether the charger output Circuit is normal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
9	P168419	" AC input Over current of charger "	CC\CP Abnormal	Check whether the CC resistance or duty cycle exceeds the cable capacity.	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
10	P16841D	" OBC IOUT OVER ERR Charger DC output Over current "	Unstable load or short Circuit	Determine whether the operating voltage of the heating film or the battery voltage is too low	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
11	P140605	"OBC_OUT_SHORT_ERR DC output short Circuit of the charger "	Short Circuit	Check whether the charger output Circuit is normal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear the historical DTCs; or 2. When the GW KL15 power is cycled 40 times without any new faults, the GW automatically clears the historical DTCs;"

Serial Number	DTC Display Code	Meaning of DTC	Possible causes of malfunction	Maintenance Recommendations	Fault code self-recovery conditions
12	P14024B	"OBC_TEMP_ERR_ERR Charger Overtemperature Shutdown Protection "	internal temperature is too highOr external temperature is too high	Consider whether the charging environment is too hot or if the vehicle's overall cooling is functioning properly.	"1. When using the Clear Historical Fault Diagnostic Service to clear historical DTCs, clear the historical DTCs; or2. When the GW KL15 power is cycled 40 times without any new faults, the GW automatically clears the historical DTCs."
13	P14034B	"OBC_TEMP_WARM_ERR Charger over-temperature derating protection "	Internal temperature is too highor external temperature is too high	Consider whether the charging environment is too hot or if the vehicle's overall cooling is functioning properly.	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
14	P141200	"OBC_12V_OVER_ERR / OBC_12V_LOW_ERR Auxiliary power overvoltage and under voltage protection "	Unstable load or short Circuit	Determine whether the small battery is short-Circuited	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
15	P141500	" O B C _ H B AT _ R EV E RS E _ E R R Output Reverse Connection Fault "	The positive and negative terminals are connected in reverse.	Check whether the charger output Circuit is normal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
16	P191A14	"OBC_CHECK-ELSF_ ERR OBC Self-Check Fault "	hardware Circuit malfunction or component damage	Check hardware Circuits	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
19	P168117	" D C D C _ V I N _ O V E R _ E R R DCDC high -voltage side input overvoltage fault "	"1 .P o w e r battery abnormality ; 2 The detection circui is abnormal;"	Check the battery voltage is abnormal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
20	P168116	" D C D C _ V I N _ L O W _ E R R DCDC high -voltage side input under voltage fault "	"1 .P o w e r battery abnormality ; 2 The detection circui is abnormal;"	Check the battery voltage is abnormal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear the historical DTCs; or 2. When the GW KL15 power is cycled 40 times without any new faults, the GW automatically clears the historical DTCs;"

Serial Number	DTC Display Code	Meaning of DTC	Possible causes of malfunction	Maintenance Recommendations	Fault code self-recovery conditions
21	P168217	" DC DC _V OUT_ OVER _ ERR DCDC Low -voltage output side over voltage fault "	battery abnormality or DCDC internal fault	Check Low-voltage battery	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
22	P168216	" DC DC _V OUT_ LOW_ERR DCDC low voltage output side under-voltage fault "	battery voltage too low	Check power supply	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
23	P178619	"DCDC_OUT_ SHORT_ERR DCDC low-voltage output side output short-Circuit fault"	Output side Circuit short	Check Low-voltage battery	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
24	P178713	"D C D C _ O U T _ B R E A K _ E R R DCDC low-voltage output side open Circuit fault"	"1 Power battery abnormality ; 2 The detection circui is abnormal;"	Check the battery voltage is abnormal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
25	P168019	"DC DC - I OUT_OVER_E RR DC/DC output overcurrent"	"1 Power battery abnormality ; 2 The detection circui is abnormal;"	Check the battery voltage is abnormal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
26	P17854B	"DC DC - TEMP_WARM _ERR DCDC Over-temperature Derating"	temperature too high	Check the cooling system	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear the historical DTCs; or 2. When the GW KL15 power is cycled 40 times without any new faults, the GW automatically clears the historical DTCs;"

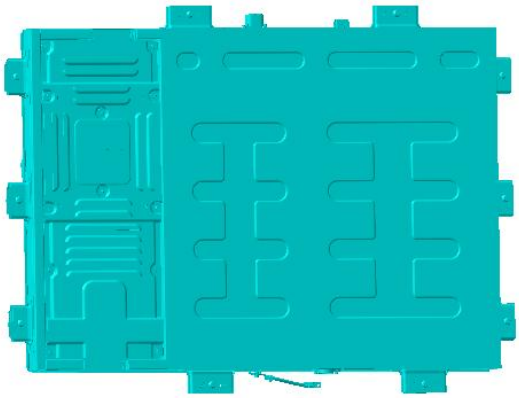
Serial Number	DTC Display Code	Meaning of DTC	Possible causes of malfunction	Maintenance Recommendations	Fault code self-recovery conditions
27	P17834B	"DC DC _TEMP_ ERR_ERR DCDC Over-temperature Shutdown"	temperature too high	Check the cooling system	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
28	P17839B	" D C D C _ CHECK-ELSF_ ERR DC Self-check failure "	hardware Circuit malfunction or component damage	Check hardware Circuits	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
29	U168000	"OBCLOSE_BMS_ERR OBC lost communication with BMS "	No messages received for 10 consecutive frames	Monitor whether the BMS messages are normal	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."
30	U168001	"OBC CLOSE_VCU_ ERROR OBC lost communication with VCU "	check can bus	"1. Power off and check the CAN terminal resistor value (normal is 60±5 ohms). 2. Check whether the CAN bus load rate is too high (normal ≤ 40%). 3. Check the shielding rings of the high-voltage harness. 4. Check if there are a large number of error frames on the bus, and unplug the front compartment harness fuses one by one to identify and eliminate faulty low-voltage electronic components. 5. Check whether the front compartment harness is properly laid out. 6. Check whether the CAN wires are short-Circuited or disconnected. 7. Others."	"1. When using the Clear History Fault Diagnostic Service to clear historical DTCs, clear historical DTCs; or 2. When the gateway (GW) KL15 power is cycled 40 times without any new faults, the GW automatically clears historical DTCs."

Common Malfunctions

Malfunction phenomenon	Possible Causes of Malfunction	Handling Methods
Do not display battery information	CAN communication failure	Inspect CAN communication system
	BMS failureInstrument failure	Replace power battery
	Parameter error	Replace instrument cluster
Charging completes without stopping	Battery failure	Correct parameters
Cannot fully charge	Parameter error	Replace battery
	Charging socket does not meet standards	Correct parameters
Slow charging cannot charge	Poor contact of charging gun connector	Charge with a standard-compliant charging socket
	Charging gun malfunction	Repair and restore
	Vehicle AC charging socket malfunction	Replace charging gun
	AC charger malfunction	Replace slow charging socket
	AC charger high-voltage harness connection failure	Replace charger / DC-DC integrated unit
	High-voltage harness connection failure of traction battery	Inspect high-voltage harness connections
	AC charger low-voltage power failure	Inspect high-voltage harness connections
	AC charger low-voltage grounding failure	Inspect charger / DC-DC integrated unit power supply
	CAN communication failure	Inspect charger / DC-DC integrated unit grounding
	Battery failure	Inspect CAN communication faults
	Charging pile does not meet standards	Replace power battery assembly
Fast charging cannot charge	Charging pile malfunction	Charge with a standard-compliant charging pile
	Poor contact of charging gun connector	Replace charging pile for charging
	Vehicle DC fast-charging socket malfunction	Repair and restore
	High-voltage harness connection failure of traction battery	Replace fast charging socket
	Battery failure	Inspect high-voltage harness connections
	Possible Causes of Malfunction	Replace power battery assembly

3.9.7 Disassembly and Installation

Three-in-one assembly disassembly

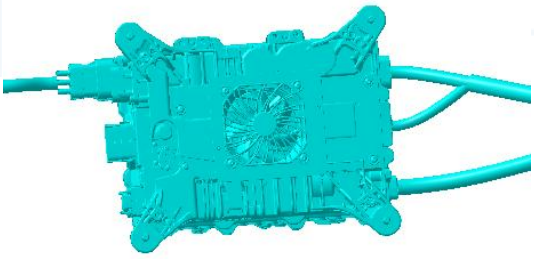


1. Turn the power switch to the OFF position, disconnect the negative battery cable, and wait for 5 minutes. Refer to the 'Vehicle Maintenance Power-off Procedure'.

2. Use an electric lift to raise the vehicle and remove the lower engine guard.

3. Disconnect the low-voltage wiring harness of the power battery, and disconnect the high-voltage cable connectors of the power battery ---- three-in-one assembly, and the power battery ---- charging cable connectors.

4. Disconnect the 3-in-1 low-voltage control harness connector from the AC charging connector



5. Remove the grounding of the low-voltage power supply and the fastening bolts of the positive power supply wire, and disconnect the power supply wire.

6. Disconnect the PTC compressor high-voltage Cable connector on the left end of the all-in-one machine

7 Remove the 4 bolts that secure the integrated machine to the Power system mounting crossbeam. Torque: 23±3 N·m

8. Carefully remove the all-in-one assembly

Install

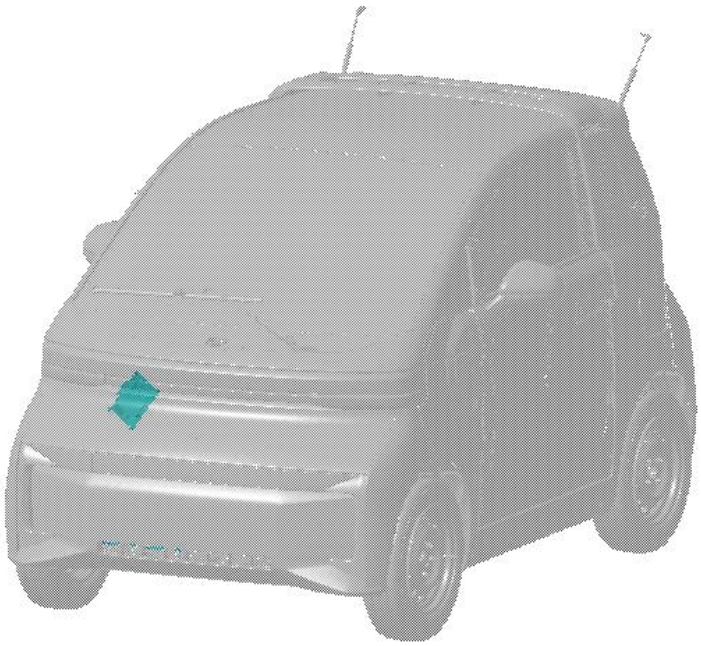
Follow the disassembly steps in reverse order.

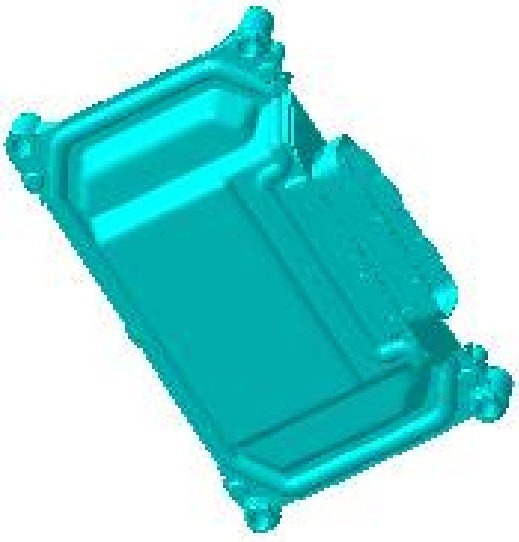
Note:

The wiring harness plug connects well with the socket on the motor controller, with no looseness.
The motor controller makes good contact with the Power system bracket assembly.
Installation is secure and reliable, with no possibility of loosening.

3.10 Vehicle Controller

3.10.1 Component Diagram





❖ System Description

System Overview

The Vehicle Control Unit (VCU) is the abbreviation for Vehicle Control Unit. As the core main control unit of the entire vehicle, it determines the driver's driving intention by collecting signals from the accelerator pedal, brake pedal, gear position, etc. By monitoring vehicle status information (such as vehicle speed and temperature), after the VCU processes and makes judgments, it sends vehicle operational status control commands to the drive system and the power battery system. Simultaneously, it controls the working modes of the onboard accessory power systems, enabling coordinated and safe operation of various sub-control units to realize the functions of the electric vehicle system.

As the core component of vehicle control, the VCU's main functions include: high/low-voltage power-on sequencing management, high/low-voltage power-off sequencing management, gear position management, accelerator pedal interpretation, torque interpretation, accessory management, instrument display/alarm, network management, remote monitoring, and fault diagnosis.

Functions and Operations

The specific functions of the vehicle control unit are as follows:

High/Low-Voltage Power-On and Power-Off Sequencing Management:

The VCU controls the high-voltage power-on and power-off of the entire vehicle based on the current power gear, gear shift lever position, and brake pedal status.

Gear Position Management:
It performs gear control of the vehicle according to the driver's operations, enabling vehicle start/stop and forward/reverse movement control.

Accelerator Pedal Interpretation and Torque Interpretation:
It reasonably controls the vehicle's torque output based on the driver's driving demands and the current vehicle status. At the same time, when the vehicle decelerates and brakes, it performs energy recovery control.

Accessory Management:
It reasonably manages various auxiliary components based on the current overall vehicle status. The auxiliary components include the air conditioning system, cooling fan, vacuum pump, water pump, DCDC, etc.

Instrument Display/Alarm:
It collects and processes basic vehicle information and displays it on the combination instrument to provide the driver with current vehicle information.

Network Management:
As the communication information center for various modules related to new energy power control, the VCU centrally collects various power-related information through network communication and simultaneously provides power system-related control information to corresponding modules.

Remote Monitoring:
Information related to the new energy three-electric system (battery, motor, and electronic control) can be remotely monitored. The VCU provides relevant information to the remote controller.

Fault Diagnosis:
It classifies the vehicle's fault levels according to the overall vehicle's fault status and takes different fault handling measures for the vehicle based on different fault levels.

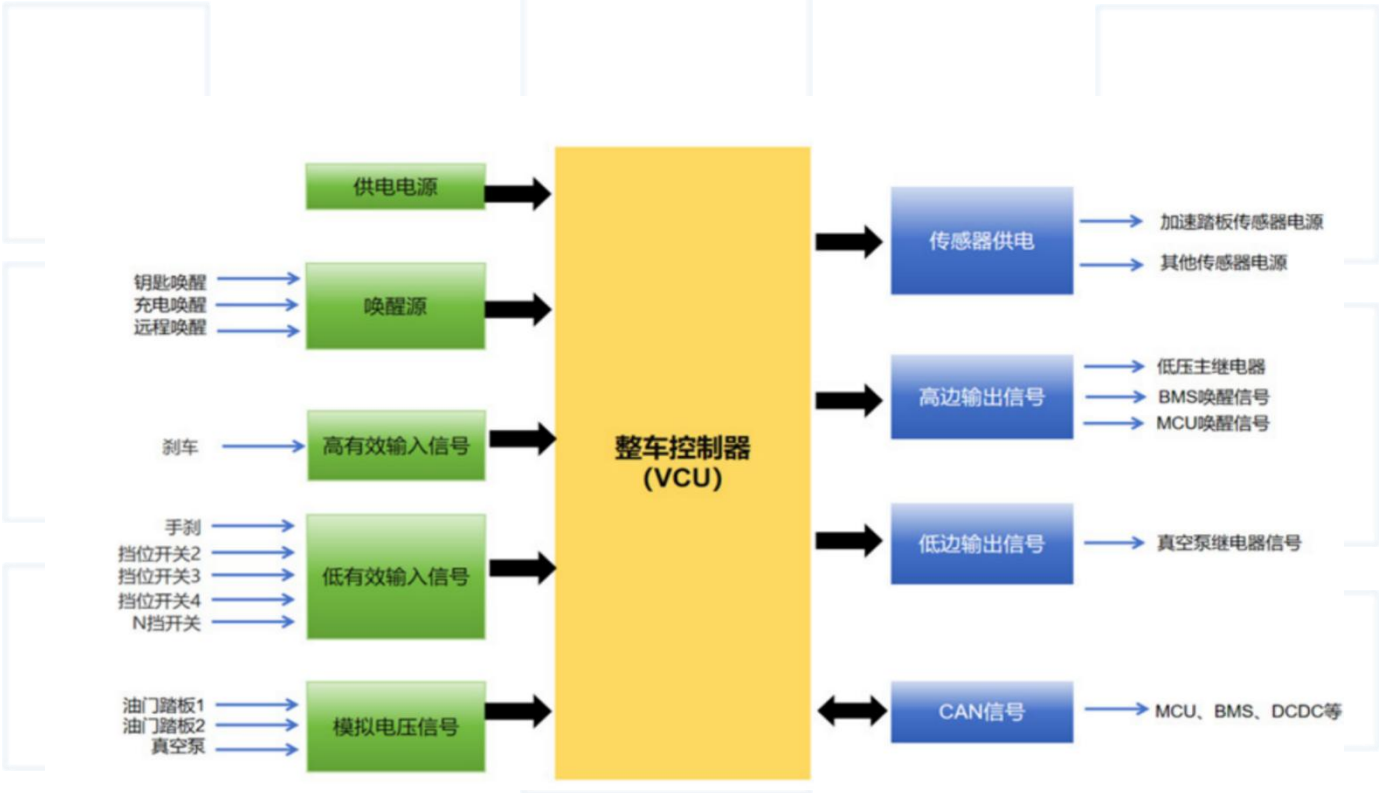
3.10.2 Maintenance Precautions

- ✧ Maintenance work should be carried out in accordance with the standard diagnostic procedures.
- ✧ When damage to components of the vehicle control system is detected, the entire component should be replaced. Decomposition or disassembly operations are strictly prohibited, as they may affect the normal operation of other components.

- Do not arbitrarily remove any components or their connectors from their installed positions to avoid damage or the entry of foreign substances such as moisture and oil into the connectors, which could affect the normal operation of the system.
- When disconnecting or connecting connectors, the power state must be set to "OFF"; otherwise, electrical components may be damaged.
- If it is necessary to remove the negative battery cable or ground connection, ensure that the power state is set to "OFF" and that all electrical loads are turned off.
- The components of the vehicle control system have high reliability. When abnormalities occur in the vehicle or drive motor, first check whether the relevant mechanical components are intact and whether the system connectors, wiring harnesses, and ground connections are in good contact.
- Faults in the vehicle control system are mainly related to the wiring harnesses and connectors, typically including broken wiring harnesses, poor connector contact, connector terminals being pulled out or not fully inserted, and improper grounding of components.
- Breaks in the middle of a wiring harness are rare; most breaks occur at the connectors. Therefore, special Note should be paid to carefully inspecting the wiring harnesses at the sensor and connector locations.
- Poor contact may be caused by corrosion of connector terminals, the entry of external dirt into the terminals, or a reduction in contact pressure between the connector plug and socket. Separating and then reinserting the connector can change its connection status and restore normal contact.
- During fault diagnosis, if no abnormal conditions are found when inspecting the wiring harnesses and connectors, and the fault disappears after reconnection, it can be considered that there is a fault in the wiring or connectors.
- Do not use a thin needle to pierce the wiring harness to check system electrical signals.
- When replacing sensors or controllers, handle them with care to ensure they are not damaged. Any impact or drop can cause significant damage to their performance.
- Tighten fixing bolts or nuts to the specified torque.
- When performing arc welding on the vehicle, disconnect the positive and negative battery cables. If necessary, remove control units such as the vehicle control unit to prevent damage from high voltage during arc welding. Exercise extreme caution when performing body repair work near the vehicle control unit or sensors to avoid damaging these electronic components.
- When installing or removing the vehicle control unit, the operator should ground themselves to remove static electricity; otherwise, static electricity from the human body may damage the Circuits of the vehicle control unit.
- The power supply systems used in vehicles are all negative-grounded. When installing the battery, pay special Note not to reverse the positive and negative terminals to avoid damaging electronic components.
- When a system fault occurs, after clearing the fault code with a diagnostic tool, if the system fault is not resolved, the fault code will persist when the fault code reading procedure is performed again until the fault is resolved. Additionally, historical fault codes should also be cleared after maintenance is completed.

3.10.3 System Operating Principle

3.10.3.1 System Principle Block Diagram



3.10.3.2 System Principle Explanation

Vehicle Power-On and Power-Off Control

Before powering on, the gear shift switch should first be set to the N (Neutral) position. Then, the brake pedal should be depressed, and the one-touch start switch should be pressed. The vehicle should enter the "Ready" state (indicated on the instrument panel) within two seconds under normal conditions, with the brake pedal remaining depressed until the "Ready" state is achieved.
The one-touch start switch has four positions: OFF, ACC (Accessory), ON, and START.

Vehicle Power Distribution

The VCU determines the driver's intent based on signals such as brake pedal switch status and depth, accelerator pedal depth, BMS (Battery Management System) allowable discharge power, MCU (Motor Control Unit) maximum executable torque, current vehicle speed, gear position, and overall vehicle fault level. Based on this comprehensive assessment, the VCU sends target torque, gear status, and motor operating mode commands to the MCU. The MCU then executes forward or reverse driving or power generation according to the target torque, gear status, and motor operating mode.

Vehicle Information Display

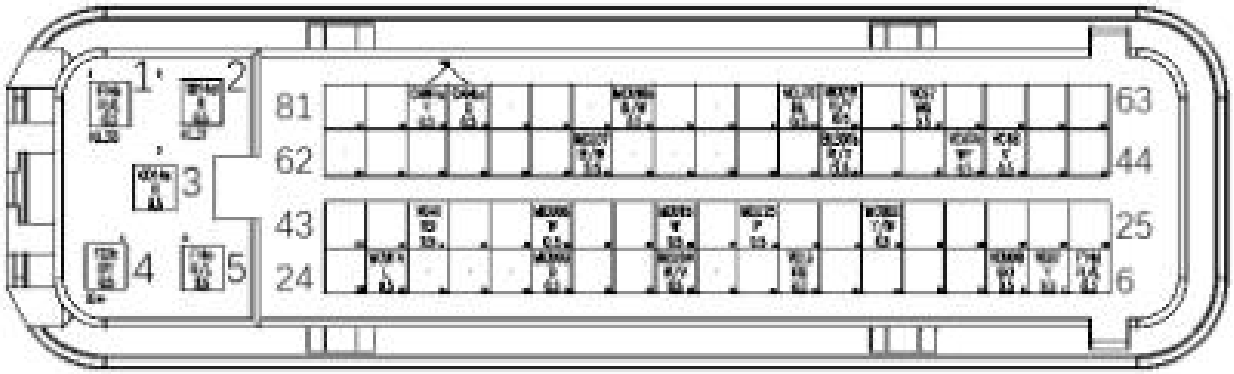
Signals received by the VCU are processed and then sent to the instrument panel for display in corresponding indicator forms, providing the driver with vehicle status information. Some of the information displayed on the ICM (Instrument Cluster Module) is derived from external signals processed by the VCU, while other information is directly collected by the ICM from the CAN bus.

Fault Handling Strategy

The primary objectives of fault handling are to ensure vehicle driving safety, reliability, and stability. A hierarchical fault handling strategy is adopted, with the overall approach as follows:

3.10.4 Electrical Connector Information

❖ Pin Definitions



Pin Number	Pin Definition	Wire Color	Wire Diameter（mm）
1	KL30	RL	0.5
2	KL31	B	0.5
3	KL31	B	0.5
4	Key Wake-up	BY	0.5
5	KL30（Power）	RL	0.5
6	Main power（Drive Power Supply）	RL	0.5
7	Vacuum Pump Relay Coil Negative	Y	0.5
8	MCU Wake-up/High-Side Output	BN	0.5
9-12	-	-	-
13	Vacuum Sensor Signal	RB	0.5
14-15	-	-	-
16	Vacuum Sensor Signal Ground	WV	0.5
17-18	-	-	-
19	Vacuum Sensor Signal 5V Power Supply	O	0.5
20-22	-	-	-
23	Accelerator Pedal Signal 5V Power Supply	L	0.5
24-29	-	-	-
30	Accelerator Pedal Signal 1	YW	0.5
31-32	-	-	-
33	Accelerator Pedal Signal 2	P	0.5
34	-	-	-
35	Accelerator Pedal Signal Ground	W	0.5
36-37	-	-	-
38	Gear Selector Switch 2	W	0.5
39-40	-	-	-
41	Charging Wake-up (OBC Wake-up VCU)	RB	0.5
42-45	-	-	-
46	MC Main Relay Coil Positive	V	0.5

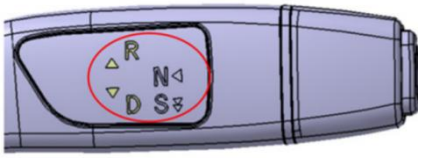
Pin Number	Pin Definition	Wire Color	Wire Diameter（mm）
47	Remote Wake-up (Small Battery Wake-up)	WY	0.5
48-49	-	-	-
50	Brake Pedal Switch Signal	RY	0.5
51-55	-	-	-
56	Gear Selector Switch 3	BW	0.5
57-66	-	-	-
67	BMS Wake-up	WG	0.5
68	-	-	-
69	Gear Selector Switch 4	GY	0.5
70	N-Gear Signal (L7)	BL	0.5
71-73	-	-	-
74	Parking Brake Switch Signal	BW	0.5
75-77	-	-	-
78	CANL	G	0.5
79	CANH	Y	0.5
80-81	-	-	-

❖ Accelerator Pedal

The voltage of Accelerator Pedal Signal 1 ranges from 1V to 4.1V, corresponding to accelerator pedal positions from 0% to 100%.

The voltage of Accelerator Pedal Signal 2 ranges from 0.5V to 2.05V, corresponding to accelerator pedal positions from 0% to 100%.

❖ Gear Recognition



Gear Recognition	Gear Selector Switch 2	Gear Selector Switch 3	Gear Selector Switch 4	N-Gear Switch	Remarks
R	×	×	√	×	
Init	×	√	×	×	Default position after gear engagement
D	√	×	×	×	
N	/	/	/	√	

❖ Gear Shifting Logic

Shifting requires two actions: first, depress the brake pedal, then shift gears. Otherwise, the gear shift will not be responded to. However, if the vehicle speed is greater than 10 km/h (TBD), the gear can be shifted directly to D-gear without depressing the brake pedal. If the brake pedal is depressed during gear shifting and the vehicle speed is too high, gear shifting is not allowed, and the current gear is maintained. If the vehicle speed is too low to meet gear shifting conditions, the gear is shifted to N-gear.

When the instrument panel indicates D-gear, shifting down will engage S-gear.

When the instrument panel indicates S-gear, shifting down will revert to D-gear.

❖ Driving Modes

Gear position	Drive Mode	Regenerative Braking Mode
"D gear"	Normal	High Regeneration
"S gear"	Sport	Standard Regeneration
"R gear"	Normal	No Regeneration

❖ Vehicle Control

1. After the vehicle is in the "Ready" state, shifting to D/S/R gear, without depressing the accelerator or brake pedal, and releasing the handbrake allows the vehicle to creep forward.
2. Depressing the accelerator pedal enables normal vehicle driving.
3. When the vehicle speed is greater than 10 km/h and the battery voltage is within the chargeable range, depressing the brake pedal or releasing the accelerator pedal initiates braking or coasting energy recovery.

❖ Key Power-On

1. In the KeyOn state, the VBU is awakened. If there are no faults, the VBU will control the high-voltage system to power on.
2. Depressing the brake pedal and pressing KeyStart allows the vehicle to enter the "Ready" state, or the vehicle can enter the "Ready" state within 5 seconds of pressing KeyStart while depressing the brake pedal.
3. If the vehicle is in the "Ready" state and KeyOff is pressed, the VBU will control the vehicle to power down the high-voltage system and enter sleep mode.
4. If the vehicle is in the "Ready" state and a charging gun is inserted, charging can begin directly, and the vehicle will automatically exit the "Ready" state.

❖ Charging

1. When the gun is inserted in the sleep state, the VBU will control the high voltage and cannot be Ready. If the gun is removed, the VBU will control the power-off.
2. During charging, the key must be turned to the KeyOn position for the air conditioning to operate normally. If KeyOff is selected, the air conditioning will turn off.
3. If KeyOn is effective during charging, after removing the charging gun, the vehicle can enter the "Ready" state by depressing the brake pedal and pressing KeyStart.

❖ Remote Battery Charging

When the battery charge is insufficient, in sleep mode, the LBMS will automatically awaken, and the VBU will automatically power on the high-voltage system to charge the battery. After battery charging is complete, the wake-up request stops, and the VCU automatically powers down the high-voltage system.

❖ Remote Air Conditioning Control

When the vehicle is in sleep mode, the air conditioning can be controlled via a mobile app until the app turns off the air conditioning or the maximum remote air conditioning operation time is reached. If the vehicle is powered on, it will not respond to remote air conditioning control commands.

3.10.5 Diagnostic Trouble Code

Serial Number	DTC Display Code	DTC Meaning	Fault Maturity Condition	System Performance (Discharging)	System Performance (Charging)	Fault Clearance Condition
1	P140000	VCU_BMSFltLv1_flg BMS Level 1 Discharge Fault	BMS reports Level 1 discharge fault	/	/	
2	P140100	VCU_BMSFltLv2_flg BMS Level 2 Discharge Fault	BMS reports Level 2 discharge fault	Tortoise Light (indicator)	/	
3	P140200	VCU_BMSFltLv3_flg BMS Level 3 Discharge Fault	BMS reports Level 3 discharge fault	Tortoise Light (indicator)	/	
4	P140300	VCU_BMSFltLv4_flg BMS Level 4 Discharge Fault	BMS reports Level 4 discharge fault	Power Battery Fault Light; Tortoise Light (indicator)	/	
5	P140400	VCU_BMSFltLv5_flg BMS Level 5 Discharge Fault	BMS reports Level 5 discharge fault	Power Battery Fault Light; System Fault Light	/	
6	P140500	VCU_BMSFltLv6_flg BMS Level 6 Discharge Fault	BMS reports Level 6 discharge fault	Power Battery Fault Light; System Fault Light	/	
7	P140600	VCU_BMSChrgFltLv1_flg BMS Level 1 Charge Fault	BMS reports Level 1 charge fault	/	/	
8	P140700	VCU_BMSChrgFltLv2_flg BMS Level 2 Charge Fault	BMS reports Level 2 charge fault	/	/	
9	P140800	VCU_BMSChrgFltLv3_flg BMS Level 3 Charge Fault	BMS reports Level 3 charge fault	/	/	
10	P140900	VCU_BMSChrgFltLv4_flg BMS Level 4 Charge Fault	BMS reports Level 4 charge fault	/	/	
11	P141000	VCU_BMSChrgFltLv5_flg BMS Level 5 Charge Fault	BMS reports Level 5 charge fault	/	Power Battery Fault Light; System Fault Light	

Serial Number	DTC Display Code	DTC Meaning	Fault Maturity Condition	System Performance (Discharging)	System Performance (Charging)	Fault Clearance Condition
12	P141100	"VCU_BMSChrgFltLv6_flg BMS reports Level 6 charging fault "	BMS reports Level 6 charging fault	/	Power battery fault light; system fault light	
13	P141200	"VCU_	"1. 0x13C message valid 2. CellMinT < 5°C 3.	Tortoise light	/	Cleared upon meeting any of the following conditions: 1. CellMinU > 2.1V 2. 0x13C message valid and Tmin_hold rises by ≥ 3°C relative to the fault reporting time, and then CellMinU ≥ 2.5V with accelerator pedal position ≤ 5%
14	P141300	"VCU_	"1. 0x13C message valid 2. CellMinT > 5°C 3. .	Tortoise light	/	Cleared upon meeting any of the following conditions: 1. CellMinU < 2.1V 2. 0x13C message valid and Tmin_hold rises by ≥ 3°C relative to the fault reporting time, and then CellMinU ≥ 2.7V with accelerator pedal position ≤ 5%
15	P141400	"VCU_	"1. 0x13C message valid 2. CellMinU < 2.1V"	Power battery fault light; system fault light	/	Cleared upon meeting any of the following conditions: 1. Power-off clearing
16	P141500	" VCU_ CellOverUFlt_flg Single Cell Overvoltage "	"1. 0x13C message valid 2. CellMaxU ≥ 3.8V"	Power battery fault light; system fault light	Power battery fault light; system fault light	CellMaxU ≤ 3.4V
17	P141600	"VCU_ CellOver_Diff_flt Battery voltage difference too large "	"1. 0x13C message valid 2. CellMaxU ≤ 3.2V when CellMaxU - CellMinU ≥ 0.7V; or CellMaxU > 3.2V when CellMaxU - CellMinU ≥ 0.3V; CellMaxUNr - CellMinUNr > 1"	/	/	Cleared upon meeting any of the following conditions: 1. Down clearing"
18	P141700	"VCU_	"1. 0x13C message valid 2. CellSumU > 5V"	/	/	Cleared upon meeting any of the following conditions: 1. Down clearing"
19	P141800	"VCU_ CellOverTFlt_flg Single Cell Over-temperature"	"1. 0x13C message valid	Tortoise light	/	

20	P141900	"VCU_	"1. 0x13C message valid; 2. CellMaxT ≥ 60°C "	Tortoise light; Power battery fault light;	Power battery fault light; System fault light	CellMaxT<58℃
Serial Number	DTC Display Code	DTC Meaning	Fault Maturity Condition	System Performance (Discharging)	System Performance (Charging)	Fault Clearance Condition
21	P142000	"VCU_	"1. 0x13C message valid; 2. 66 ≤ BattU < 74V; 3. CellMinT < 5°C "	Tortoise light	/	" Cleared upon meeting any of the following conditions: 1. BattU < 66V; 2. 0x13C message valid && Tmin rises by ≥ 3°C relative to the Tmin_hold recorded at the fault reporting time, and then BattU ≥ 74V is judged again && the accelerator pedal position ≤ 5%"
22	P142100	"VCU_	"1. 0x13C message valid; 2. 66 ≤ BattU < 79V	Tortoise light	/	" Cleared upon meeting any of the following conditions: 1. BattU < 66V; 2. 0x13C message valid && Tmin rises by ≥ 3°C relative to the Tmin_hold recorded at the fault reporting time, and then BattU ≥ 79V is judged again && the accelerator pedal position ≤ 5%"
23	P142200	"VCU_	"1. 0x13C message valid; 2. BattU < 66V;"	Power battery fault light; System fault light	/	" Cleared upon meeting any of the following conditions: 1. Power-off clearing;"
24	P142300	"VCU_ BattUnBalT_flg Battery Temperature Imbalance "	"1. 0x570 message valid 2. CellMaxT - CellMinT > 15°C "		/	" Cleared upon meeting any of the following conditions: 1. Power-off clearing;"
25	P142400	"VCU_ BattUnderT_flg Battery Temperature Too Low "	"1. 0x570 message valid CellminT ≤ -30°C"	Tortoise light; Power battery fault light;	/	1、CellminT>-25℃
26	P142500	"VCU_ BattOverUFlt_ flg Total Voltage Overvoltage"	"1. 0x13B message is valid 2. BattU > 109V"	/	Power battery fault light; System fault light	1、BattU ≤ 104V
27	P142600	"VCU_ BattChrgOverI_ flg Battery Charging Overtemperature "	"1. 0x13B message is valid 2. BattI ≤ -200A"	/	Power battery fault light; System fault light	" Cleared when either condition is met: 1. Cleared upon power-off;"
28	P142700	"VCU_ SnsrCurFlt_flg Current Sensor Fault "		/	/	
29	P142800	"VCU_	"1. 0x512 message is valid 2. Closing command is valid	/	/	" Cleared when either condition is met:1.Cleared upon power-off;"

30	P142900	"VCU_	" 1. 0x512 message is valid 2. Closing command is invalid	Tortoise light	Power battery fault light; System fault light	" Cleared when either condition is met: 1. Cleared upon power-off;"
31	P143000	"VCU_ MCUFltLv1_flg MCU Level 1 Fault "	MCU reports a fault of level 1	/	/	" Cleared when either condition is met: 1. Cleared upon power-off; 2. MCU fault level ~= 1"
32	P143100	"VCU_ MCUFltLv2_flg MCU Level 2 Fault"	MCU reports a fault of level 2	Tortoise light	/	" Cleared when either condition is met: 1. Cleared upon power-off; 2. MCU fault level ~= 2"
33	P143200	"VCU_ MCUFltLv3_flg MCU Level 3 Fault"	MCU reports a fault of level 3	Tortoise light	/	" Cleared when either condition is met: 1. Cleared upon power-off; 2. MCU fault level ~= 3"
34	P143300	"VCU_ MCUFltLv4_flg MCU Level 4 Fault "	MCU reports a fault of level 4	Tortoise light; Motor fault light	/	" Cleared when either condition is met: 1. Cleared upon power-off; 2. MCU fault level ~= 4"
35	P143400	"VCU_MCUFltLv5_flg MCU Level 5 Fault "				
36	P143500		12PwrSplyU ≤ 11V	Tortoise light; 12V battery fault light	12V battery fault light	
37	P143600		12PwrSplyU ≤ 9V	System fault light; 12V battery fault light	12V battery fault light	12PwrSplyU ≥ 10V
38	P143700		12PwrSplyU ≥ 16V	System fault light; 12V battery fault light	System fault light; 12V battery fault light	12PwrSplyU ≤ 14
39	P143800		5PwrSplyU ≥ 5.6V	/	/	5PwrSplyU ≤ 5V
40	P143900		5PwrSplyU ≤ 4.6V	/	/	5PwrSplyU ≥ 5V
41	P144000	"VCU_	AccPedl1U>4.8V	/	/	AccPedl1U ≤ 4.8V
42	P144100	"VCU_	AccPedl1U<0.5V	/	/	AccPedl1U ≥ 0.5V
43	P144200	"VCU_	AccPedl2U>2.5 V	/	/	AccPedl2U ≤ 2.5V
44	P144300	"VCU_	AccPedl2U<0.15 V	/	/	AccPedl2U ≥ 0.15V
45	P144400	"VCU_	|AccPedl1U/2-AccPedl2U|>0.2	/	/	|AccPedl1U/ 2- AccPedl2U| ≤ 0.2
46	P144500	"VCU_		Tortoise light	/	
47	P144600	"VCU_BrkFldFlt_ flg Low Brake Fluid Level "	"1、	Tortoise light, Brake System Fault Light	Brake System Fault Light	BrkFldSt=0
48	P144700	"VCU_ VacSnsrFlt_flg Short Circuit of Vacuum Pump Sensor "		Tortoise light, Brake System Fault Light	Brake System Fault Light	
49	P144800	"VCU_ VacWOverTiFlt_ flg Vacuum Pump Working Timeout "	VacWorkTi ≥ 60s	/	/	

50	P144900	"VCU_	The number of times the vacuum pump works for 60s within one power -on cycle reaches 5	Tortoise light, Brake System Fault Light	Brake System Fault Light	
51	P145000	"VCU_ PrecOverTiFlt_ flg Pre-charge Timeout "	The pre-charge relay has been closed for more than 2.5s and the conditions are not met	System Fault Light	System Fault Light	" Cleared when either condition is met: 1. Cleared upon power-off;"
52	P145100	"VCU_ PosRlyAdhFlt_ flg Main Positive Relay Adhesion "	After the pre -charge is disconnecte d and the main positive is disconnecte d for 3s	System Fault Light	System Fault Light	" Cleared when either condition is met: 1. Cleared after one power-on and power-off cycle without this fault;"
53	P145200	"VCU_	"1、Main positive closing command is valid 2、MCUDcU<50V"	System Fault Light	System Fault Light	"Cleared when either condition is met: 1. Cleared upon power-off;"
54	P145300	"VCU_	The tube-opening command is valid, but the tube is not opened within 3s	Tortoise light; Motor Fault Light	/	" Cleared when either condition is met: 1. Cleared upon power-off;"
55	P145400	"VCU_	"1. Active discharge command is valid 2. Active discharge is not completed after 4s"	/	/	
56	P145500	"VCU_DcdcFlt_ flg DCDC Fault "	DCDCFltLv=3	Tortoise light, 12V Battery Fault Light		DCDCFltLv<3
57	P145600	"VCU_ LBMSFltLv2_flg LBMS Level 2 Fault"	LBMSFltLv=2	Tortoise light, 12V Battery Fault Light	Tortoise light, 12V Battery Fault Light	LBMSFltLv<2
58	P145700	"VCU_ LBMSFltLv3_flg LBMS LBMS Level 3 Fault "	LBMSFltLv=3	Tortoise light, 12V Battery Fault Light	Tortoise light, 12V Battery Fault Light	" Cleared when either condition is met: 1. Cleared upon power-off;"
59	P145800	"VCU_ LBMSFltLv4_flg LBMS Level 4 Fault "	LBMSFltLv=4	Tortoise light, 12V Battery Fault Light	Tortoise light, 12V Battery Fault Light	"Cleared when either condition is met: 1. Cleared upon power-off;"
60	U007300	"CAN BusOff CAN Network Collapse "	Judged at the underlying layer	/	/	Judged at the underlying layer

61	U011000	"VCU_ MCUTiOutFlt_ flg MCU Communication Loss "	"1. MCU wake-up is valid. 2. The 0x138 message is invalid || the 0x139 message is invalid, confirmed after 300ms. 3. The 0x30B message is invalid, confirmed after 600ms. 4. The 0x238 message is invalid, confirmed after 1000ms."	System Fault Light	/	"Cleared when either condition is met: 1. Cleared upon power-off;"
62	U011100	"VCU_ BMSTiOutFlt_flg BMS Communication Loss"	"1. BMS wake-up is valid. 2. The 0x13F message is invalid || the 0x13B message is invalid || the 0x13C message is invalid, confirmed after 300ms. 3. The 0x570 message is invalid || the 0x57C message is invalid || the 0x573 message is invalid, confirmed after 4000ms. "	System Fault Light	System Fault Light	"Cleared when either condition is met: 1. Cleared upon power-off;"
63	U015500	"VCU_ICMTiOutFlt_flg ICM Communication Loss "	"1. Key-on or key-start is valid. 2. The 0x508 message is invalid. "	/	/	"Cleared when either condition is met: 1. Cleared upon power-off; 2. The 0x508 message is valid."
64	U029800	"VCU_ DCDCTiOutFlt_ flg DCDC Communication Loss"	"1. The MC relay is closed. 2. The 0x595 message is invalid || the 0x596 message is invalid. "	/	/	"Cleared when either condition is met: 1. Cleared upon power-off; 2. Both the 0x595 and 0x596 messages are valid. "
65	U019B00	"VCU_ OBCTiOutFlt_flg OBC Communication Loss "	"1. The MC relay is closed and the charging wake-up is valid. 2. The 0x326 message is invalid || the 0x327 message is invalid."	/	System Fault Light	" Cleared when either condition is met: 1. Cleared upon power-off; 2. Both the 0x326 and 0x327 messages are valid. "
66	U015600	"VCU_ TBOXTiOutFlt_ flg TBOX Communication Loss "	"1. The MC relay is closed. 2. The 0x598 message is invalid. "	/	/	" Cleared when either condition is met: 1. Cleared upon power-off; 2. The 0x598 message is valid."
67	U110187	"VCU_ EACTiOutFlt_flg EAC Communication Loss "	"1. The MC relay is closed. 2. The 0x380 message is invalid."	/	/	" Cleared when either condition is met: 1. Cleared upon power-off; 2. The 0x380 message is valid. "

68	U010F00	"VCU_ ACTiOutFlt_flg AC Communication Loss "	"1. Key-on or key-start is valid. 2. The 0x50B message is invalid."	/	/	" Cleared when either condition is met: 1. Key-off is valid. 2. The 0x50B message is valid. "
69	U014000	"VCU_ BCMTiOutFlt_ flg BCM Communication Loss "	"1. Key wake-up or charging wake-up is valid. 2. The 0x565 message is invalid."	/	/	" Cleared when either condition is met: 1. Cleared upon power-off; 2. The 0x565 message is valid. "
70	U012100	"VCU_ ABSTiOutFlt_flg ABS Communication Loss "	"1. Key-on or key-start is valid and the MC relay is closed. 2. The 0x200 message is invalid."	/	/	"Cleared when either condition is met: 1. Cleared upon power-off; 2. The 0x200 message is valid. "
71	P145900	"VCU_ ChrgSlidFlt_flg Charging Vehicle Creeping "	"1. In charging state. 2. Vehicle speed is greater than or equal to 3km/h."	/	System Fault Light	"1. Unplug the charging gun. 2. Vehicle speed is less than 1km/h."
72	P146000	"VCU_ EepReadFlt_flg Eep Read Failure "	EepPreIntSt~=1	/	/	
73	P146100	"VCU_GearFlt_ flg Gear Fault "	"1. The entire vehicle is in the Ready state. 2. None of the following combinations are satisfied a、GearSwt2=0 , GearSwt3=0 GearSwt4=0; b、GearSwt2=0 , GearSwt3=1 GearSwt4=0; c、GearSwt2=0 , GearSwt3=0 GearSwt4=1; d、GearSwt2=1 , GearSwt3=1 GearSwt4=0; e、GearSwt2=1 , GearSwt3=0 GearSwt4=0; "	/	/	"1. Any of the following combinations are satisfied a、 GearSwt2=0 GearSwt3=0 GearSwt4=0; b、 GearSwt2=0 GearSwt3=1 GearSwt4=0; c、 GearSwt2=0 GearSwt3=, GearSwt4=1; d、 GearSwt2=1, GearSwt3=1 GearSwt4=0; e、 GearSwt2=1 GearSwt3=0 GearSwt4=0; "
74	P146200	"VCU_ CritGearFlt_flg Severe Gear Fault"		Tortoise Light	/	
75	P146300	"VCU_	Open Circuit Judged at the Underlying Layer	/	/	Open Circuit Judged at the Underlying Layer
76	P146400	"VCU_	Open Circuit Judged at the Underlying Layer	/	/	Open Circuit Judged at the Underlying Layer
77	P146500	"VCU_ VacRlyOverIFlt_ flg Vacuum Pump Over current "	Open Circuit Judged at the Underlying Layer	/	/	Open Circuit Judged at the Underlying Layer

78	P146600	"VCU_	Vacuum Pump Overcurrent	/	/	Vacuum Pump Overcurrent
79	P146700	"VCU_	Vacuum Pump Overcurrent	/	/	Vacuum Pump Overcurrent
80	P146800	"VCU_	Vacuum Pump Overcurrent	/	/	Vacuum Pump Overcurrent

3.10.6 Fault Diagnosis Guidance

Note: L6 has no Vehicle Control Unit (VCU) controller;

Serial Number	DTC Display Code	DTC Meaning	Possible Fault Causes	Maintenance Recommendations
1	P140000	"VCU_BMSFltLv1_flg BMS Discharge Level 1 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
2	P140100	"VCU_BMSFltLv2_flg BMS Discharge Level 2 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
3	P140200	"VCU_BMSFltLv3_flg BMS Discharge Level 3 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
4	P140300	"VCU_BMSFltLv4_flg BMS Discharge Level 4 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
5	P140400	"VCU_BMSFltLv5_flg BMS Discharge Level 5 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
6	P140500	"VCU_BMSFltLv6_flg BMS Discharge Level 6 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
7	P140600	"VCU_BMSChrgFltLv1_flg BMS Charging Level 1 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
8	P140700	"VCU_BMSChrgFltLv2_flg BMS Charging Level 2 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
9	P140800	"VCU_BMSChrgFltLv3_flg BMS Charging Level 3 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
10	P140900	"VCU_BMSChrgFltLv4_flg BMS Charging Level 4 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
11	P141000	"VCU_BMSChrgFltLv5_flg BMS Charging Level 5 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
12	P141100	"VCU_BMSChrgFltLv6_flg BMS Charging Level 6 Fault"	1. BMS fault	1. Refer to ALUMI_L7 battery fault diagnosis and handling
13	P141200	"VCU_CellLo-TUnderUFltLv1_flg Single Cell Low-Temperature Level 1 under voltage"	1. Battery charge is too low	1. Fully charge the vehicle and then confirm again
14	P141300	"VCU_CellNormTUnderUFltLv1_flg Normal-Temperature Single Cell Level 1 under voltage"	1. Battery charge is too low	1. Fully charge the vehicle and then confirm again
15	P141400	"VCU_CellUnderUFltLv2_flg Single Cell Level 2 under voltage"	1. Battery charge is too low	1. Fully charge the vehicle and then confirm again. 2. Repair or replace the battery
16	P141500	"VCU_CellOverUFlt_flg Single Cell Overvoltage"	1. Battery voltage is too high	1. Stop charging, unplug the gun, and discharge the battery. 2. Repair the battery
17	P141600	"VCU_CellOverDiffUFlt_flg Excessive Battery Voltage Difference"	1. Battery voltage imbalance	1. Balance the battery pack
18	P141700	"VCU_CellSumUBattUUn-match_flg Single Cell Voltage Mismatch with Total Voltage"	1. Large error in single cell voltage acquisition or total voltage acquisition	1. Repair or replace the BMS controller
19	P141800	"VCU_CellOverTFlt_flg Single Cell Overtemperature"	1. Battery temperature is too high	1. Park the vehicle, turn off the engine, and cool the battery

20	P141900	"VCU_CellCritOverTFlt_flg Single Cell Severe Overtemperature"	1. Battery temperature is too high	1. Park the vehicle, turn off the engine, and cool the battery
21	P142000	"VCU_BattLoTUnderUFlt_flg Total Voltage Low-Temperature under voltage"	1. Battery charge is too low	1. Fully charge the vehicle and then confirm again
22	P142100	"VCU_BattNormTUnderUFlt_flg Total Voltage Normal-Temperature under voltage"	1. Battery charge is too low	1. Fully charge the vehicle and then confirm again
23	P142200	"VCU_BattCritUnderUFlt_flg Total Voltage Severe under voltage"	1. Battery charge is too low	1. Fully charge the vehicle and then confirm again
24	P142300	"VCU_BattUnbalT_flg Battery Temperature Imbalance"	1. Uneven battery heating and cooling	1. Check if the battery heating film is faulty. 2. Check if the cooling vents are blocked
25	P142400	"VCU_BattUnderT_flg Battery Temperature Too Low"	1. Battery temperature is too low	1. Plug in the gun for charging to heat the battery
26	P142500	"VCU_BattOverUFlt_flg Total Voltage Overvoltage"	1. Battery voltage is too high	1. Stop charging, unplug the gun, and discharge the battery. 2. Repair the battery
27	P142600	"VCU_BattChrgOverI_flg Battery Charging Overtemperature"	1. Short Circuit in the charging Circuit. 2. Abnormal charger control	1. Stop charging and unplug the gun. 2. Check the high-voltage wiring harness and the charger status
28	P142700	"VCU_SnsrCurFlt_flg Current Sensor Fault"	Shunt fault	Replace the shunt
29	P142800	"VCU_HeatRlyConnectFlt Heating Relay Cannot Close"	1. Heating relay fault	1. Replace the relay
30	P142900	"VCU_HeatRlyDisconnectFlt Heating Relay Cannot Open"	1. Heating relay fault	1. Replace the relay
31	P143000	"VCU_MCUFltLv1_flg MCU Level 1 Fault"	1. MCU fault	1. Check the MCU and motor fault codes
32	P143100	"VCU_MCUFltLv2_flg MCU Level 2 Fault"	1. MCU fault	1. Check the MCU and motor fault codes
33	P143200	"VCU_MCUFltLv3_flg MCU Level 3 Fault"	1. MCU fault	1. Check the MCU and motor fault codes
34	P143300	"VCU_MCUFltLv4_flg MCU Level 4 Fault"	1. MCU fault	1. Check the MCU and motor fault codes
35	P143400	"VCU_MCUFltLv5_flg MCU Level 5 Fault"	/	/
36	P143500	/	1. DC-DC is not working. 2. Battery damage. 3. Loose 12V power wiring harness. 4. Voltage acquisition fault	1. Check if the DC-DC is working. 2. Check the power wiring harness. 3. Replace the battery
37	P143600	/	1. DC-DC is not working. 2. Battery damage. 3. Loose 12V power wiring harness. 4. Voltage acquisition fault	1. Check if the DC-DC is working. 2. Check the power wiring harness. 3. Replace the battery
38	P143700	"VCU_12VPwrSplyOverUFlt_flg 12V Power Supply Overvoltage"	1. Battery overcharging. 2. Voltage acquisition fault	1. Stop charging the battery. 2. Replace the battery
39	P143800	"VCU_5VPwrSplyOverUFlt_flg 5V Power Supply Overvoltage"	1. VCU internal fault	1. Replace the VCU hardware

Serial Number	DTC Display Code	DTC Meaning	Possible Fault Causes	Maintenance Recommendations
40	P143900	"VCU_5VPwrSplyUnderUFlt_flg 5V Power Supply under voltage"	1. VCU internal fault	1. Replace the VCU hardware
41	P144000	"VCU_AccrPed1OverUFlt_flg Accelerator Pedal 1 Exceeds Upper Limit"	1. Signal wire short-Circuited to power. 2. Voltage acquisition fault	1. Check the relevant wiring harness and connectors. 2. Replace the pedal
42	P144100	"VCU_AccrPed1UnderUFlt_flg Accelerator Pedal 1 Exceeds Lower Limit"	1. Signal wire(broken Circuit. 2. Voltage acquisition fault	1. Check the relevant wiring harness and connectors. 2. Replace the pedal
43	P144200	"VCU_AccrPed2OverUFlt_flg Accelerator Pedal 2 Exceeds Upper Limit"	1. Signal wire short-Circuited to power. 2. Voltage acquisition fault	1. Check the relevant wiring harness and connectors. 2. Replace the pedal
44	P144300	"VCU_AccrPed2UnderUFlt_flg Accelerator Pedal 2 Exceeds Lower Limit"	1. Signal wire broken Circuit. 2. Voltage acquisition fault	1. Check the relevant wiring harness and connectors. 2. Replace the pedal
45	P144400	"VCU_AccrPedlUDiffFlt_flg Two Accelerator Pedal Ratios Exceed Limit"	1. Damage or looseness in the signal wire or connector of one or both channels. 2. Voltage acquisition fault	1. Check the relevant wiring harness and connectors. 2. Replace the pedal
46	P144500	"VCU_AccrPedlBothFlt_flg Both Accelerator Pedals Are Faulty"	1. Damage or looseness in the signal wire or connector of both channels. 2. Voltage acquisition faults in both channels	1. Check the relevant wiring harness and connectors. 2. Replace the pedal
47	P144600	"VCU_BrkFldFlt_flg Low brake fluid level"	"1. Brake fluid leakage 2. Fluid level sensor failure 3. Instrument error"	"1. Add brake fluid 2. Replace the brake fluid storage tank 3. Check the instrument"
48	P144700	"VCU_VacSnsrFlt_flg Short Circuit of vacuum pump sensor"	1. Short Circuit or open Circuit of wire harness	1. Check the continuity of relevant wire harnesses and whether they are grounded
49	P144800	"VCU_VacWOverTiFlt_flg Vacuum pump working overtime"	"1. Vacuum pump air leakage 2. Air pressure sensor failure"	"1. Check the vacuum pump body for air leakage 2. Replace the vacuum pump"
50	P144900	"VCU_VacContnsLoVacFlt_flg Continuous low vacuum of vacuum pump"	"1. Vacuum pump air leakage 3. Air pressure sensor failure"	"1. Check the vacuum pump body for air leakage 3. Replace the vacuum pump"
51	P145000	"VCU_Pre cOverTiFlt_flg Pre-charging timeout"	"1. Pre-charging resistor damage 2. Pre-charging relay damage"	"1. Replace the pre-charging resistor 2. Replace the pre-charging relay"
52	P145100	"VCU_PosRlyAdhFlt_flg Main positive relay adhesion"	"1. Cutting high voltage under load 2. Relay damage"	1. Replace the relay
53	P145200	"VCU_PosRlyNotClsFlt_flg Main positive relay not closed"	"1. Relay damage 2. Relay control error"	"1. Check the relay control signal 2. Replace the relay"
54	P145300	"VCU_McuEnaOverTiFlt_flg MCU tube opening timeout"	"1. Invalid control signal 2. MCU hardware failure"	"1. Check the control signal and corresponding wire harnesses and connectors 2. Replace the MCU"
55	P145400	"VCU_McuActvDchaOverTiFlt_flg Active discharge timeout"	"1. MCU hardware failure 2. Voltage collection failure 3. Control signal failure or discharge timing problem"	"1. Confirm again after passive discharge and power on and off 2. Confirm the discharge timing 3. Replace the motor controller"

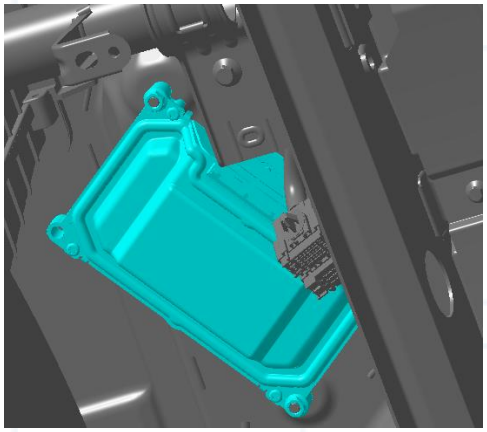
Serial Number	DTC Display Code	DTC Meaning	Possible Fault Causes	Maintenance Recommendations
56	P145500	"VCU_DcdcFlt_flg DCDC failure"	1. DCDC failure	1. Check the DCDC
57	P145600	"VCU_LBMSFltLv2_flg LBMS Level 2 failure"	1. LBMS failure	1. Check the LBMS
58	P145700	"VCU_LBMSFltLv3_flg LBMS Level 3 failure"	1. LBMS failure	1. Check the LBMS
59	P145800	"VCU_LBMSFltLv4_flg LBMS Level 4 failure"	1. LBMS failure	1. Check the LBMS
60	U007300	"CAN BusOff CAN network collapse"	"1. Interference with the vehicle's CAN network 2. Short Circuit of CAN line"	"1. Push the vehicle to a place away from interference 2. Unplug connectors one by one and check the CAN lines 3. Power off the low voltage and check the terminal resistors"
61	U011000	"VCU_MCUTiOutFlt_flg MCU communication loss"	"1. Problem with MCU CAN line connection 2. Error in MCU CAN message sending cycle 3. MCU connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the MCU low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"
62	U011100	"VCU_BMSTiOutFlt_flg BMS communication loss"	"1. Problem with BMS CAN line connection 2. Error in BMS CAN message sending cycle 3. BMS connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the BMS low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"
63	U015500	"VCU_ICMTiOutFlt_flg ICM communication loss"	"1. Problem with ICM CAN line connection 2. Error in ICM CAN message sending cycle 3. ICM connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the ICM low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"
64	U029800	"VCU_DCDCTiOutFlt_flg DCDC communication loss"	"1. Problem with DCDC CAN line connection 2. Error in DCDC CAN message sending cycle 3. DCDC connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the DCDC low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"

Serial Number	DTC Display Code	DTC Meaning	Possible Fault Causes	Maintenance Recommendations
65	U019B00	"VCU_OBCTiOutFlt_flg OBC communication loss"	"1. Problem with OBC CAN line connection 2. Error in OBC CAN message sending cycle 3. OBC connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the OBC low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message cycle is correct 3. Check whether there is an interference source within the vehicle's CAN network"
66	U015600	"VCU_TBOXTiOutFlt_flg TBOX communication loss"	"1. Problem with TBox CAN line connection 2. Error in TBox CAN message sending cycle 3. TBox connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the TBox low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"
67	U110187	"VCU_EACTiOutFlt_flg EAC communication loss"	"1. Problem with EAC CAN line connection 2. Error in EAC CAN message sending cycle 3. EAC connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the EAC low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"
68	U010F00	"VCU_ACTiOutFlt_flg AC communication loss"	"1. Problem with AC CAN line connection 2. Error in AC CAN message sending cycle 3. AC connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the AC low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message cycle is correct 3. Check whether there is an interference source within the vehicle's CAN network"
69	U014000	"VCU_BCMTiOutFlt_flg BCM communication loss"	"1. Problem with BCM CAN line connection 2. Error in BCM CAN message sending cycle 3. BCM connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the BCM low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"
70	U012100	"VCU_ABSTiOutFlt_flg ABS communication loss"	"1. Problem with ABS CAN line connection 2. Error in ABS CAN message sending cycle 3. ABS connector not checked 4. There is an interference source within the vehicle's CAN network"	"1. Check the ABS low-voltage connector and corresponding wire harnesses 2. Collect messages to check whether the message ID and cycle are correct 3. Check whether there is an interference source within the vehicle's CAN network"
71	P145900	"VCU_ChrgSlidFlt_flg Charging vehicle rolling"	-	-
72	P146000	"VCU_EepReadFlt_flg Eep reading failure"	1. VCU internal failure	1. Replace the vehicle controller

Serial Number	DTC Display Code	DTC Meaning	Possible Fault Causes	Maintenance Recommendations
73	P146100	"VCU_GearFlt_flg Gear failure"	"1. Loose wire harness of combination switch connector 2. Gear switch damage"	"1. Check the combination switch and corresponding wire harnesses 2. Replace the combination switch"
74	P146200	"VCU_CritGearFlt_flg Serious gear failure"	-	-
75	P146300	"VCU_VacRlyOpenLoadFlt_flg Vacuum pump open Circuit failure"	1. Open Circuit of vacuum pump power supply wire harness	1. Check the vacuum pump power supply wire harness
76	P146400	"VCU_VacRlyShoGndFlt_flg Vacuum pump short Circuit to ground"	1. Short Circuit of vacuum pump power supply wire harness	1. Check the vacuum pump power supply wire harness
77	P146500	"VCU_VacRlyOverIFlt_flg Vacuum pump overcurrent"	1. Short Circuit of vacuum pump power supply wire harness	1. Check the vacuum pump power supply wire harness
78	P146600	"VCU_MaiRlyOverIFltFlt_flg Low-voltage main relay overcurrent"	"1. Hardware failure 2. Short Circuit in the power supply Circuit"	"1. Replace the VCU hardware 2. Check the power supply Circuit wire harnesses"
79	P146700	"VCU_McuWkUpOverIFlt_flg MCU wake-up overcurrent"	"1. Hardware failure 2. Short Circuit in the power supply Circuit"	"1. Replace the VCU hardware 2. Check the power supply Circuit wire harnesses"
80	P146800	"VCU_BmsWkUpOverIFlt_flg BMS wake-up overcurrent"	"1. Hardware failure 2. Short Circuit in the power supply Circuit"	"1. Replace the VCU hardware 2. Check the power supply Circuit wire harnesses"

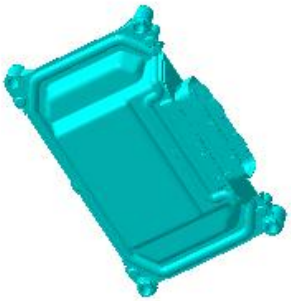
3.10.7 Removal and Installation

Removal of the Vehicle Control Unit



1.Set the power to the OFF position and remove the negative cable of the battery.

2. Adjust the right front seat backward and disconnect the two connectors of the vehicle control unit assembly.



3.Remove the four fixing nuts of the vehicle control unit assembly.

The torque for the nuts is 10 ± 2 N.m.

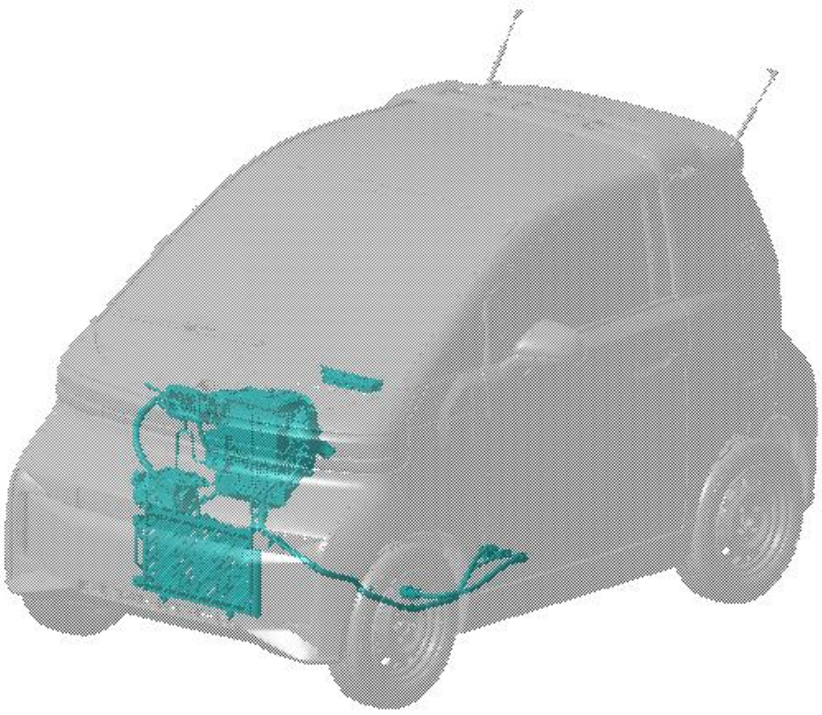
4.Take out the vehicle control unit assembly.

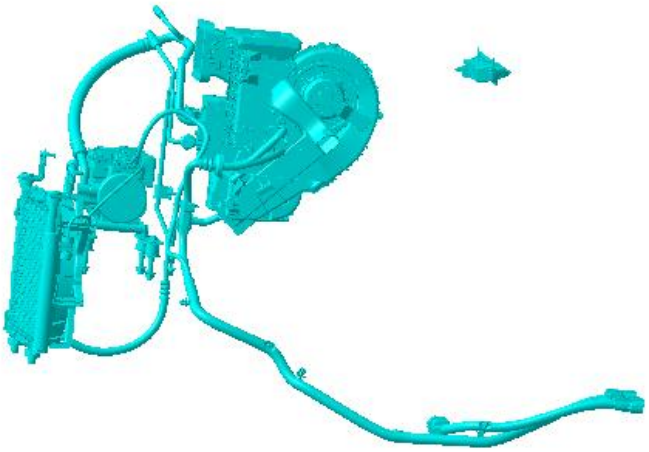
Installation

Carry out the installation in the reverse order of the removal steps.

3.11 Air Conditioning System

3.11.1 Component Diagram





Item	Description	Item	Description
1	Electric Compressor	4	Condenser
2	Air-Conditioning Control Panel	5	Air-Conditioning Piping
3	Evaporator Assembly	6	PTC

❖ System Composition

a. The air-conditioning system is composed of components such as an electric compressor, air-conditioning control panel, condenser, evaporator assembly, air-conditioning piping, and PTC.

❖ Working Principle

a. Based on the information input through the air-conditioning panel, including temperature adjustment, mode adjustment, internal/external circulation adjustment, air volume gear adjustment, compressor activation request, front

defrost request, and rear defrost request, the air-conditioning system drives each air damper motor to the corresponding positions. It regulates the blower speed through the control module and turns the compressor on/off to achieve the purposes of air temperature adjustment, defrosting, and defogging.

❖ Function Introduction

Serial Number	Function Category	Function	Function Description
1	Basic Adjustment Functions	Air-Conditioning On/Off	Enables the start and stop operations of the air-conditioning system, meeting users' basic needs for air-conditioning use.
2		Temperature Adjustment	Supports adjusting the interior temperature of the vehicle to create a comfortable temperature environment for occupants.
3		Air Volume Adjustment	Capable of regulating the air volume gears (1 - 7 gears) of the blower to control the air circulation volume inside the vehicle.
4		Defrost Function	By forcibly switching to the defrost mode, it quickly removes frost and fog from the windshield, ensuring clear driving visibility. When the front defrost button is pressed, the air-conditioning system starts and enters the defrost working mode, with the air volume automatically set to gear 7, the A/C requested, and the internal/external circulation switched to external circulation.
5		Cooling Function	When the A/C button is pressed and relevant conditions are met, the compressor operates to achieve cooling, reducing the interior temperature of the vehicle. When the interior temperature reaches the set temperature, the compressor in some vehicle models may stop working intermittently to save energy; when the ambient temperature is too low, some vehicles may restrict the compressor's operation to protect it.
6		Heating Function	When the PTC activation conditions are met, heating is achieved by controlling the PTC heating power to raise the interior temperature of the vehicle. The heating gears are related to the target air outlet temperature and can be adjusted according to the set temperature.
7	Mode Control Functions	Air Blowing Mode Switching	Can cycle through five modes: face blowing, face and foot blowing, foot blowing, foot and defrost blowing, and defrost blowing, meeting users' needs for air outlet direction in different scenarios.
8		Internal/External Circulation Control	Can alternate between internal and external circulation to block or introduce outside air, improving the interior air quality.
9	Intelligent and Management Functions	Remote Function (Receiving TBOX CAN)	Receives remote commands from the entire vehicle to enable remote control of functions such as air-conditioning cooling, heating, and defrosting, and feeds back the operating status to the vehicle system.
10		Air-Conditioning Sleep and Wake-Up Functions	When the vehicle is in the OFF gear and no signal is received for a certain period, the air-conditioning system is ready to enter sleep mode; when the vehicle is in the ON gear, the air-conditioning system is awakened.
11		UDS Diagnosis (with Bootloader)	Has unified diagnostic service functions and supports program flashing through the bootloader, facilitating system maintenance and upgrades.
12		Network Management Function	Meets relevant network management requirements and specifications, enabling functions such as network wake-up, such as through direct network management frames or L15 electrical wake-up, ensuring effective connection and collaborative work between the air-conditioning system and the vehicle's network.

3.11.2 Maintenance Precautions

To avoid potential property damage, personal injury, or death before conducting maintenance in this section, please be sure to adhere to the following instructions.

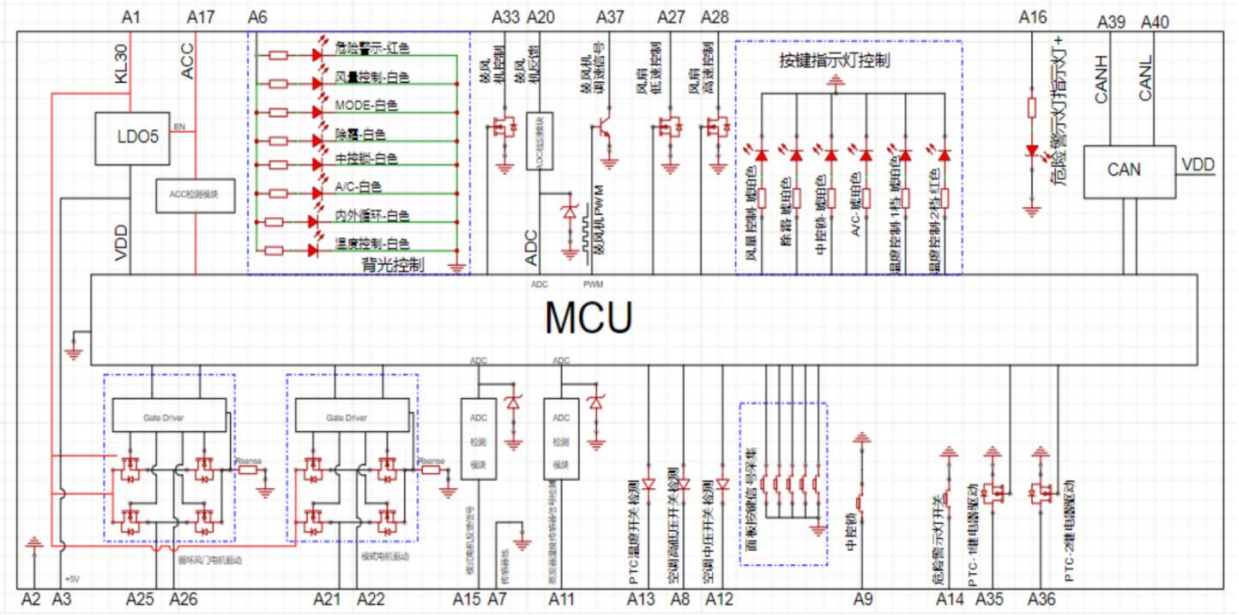
(1) The air-conditioning system operates under high pressure, so extreme caution should be exercised during maintenance.

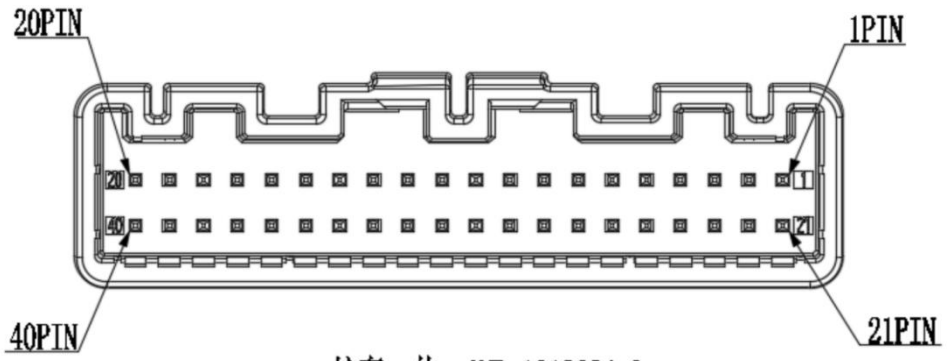
(2) The air-conditioning system contains refrigerant under high pressure. Maintenance must be carried out by professional technicians. Otherwise, incorrect maintenance procedures may lead to serious hazards or fatal injuries.

(3) If the air-conditioning system accidentally depressurizes, ventilate the work area before performing maintenance. Releasing a large amount of refrigerant in an enclosed workspace will reduce oxygen levels and may cause suffocation, resulting in serious or fatal injuries.
(4) Do not directly discharge the refrigerant from the vehicle's air-conditioning system into the atmosphere to prevent environmental pollution.

3.11.3 System Working Principle, Circuit Diagram, and Connector Pin Definitions

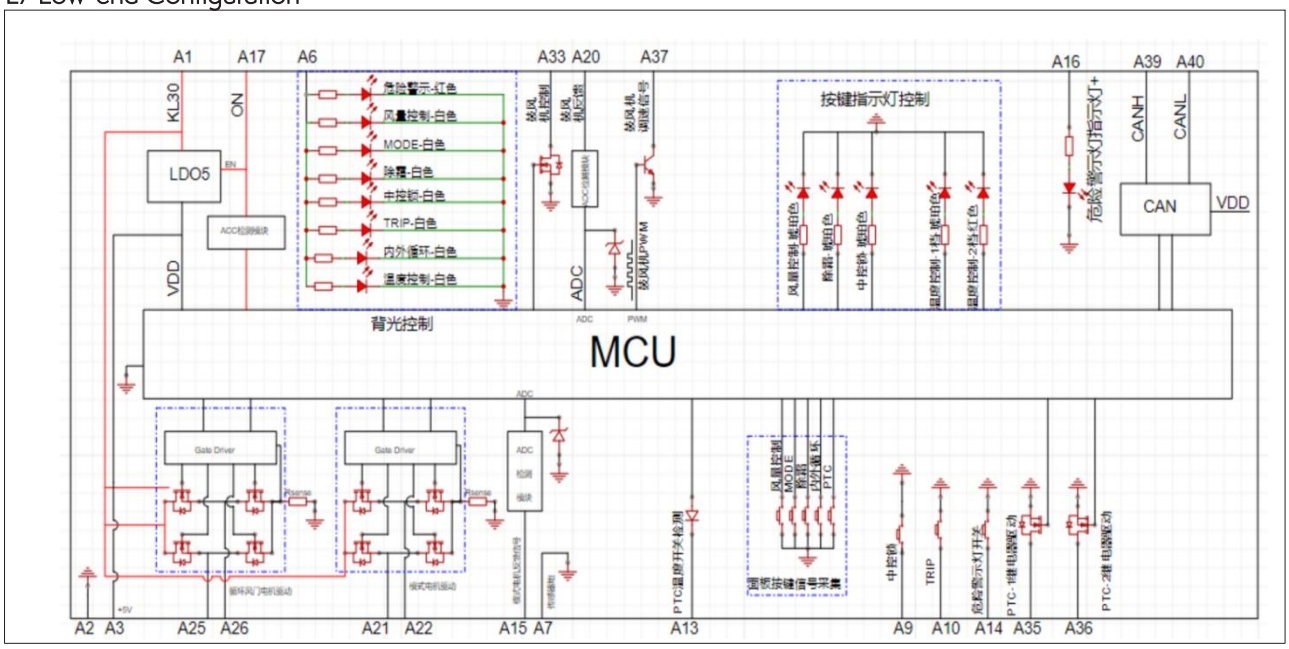
There are four configurations: L7/L6 high-end, L7 low-end, L6 low-end, and L7/L6 high-end.

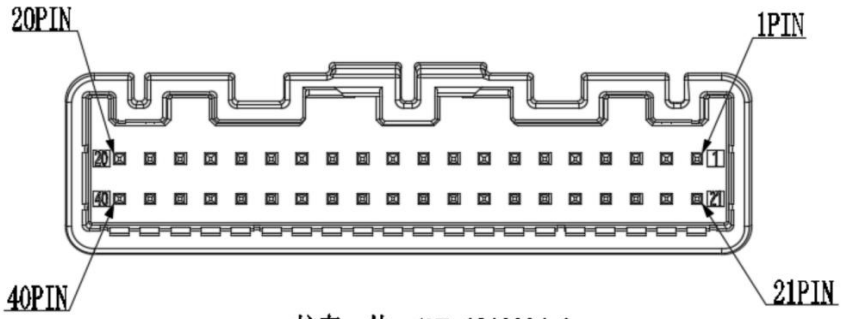




序号	引脚定义	序号	引脚定义
1PIN	KL30	21PIN	模式电机+
2PIN	系统地	22PIN	模式电机-
3PIN	+5V	23PIN	NA
4PIN	NA	24PIN	NA
5PIN	NA	25PIN	循环电机+
6PIN	背光	26PIN	循环电机-
7PIN	传感器地	27PIN	低速风扇继电器线圈负极
8PIN	空调高低压开关	28PIN	高速风扇继电器线圈负极
9PIN	中控锁	29PIN	NA
10PIN	NA	30PIN	NA
11PIN	蒸发器温度传感器	31PIN	NA
12PIN	空调中压开关	32PIN	NA
13PIN	PTC温度开关	33PIN	鼓风机继电器线圈负极
14PIN	危险警示灯开关	34PIN	NA
15PIN	模式电机反馈信号	35PIN	PTC-1继电器控制负
16PIN	危险警示指示灯+	36PIN	PTC-2继电器控制负
17PIN	ON	37PIN	鼓风机调速信号
18PIN	NA	38PIN	NA
19PIN	NA	39PIN	CANH
20PIN	鼓风机反馈	40PIN	CANL

L7 Low-end Configuration

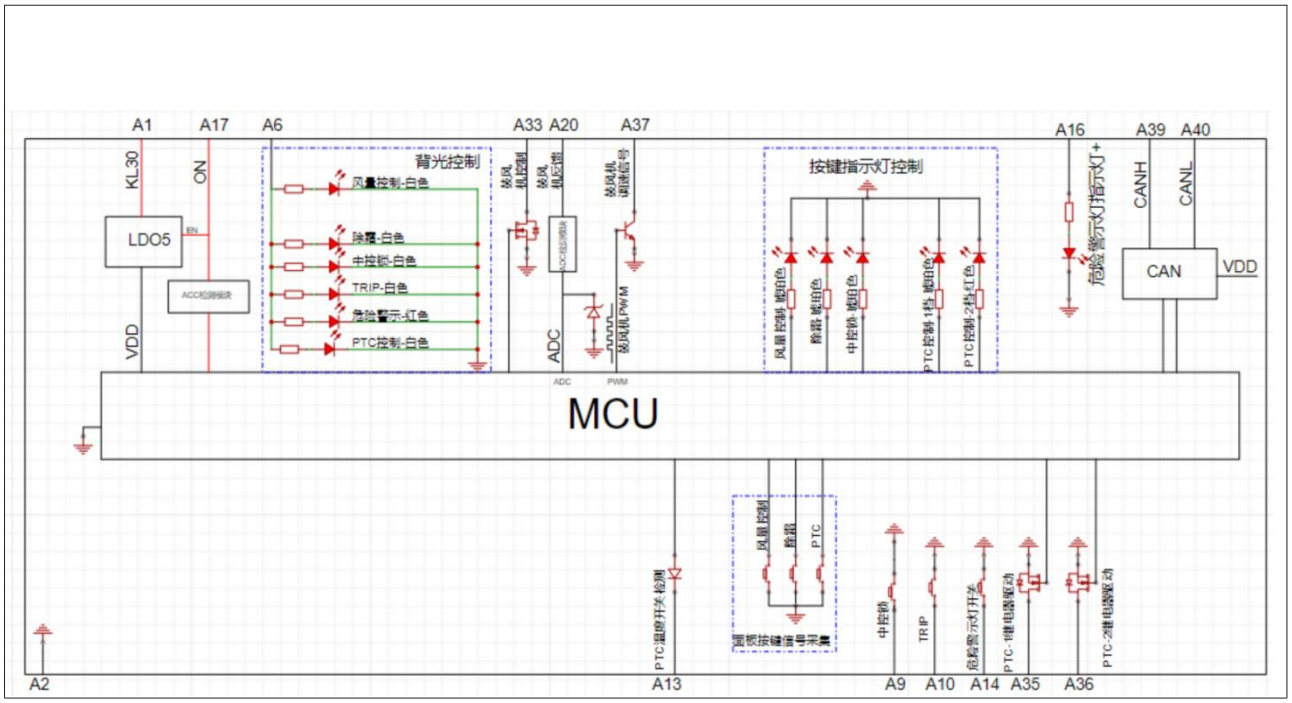


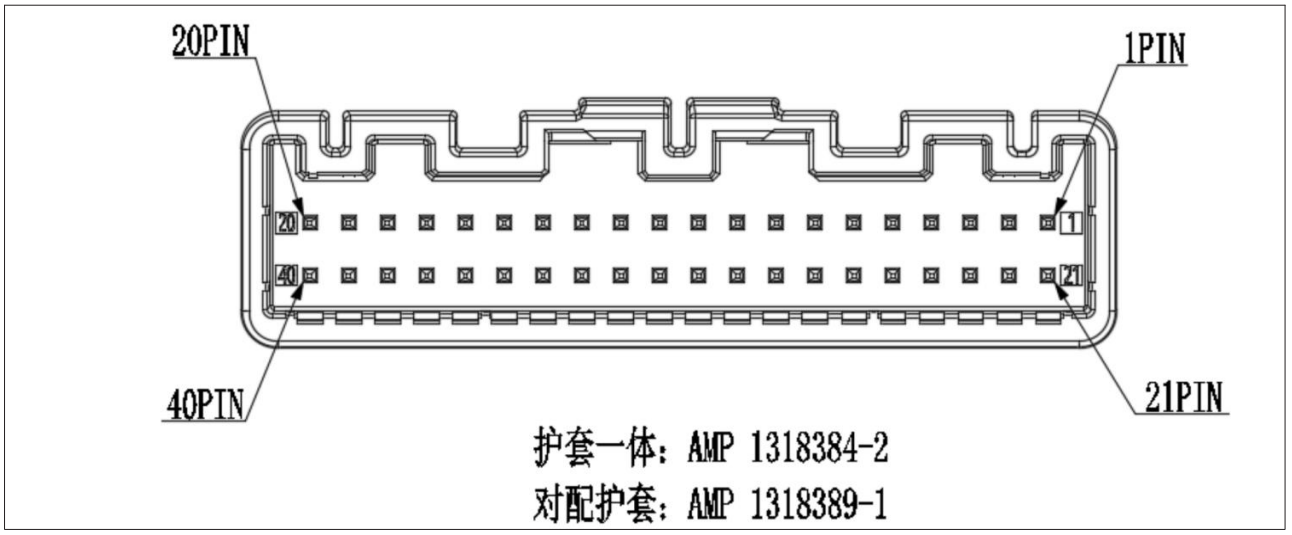


护套一体：AMP 1318384-2

对配护套：AMP 1318389-1

序号	引脚定义	序号	引脚定义
1PIN	KL30	21PIN	模式电机+
2PIN	系统地	22PIN	模式电机-
3PIN	+5V	23PIN	NA
4PIN	NA	24PIN	NA
5PIN	NA	25PIN	循环电机+
6PIN	背光	26PIN	循环电机-
7PIN	传感器地	27PIN	NA
8PIN	NA	28PIN	NA
9PIN	中控锁	29PIN	NA
10PIN	TRIP开关	30PIN	NA
11PIN	NA	31PIN	NA
12PIN	NA	32PIN	NA
13PIN	PTC温度开关	33PIN	鼓风机继电器线圈负极
14PIN	危险警示灯开关	34PIN	NA
15PIN	模式电机反馈信号	35PIN	PTC-1继电器控制负
16PIN	危险警示指示灯+	36PIN	PTC-2继电器控制负
17PIN	ON	37PIN	鼓风机调速信号
18PIN	NA	38PIN	NA
19PIN	NA	39PIN	CANH（预留）
20PIN	鼓风机反馈	40PIN	CANL（预留）





序号	引脚定义	序号	引脚定义
1PIN	KL30	21PIN	NA
2PIN	系统地	22PIN	NA
3PIN	NA	23PIN	NA
4PIN	NA	24PIN	NA
5PIN	NA	25PIN	NA
6PIN	背光	26PIN	NA
7PIN	NA	27PIN	NA
8PIN	NA	28PIN	NA
9PIN	中控锁	29PIN	NA
10PIN	TRIP开关	30PIN	NA
11PIN	NA	31PIN	NA
12PIN	NA	32PIN	NA
13PIN	PTC温度开关	33PIN	鼓风机继电器线圈负极
14PIN	危险警示灯开关	34PIN	NA
15PIN	NA	35PIN	PTC-1继电器控制负
16PIN	危险警示指示灯+	36PIN	PTC-2继电器控制负
17PIN	ON	37PIN	占空比信号
18PIN	NA	38PIN	NA
19PIN	NA	39PIN	CANH（预留）
20PIN	鼓风机反馈	40PIN	CANL（预留）

Temperature Sensor

Power Supply	Power Range	0-5v
	Power Supply Method	Stabilized power is provided by the
	Accuracy Requirement	Power supply fluctuations must be controlled within ±2% to avoid affecting sensor signal accuracy.
Temperature Sensor Performance Specifications	Temperature Range	-40℃ ~87℃
	Measurement Accuracy	±0.5°C (at 25°C), with a full-scale error ≤ ±1.5°C
	Extreme Tolerance Temperature	Can withstand -50°C to 100°C for short periods (<1 hour), but this may affect sensor lifespan.
Strategy	Update Cycle	Fixed at 100ms (10Hz sampling rate)
	Update Amplitude Limitation	Update amplitude is restricted to ±0.5°C
	Power-On Initialization	Initialization takes approximately 50-100ms upon first power-up. During this period, CAN messages transmit invalid values (0xFF in hexadecimal)
Fault handling	Sensor short circuit	1. When there is no fault (short circuit or open circuit), the evaporation temperature sensor adopts the default limit temperature of 3℃. When the temperature of the evaporator temperature sensor is lower than the limit temperature, the AC is prohibited from outputting the compressor enable request. 2. In failure mode, the default value is not adopted, and at this time, the validity of the evaporator temperature sensor is invalid. 3. When the sensor is short-circuited, the ECU fault code (DTC) is triggered for storage.
	Sensor open circuit	In the same way as short-circuit handling, the ECU fault code (DTC) is triggered for storage.
	Signal drift	If the sampling exceeds the tolerance (±5℃) for three consecutive times, it is regarded as a soft fault and enters the downgrade mode
	Data validity marker	In the event of a fault, the system needs to send '0xFF' (invalid data) via CAN.
Signal filtering method	Weighted recursive average filtering	Window size: 5 points (i.e., the average of the most recent 5 sampling values) Weight distribution: Equal weight or recent data weighting can be selected (e.g.,'[0.1,0.1,0.2,0.3,0.3]')
	Limiting filter	If the temperature difference between a certain sampling value and the previous point is greater than ±3℃, it should be directly discarded and replaced with historical values
	Median filtering	Take the median of N samplings to suppress the instantaneous noise caused by poor sensor contact

High-pressure pipe pressure sensor

Work and fault handling	1. Low-pressure protection: When there is a leakage in the air conditioning system or the refrigerant is low (0.196±0.02Mpa), to prevent the compressor from idling, the high and low pressure circuits are cut off to stop the compressor from working. 2. Medium pressure function: When the system pressure rises to a certain extent (higher than (1.77±0.1Mpa), the medium-voltage circuit is connected, and the condenser fan is switched to the high-speed mode to enhance the condensation effect. 3. High-pressure protection: To prevent the system pressure from being too high (above 3.14±0.2Mpa) and the compressor from operating at high load, the high and low pressure circuits are cut off to stop the compressor from working.

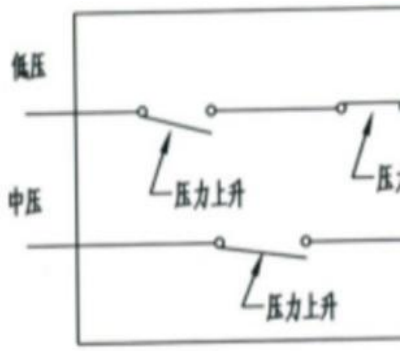
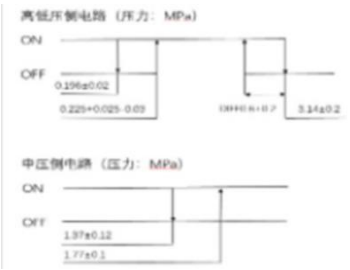
Mode Motor

Motor parameters	Voltage acquisition frequency :10ms; ADC conversion accuracy :8mV; Allowable error 0.1V;				
Control parameters and strategies	The target voltage of the mode motor is set according to different air-blowing modes and system design requirements. Different air-blowing modes correspond to different target voltage values, which are used to control the mode motor to reach the corresponding position and achieve accurate switching of the air outlet mode. When switching from the face-blowing mode to the face-blowing and foot-blowing mode, the air conditioning controller will output a specific target voltage signal to the mode motor, driving the motor to rotate, adjusting components such as the damper to the appropriate position and changing the air outlet direction. The target voltage corresponding to different blowing speeds: The adjustment process is regulated by using the PID algorithm.				
Mode: Damper mode	Blow the face	Blow on the face and feet	Blow your feet	Blow dry your feet to defrost	Defrosting
Rotation Angle	0°	22°	60°	100°	140°
Target voltage (V)	4.55V	3.96V	2.90V	2.15V	1.27V

Circulation Motor

Control Parameters	Control logic for the circulation air damper motor: To prevent incomplete closure of the circulation air damper, a time delay is required before shutting down the circulation motor after it stalls. The specific delay time is to be determined (TBD). Additionally, to prevent excessive current draw during stalling, which could reduce the motor's lifespan, hardware protection measures must be implemented.

Blower

<table>
<tr><td>Parameters for Each Gear Level</td><td colspan="2">Currently, the parameters for each gear level are tentatively set as shown in the table below and will require calibration later. The adjustment process employs PID control.</td></tr>
<tr><td>Parameter Name</td><td>Blower Terminal Voltage</td><td>Air Volume</td></tr>
<tr><td>Gear 1</td><td>3.43V</td><td>30%</td></tr>
<tr><td>Gear 2</td><td>5.15V</td><td>45%</td></tr>
<tr><td>Gear 3</td><td>6.29V</td><td>55%</td></tr>
<tr><td>Gear 4</td><td>7.44V</td><td>65%</td></tr>
<tr><td>Gear 5</td><td>8.58V</td><td>75%</td></tr>
<tr><td>Gear 6</td><td>9.5V</td><td>83%</td></tr>
<tr><td>Gear 7</td><td>12V</td><td>100%</td></tr>
<tr><td colspan="3">Interface Definitions and Schematic Diagram</td></tr>
<tr><td rowspan="2">Air Volume Control Requirements</td><td>The maximum air volume of the air conditioning system is set at 7 levels, namely 1-2-3-4-5-6-7. By pressing the "air volume +" or "air volume -" button, the air volume will increase or decrease by one level step by step. It is required to achieve the function of constant terminal voltage at each gear of the fan. When the power supply voltage fluctuates, the terminal voltage of the blower should remain unchanged.</td><td rowspan="2"> 
</td></tr>
<tr><td>Regardless of the air volume level, low-voltage start-up (starting from level 1) is implemented. Within the specified time (100ms, calibrated later), the blower voltage can only increase or decrease by a certain value (level 1) to avoid voltage surges and sudden changes in air volume.</td></tr>
<tr><td rowspan="4">Blower feedback signal detection</td><td>5V: The blower is on</td><td rowspan="4"> 
</td></tr>
<tr><td>0V: The blower is turned off</td></tr>
<tr><td>After starting the blower and controlling the speed regulation signal, if a 5V feedback signal is detected, it indicates a successful start-up. If a 0V signal is detected, it indicates a failed start-up, and a fault message will be sent via CAN</td></tr>
<tr><td>Shut down the blower. A detection of 0V indicates a successful shutdown, while a detection of 5V indicates a failed shutdown. A fault message will be sent via CAN</td></tr>
</table>

Key definition

Serial number	Key press	Function Definition	Detailed logic
1	Air volume control	Adjust the air volume gear of the blower (1 to 7 gears)	Gear increment cycle 1-2 -... The power of the blower is controlled in real time by the 7→1 gear signal. The MOSFET linear voltage control is adopted (PWM control is used for the low configuration of L6).
2	MODE	Switch the air outlet mode (5 cycles)	Sequential switch Blow the face → Blow the face and blow the feet → Blow the feet → blow the feet to defrost → defrost → blow the face (cycle))
3	Defrosting	Force switch to defrosting mode	It has the highest priority. After covering other modes and triggering, the mode motor immediately turns to the defrosting direction
4	Internal and external circulation	Switch the air circulation mode	Alternate switching External circulation and internal circulation (motor -driven damper position)
5	Temperature control	Adjust the target temperature	Four gears alternate:
6	A/C request	Control the start and stop of the compressor (refrigeration function switch)	Press: Start the compressor (if conditions are met). Press again: Turn off the compressor and exit the refrigeration

3.11.4 Diagnostic Trouble Codes

Serial No.	DTC Display Code	DTC Description	Fault Maturation Condition	System Behavior	Fault Resolution Condition
1	B140100	Evaporator Fault	ADC conversion value = 0x000/0xFFF, duration > 500ms	Record DTC status	Normal state detected continuously for 500ms
2	B140200	Mode Motor Fault	ADC conversion value = 0x000/0xFFF, duration > 500ms	Record DTC status	Normal state detected continuously for 500ms
3	B140300	Blower Fault	ADC conversion value = 0x000/0xFFF, duration > 500ms	Record DTC status	Normal state detected continuously for 500ms
4	B140400	Recirculation Damper Motor Fault	ADC conversion value = 0x000/0xFFF, duration > 500ms	Record DTC status	Normal state detected continuously for 500ms
5	B140500	A/C High/Low Pressure Fault	High/low pressure signal fault detected, duration > 500ms	Record DTC status	Normal state detected continuously for 500ms
6	B140600	A/C Medium Pressure Fault	Medium pressure signal fault detected, duration > 500ms	Record DTC status	Normal state detected continuously for 500ms
7	B140700	PTC Temperature Fault	PTC temperature fault signal detected, duration > 500ms	Record DTC status	Normal state detected continuously for 500ms
8	B140800	Air Volume Control Button Stuck	Button press state continuously detected for > 60s	Record DTC status	Button stuck condition released
9	B140900	MODE Button Stuck	Button press state continuously detected for > 60s	Record DTC status	Button stuck condition released
10	B141000	Defrost Button Stuck	Button press state continuously detected for > 60s	Record DTC status	Button stuck condition released
11	B141100	A/C Button Stuck (TRIP Stuck)	Button press state continuously detected for > 60s	Record DTC status	Button stuck condition released
12	B141200	Interior/Exterior Circulation Button Stuck	Button press state continuously detected for > 60s	Record DTC status	Button stuck condition released
13	B141300	Temperature Control Button Stuck	Button press state continuously detected for > 60s	Record DTC status	Button stuck condition released
14	B141400	VCU Communication Lost	No VCU status message received for 5 consecutive message cycles	Record DTC status	VCU status message received
15	B141500	A/C Panel Voltage Too Low	ADC conversion value = 0x000/0xFFF, duration > 500ms	Record DTC status	Voltage returns to normal level
16	B141600	A/C Panel Voltage Too High	ADC conversion value = 0x000/0xFFF, duration > 500ms	Record DTC status	Voltage returns to normal level
17	B141700	BUSOFF			

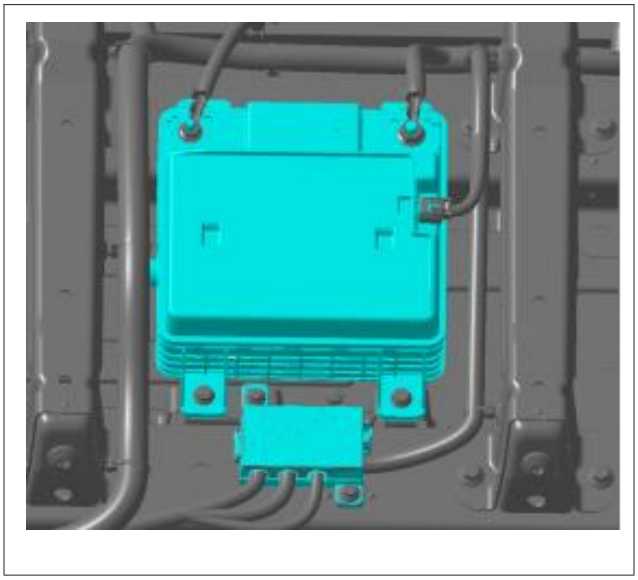
3.11.5 Fault Code Maintenance Guide

Serial No.	DTC Display Code	DTC Description	Possible Fault Causes	Maintenance Recommendations	DTC Self-Recovery Conditions
1	B140100	Evaporator Fault	Evaporator temperature sensor fault / Evaporator malfunction	Check if the evaporator temperature sensor is functioning properly and inspect the evaporator for normal operation.	1. After clearing historical DTCs using the Clear Historical Diagnostic Trouble Code service, the historical DTCs are cleared. OR 2. After 40 power cycles of GW KL15 without this fault occurring, GW automatically clears the historical DTCs.
2	B140200	Mode Motor Fault	Motor damage	Check if the motor is operating normally.	
3	B140300	Blower Fault	Motor damage	Check if the motor is operating normally.	
4	B140400	Recirculation Damper Motor Fault	Motor damage	Check if the motor is operating normally.	
5	B140500	A/C High/Low Pressure Fault	-	Check for damage to the refrigerant lines.	
6	B140600	A/C Medium Pressure Fault	-	Check for damage to the refrigerant lines.	
7	B140700	PTC Temperature Fault	-	Check if the PTC is damaged.	
8	B140800	Air Volume Control Button Stuck	Button stuck	Inspect the button for physical damage.	
9	B140900	MODE Button Stuck	Button stuck	Inspect the button for physical damage.	
10	B141000	Defrost Button Stuck	Button stuck	Inspect the button for physical damage.	
11	B141100	A/C Button Stuck (TRIP Stuck)	Button stuck	Inspect the button for physical damage.	
12	B141200	Interior/Exterior Circulation Button Stuck	Button stuck	Inspect the button for physical damage.	
13	B141300	Temperature Control Button Stuck	Button stuck	Inspect the button for physical damage.	
14	B141400	VCU Communication Lost	-	-	
15	B141500	A/C Panel Voltage Too Low	Voltage fluctuation	-	
16	B141600	A/C Panel Voltage Too High	Voltage fluctuation	-	
17	B141700	BUSOFF	-	-	

3.11.6 Disassembly and Installation

3.11.6.1 Compressor Disassembly and Assembly

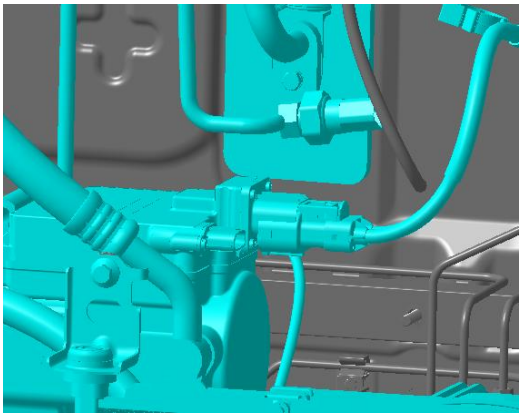
1. Turn the power to the OFF position, remove the negative battery cable, and wait for 5 minutes. Disconnect the power cable assembly (on the power battery pack side) connector.
Refer to the "Vehicle Maintenance Power Disconnection Procedure".
Remove the front panel trim assembly and the front panel gutter assembly.



2.Use an air-conditioning refrigerant recovery machine to recover the refrigerant from the air-conditioning system.
Refer to the "Vehicle Refrigerant Recovery Procedure".

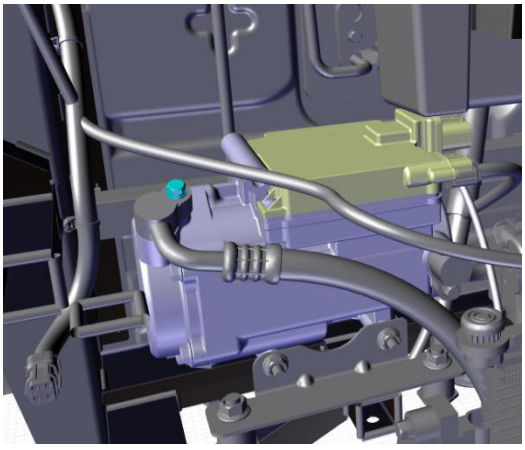
3.Disconnect the high-voltage compressor cable connector on the power distributor.

4.Disconnect the high-voltage cable connector and the low-voltage control harness connector on the compressor side.



5.Remove the fixing bolts of the high-pressure pipe on the compressor, disconnect the high-pressure pipe, and protect the interfaces of both the high-pressure pipe and the compressor to prevent contamination.

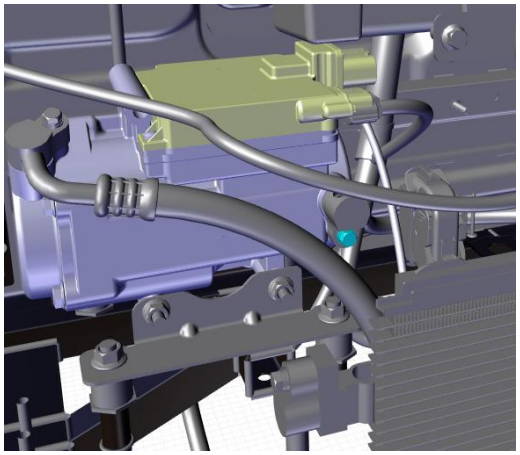
Specification: M6X20 Torque: 9±2N·m



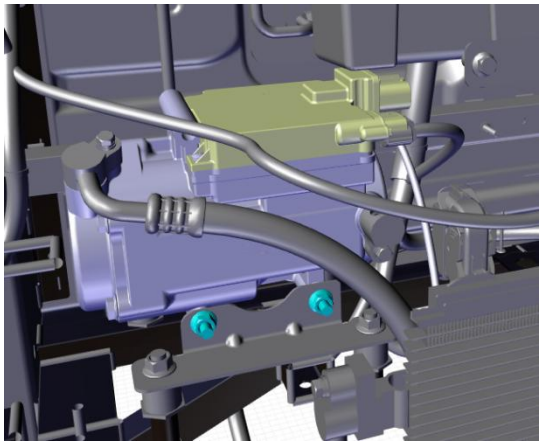
6.Remove the fixing bolts of the low-pressure pipe on the compressor, disconnect the low-pressure pipe, and protect the interfaces of both the low-pressure pipe and the compressor to prevent contamination.

Specification: M6X20

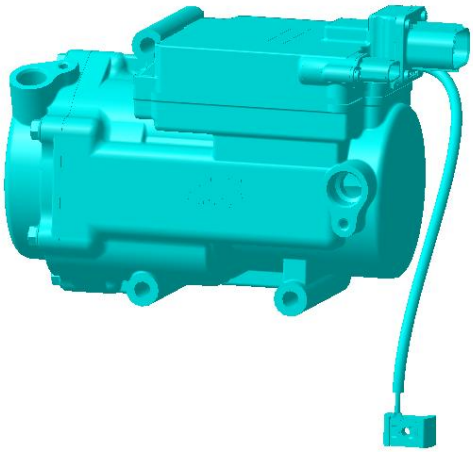
Torque: 9±2N·m



7.Remove the two fixing bolts of the compressor.
Specification: M8X11 Torque: 25±1N·m



8.Carefully remove the compressor assembly, and take protective measures to prevent contamination at the pipe interfaces and inside.



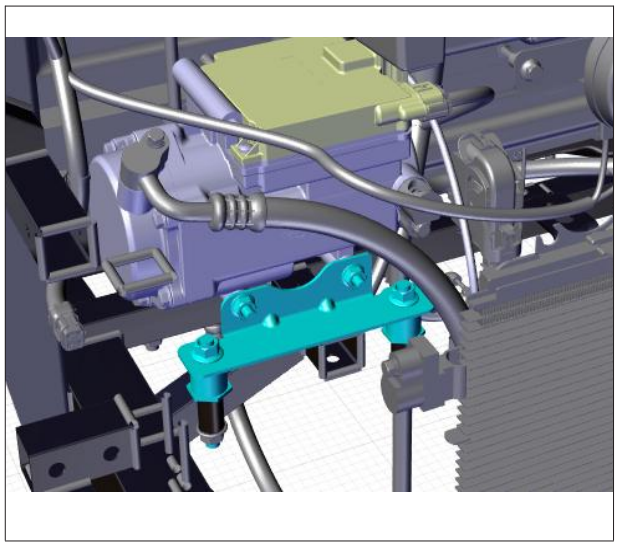
Installation

Carry out the installation in the reverse order of the disassembly steps.

Note::

Ensure that the harness connector is properly plugged into the socket on the electric air-conditioning compressor without any looseness.
Ensure that the harness connector is properly plugged into the socket on the HVAC assembly without any looseness.
The installation should be firm and reliable, with no looseness.

3.11.6.2 Disassembly and Assembly of the Compressor Bracket

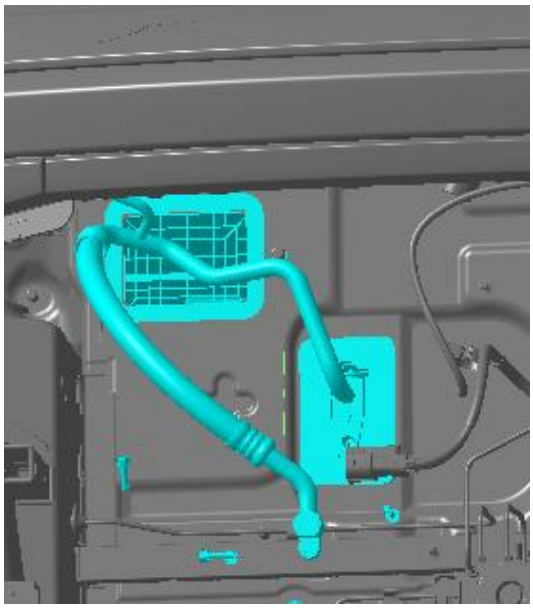


1.Disassemble the compressor assembly (refer to the compressor disassembly procedure).
2.Remove the four bolts connecting the compressor bracket to the vehicle body, and take out the compressor bracket.
Specification: M6X20 Torque: 9±2N·m

Installation

Carry out the installation in the reverse order of the disassembly steps.

3.11.6.3 Evaporator - Tight Exhaust Pipe Assembly



1.Remove the fixing bolts of the high-pressure pipe on the compressor, disconnect the high-pressure pipeline, and properly protect the interfaces of the high-pressure pipeline
and the compressor to prevent contamination.
Specification: M6X20 Torque: 9±2 N·m

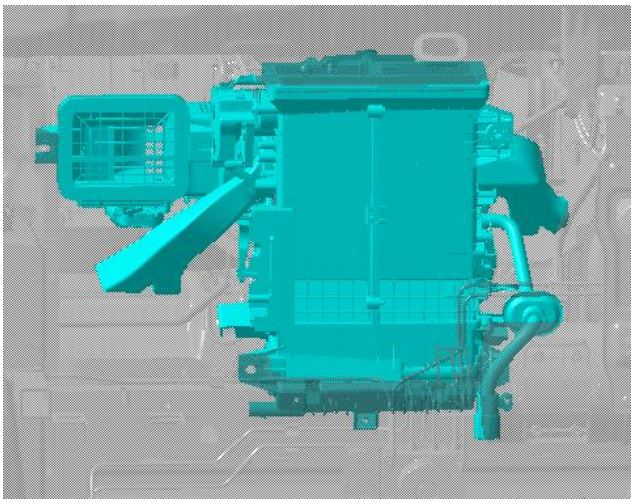
2.Remove the fixing bolts of the low-pressure pipe on the compressor, disconnect the low-pressure pipeline, and
properly protect the interfaces of the low-pressure pipeline
and the compressor to prevent contamination.
Specification: M6X20 Torque: 9±2 N·m

Installation

Carry out the installation in the reverse sequence of the disassembly steps.

3.11.6.4 Heater Core Assembly for Air Conditioner

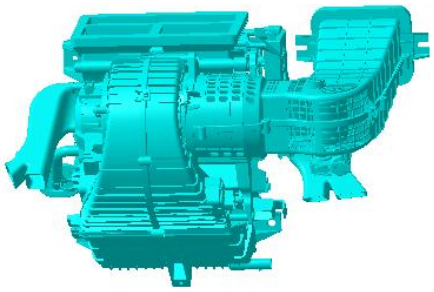
1. Remove related accessories from the heater core assembly.



2. Remove the five bolts connecting the air conditioner ventilation box assembly to the vehicle body, and take out the air conditioner heater core assembly.
Specification: M6X20 Torque: 7±1 N·m

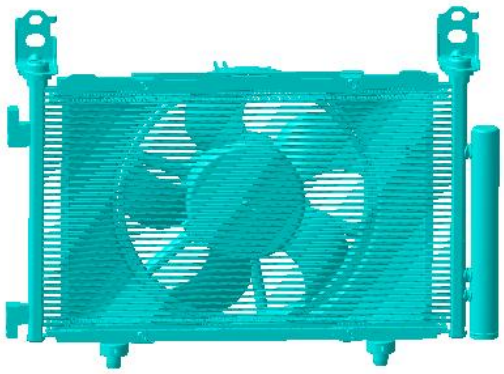
Installation

Carry out the installation in the reverse order of the disassembly steps.



3.11.6.5 Condenser

1.Remove the front bumper assembly (refer to the front bumper assembly removal procedure) and disconnect the fan connector plug.



2. Remove the fixing bolts on the high- and low-pressure pipes of the condenser, disconnect the high-pressure pipeline, and properly protect the interfaces of the high-pressure pipeline and the compressor to prevent contamination.
Specification: M6X20 Torque: 9±2 N·m

3.Remove the connecting bolts of the condenser bracket and take out the condenser assembly.
Specification: M6X20 Torque: 9±2 N·m

Installation

Carry out the installation in the reverse order of the disassembly steps.

3.11.6.6 Condenser Bracket

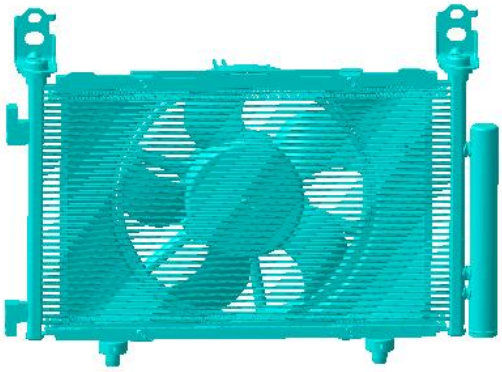
Remove the connecting bolts of the condenser bracket and take out the condenser bracket.
Specification: M6X20 Torque: 9±2 N·m

Installation

Carry out the installation in the reverse order of the disassembly steps.

3.11.6.7 Condenser Fan

1. Disconnect the fan connector plug.
2.Remove the four fixing bolts connecting the condenser fan to the condenser assembly, and take out the condenser fan.



Installation

Carry out the installation in the reverse order of the disassembly steps.

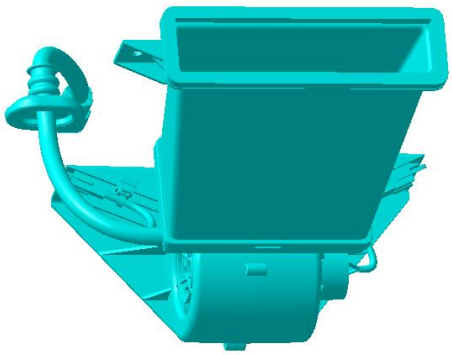
3.11.6.8 Air-Conditioner Panel Assembly

1.Pry along the edge of the air-conditioner panel to release it from the four retaining clips on the instrument panel.
2. Unplug the wire harness connector of the air-conditioner panel and take out the panel.

Installation
Carry out the installation in the reverse order of the disassembly steps.

3.11.6.9 Heater Assembly

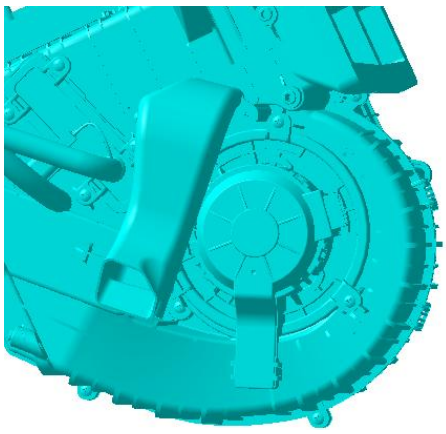
1.Unplug the wire harness connector of the heater.
2. Remove the fixing screws of the heater assembly and take out the heater assembly.



Installation
Carry out the installation in the reverse order of the disassembly steps.

3.11.6.10 Blower

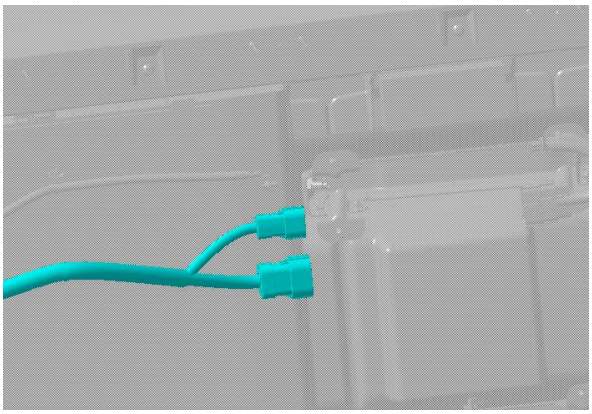
1.Remove the left foot air vent.
2.Unplug the wire harness connector of the blower.
3.Remove the three fixing screws of the blower and take out the blower.



Installation
Perform the installation in the reverse order of the disassembly steps.

3.11.6.11 PTC Heater

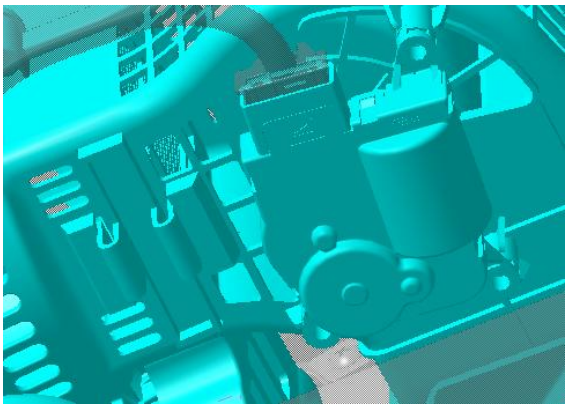
1.Disconnect the wire harness connector of the PTC heater.
2. Remove the fixing screws of the PTC heater and take out the PTC heater.



Installation
Carry out the installation in the reverse order of the disassembly steps.

3.11.6.12 Speed Control Module

1. Disconnect the wire harness connector of the speed control module.
2. Remove the fixing screws of the speed control module and take down the speed control module.

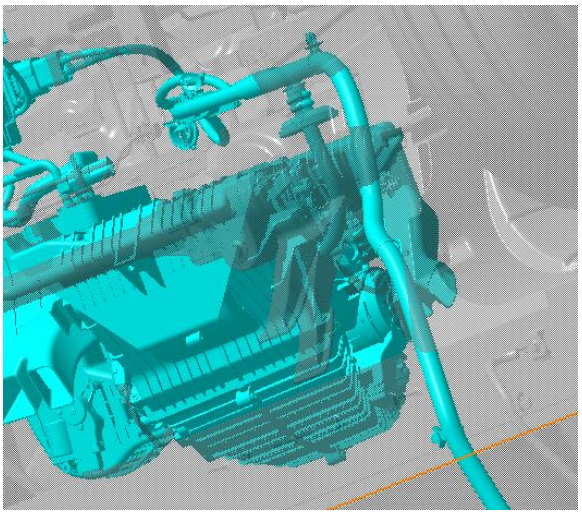


Installation

Carry out the installation in the reverse order of the disassembly steps.

3.11.6.13 Inside/Outside Air Circulation Motor

1. Remove the right foot air vent.
2. Unplug the wire harness connector of the inside/outside air circulation motor.
3. Remove the fixing screws of the motor and take down the inside/outside air circulation motor.

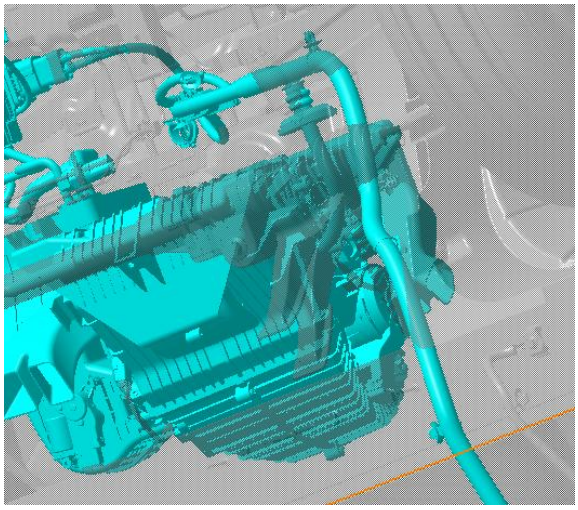


Installation

Carry out the installation in the reverse order of the disassembly steps.

3.11.6.14 Mode Motor

1. Unplug the wire harness connector of the mode motor.
2.Remove the fixing screws of the mode motor and take down the mode motor.

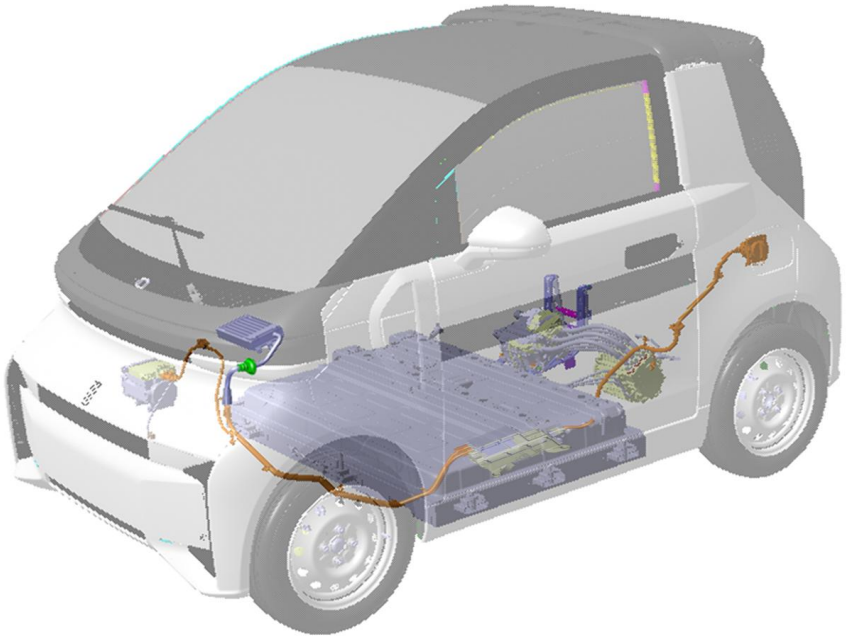


Installation

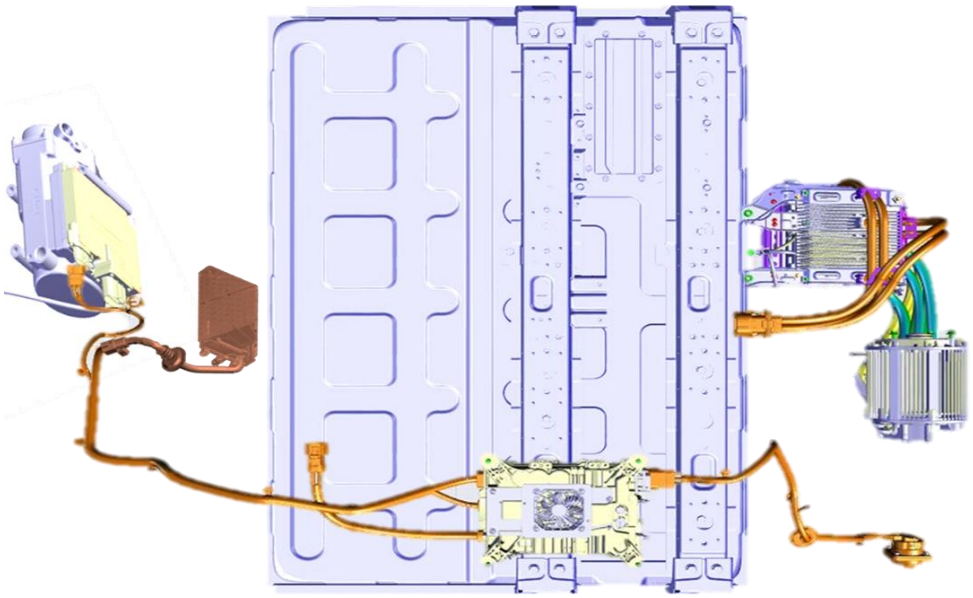
Carry out the installation in the reverse order of the disassembly steps.

3.12 High-voltage Wire Harness

3.12.1 Component Diagram



Component Name



1	AC charging port	4	Three-in-one --- High-voltage cable for air conditioning system
2	AC charging high-voltage cable	5	High-voltage cable between power battery pack and motor controller
3	charging high-voltage cable	6	High-voltage cable between motor controller and drive motor

❖ System Overview

The Alumi model uses high-voltage wire harnesses to connect various high-voltage components. High-voltage wire harnesses are special cables designed for transmitting high voltage. The high-voltage cables are uniformly identified by orange insulating sheaths.

❖ Functions and Operations

High-voltage wire harnesses possess corresponding power transmission capabilities, insulation protection, and connector interlock power-off protection functions. The Alumi model includes the following high-voltage wire harnesses:

1.DC bus cable (connects the power battery pack to the motor controller, consisting of two lines for positive and negative poles, with plugs featuring interlock devices)

2.AC slow-charging connection cable (connects the slow-charging port to the charging/DC-DC integrated unit, for 220V AC power, three-wire)

3.Three-phase AC cable for motor drive (connects the drive motor to the motor controller, consisting of U, V, and W three-phase AC cables)

4.OBC/DC-DC power cable (connects the motor controller to the charging/DC-DC integrated unit, consisting of two lines for positive and negative poles, with the DC-DC power supply and slow-charging OBC output sharing the same positive and negative poles)

5.PTC/compressor AC cable (the motor controller connects to the heater PTC and the electric compressor respectively, consisting of two independent sets of positive and negative lines, totaling four lines, with plugs featuring interlock devices)

6.Electric heater PTC cable (connects the electric heater PTC to the charging/DC-DC integrated unit, consisting of two lines for positive and negative poles, with plugs featuring interlock devices)

3.12.2 Maintenance Precautions for High-Voltage Wire Harnesses

❖ Warnings and Precautions

Warning!

1.During maintenance, failure to follow the correct procedures may result in vehicle damage, electric shock, or other serious accidents.

2.Errors during maintenance may lead to serious accidents.

3.Before performing maintenance (including disassembly, assembly, testing, or replacement of components), be sure to carefully read the following instructions and follow the correct procedures specified in the maintenance manual.

4.Maintenance personnel for Alumi vehicles must undergo professional training, be with electrical safety knowledge and first-aid methods for electric shock, and possess a high level of safety awareness.

5.When maintaining high-voltage components, operators must hold relevant qualification certificates.

6.Strictly comply with national laws and regulations regarding high-voltage system operations.

7.When servicing the vehicle, strictly adhere to the relevant maintenance standards of Letin Auto Co., Ltd. and set up corresponding warning signs.

❖ Maintenance Precautions

1.Maintenance on the vehicle's high-voltage system should only be performed by professionals certified in high-voltage system maintenance. Except for operations that require power-on, such as diagnostics using a diagnostic instrument, all other maintenance and disassembly operations related to the high-voltage system must be preceded by standard high-voltage power-down procedures (turn off the ignition switch, disconnect the 12V power supply, disconnect the high-voltage bus cable, verify the absence of voltage, and perform insulation treatment) before proceeding. These procedures should be carried out using insulated protective equipment and maintenance tools.

2.When plugging and unplugging high- and low-voltage connectors, be sure to follow the sequence of the connector's self-locking structure. Do not forcefully plug or unplug to avoid damaging the connectors.

3.The disassembly and assembly of high-voltage components must be carried out in accordance with standard procedures using specialized tools to prevent dropping accidents during maintenance.

4."Warning signs" are present at locations with high voltage or high temperature on the vehicle body. Operate strictly according to the requirements of these signs!

5.Before performing vehicle maintenance, execute the power-off procedure and wear safety protective equipment before proceeding!

6.When washing the vehicle, do not direct the high-pressure water gun at the charging port to avoid water ingress and the risk of electric shock!

7.Use only designated charging sockets and charging cables. Do not choose charging equipment on your own!

8.When extinguishing a fire in the vehicle, do not use the "water pouring method." Use a "dry powder" fire extinguisher!

9.During vehicle maintenance, do not operate with a wet or damp vehicle body!

10.When disassembling and assembling the vehicle, do not operate the positive and negative poles simultaneously!

11.Do not connect the positive and negative poles directly to avoid the positive or negative pole passing through the human body to the ground!

12.Insulate the disconnected high-voltage wire connectors!

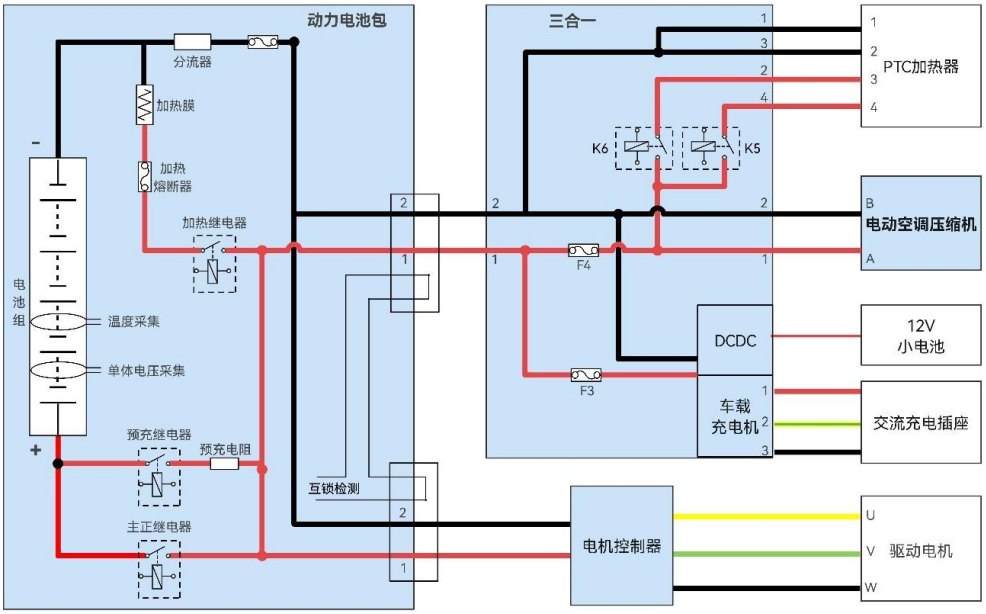
13.Unless absolutely necessary, do not touch the connectors of various parts of the electronic control system of high-voltage components to prevent electric shock and damage!

14.Use specialized tools approved by Letin Auto Co., Ltd. for maintenance operations on high-voltage electric vehicle models!

15.Perform operations with two people: one for supervision and one for operation!

16.During maintenance, ensure that other personnel do not accidentally apply high voltage to the entire vehicle, including turning the key or connecting the 12V battery terminals.

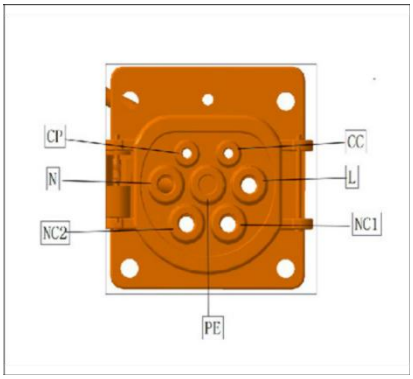
3.12.3 System Working Principle



3.12.4 Electrical Connector Information

Slow Charging Port Description

Pin Number	Definition	Rated Voltage & Current	Definition Explanation
L	Live Wire	250V/440V, 16A/32A	AC power supply
NC1	/	/	Unused contact
NC2	/	/	Unused contact
N	Protective Earth (Neutral in some contexts, but here clearly protective earth as paired with PE)	250V/440V, 16A/32A	Neutral line (Note: In a proper protective earthing system, N is neutral and PE is earth; here it's clarified as protective earth related to the context, though the term "protective grounding" might be more accurate in some strict electrical standards interpretations; for simplicity, we keep it as presented in the original with a note)
PE	Earth Wire	/	Connects the earth wire of the power supply equipment to the vehicle body's earth wire
CC	CC Connection Confirmation Signal	30V, 2A	Charging connection confirmation
CP	CP Signal	30V, 2A	Control confirmation



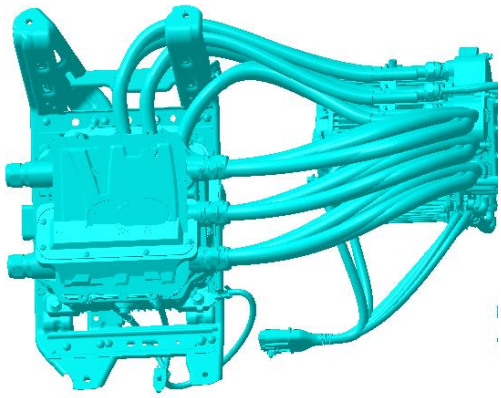
3.12.5 Fault Diagnosis Guidelines

Fault Symptom	Possible Causes of the Fault	Handling Methods
High-voltage system connection interruption caused by high-voltage wire harness faults	Open Circuit in the high-voltage wire harness	Replace the relevant high-voltage wire harness
	Poor contact at the connection plug of the high-voltage wire harness	Inspect and handle the relevant high-voltage wire harness, and replace it if necessary
	Damaged connection plug of the high-voltage wire harness	Replace the relevant high-voltage wire harness
	Incorrect installation of the locking device for the high-voltage wire harness plug	Reinstall the relevant high-voltage wire harness
Insulation fault in the vehicle caused by high-voltage wire harness faults	Damage and leakage in the high-voltage wire harness	Replace the relevant high-voltage wire harness
	Water ingress or contamination at the high-voltage wire harness plug	Inspect and handle the relevant high-voltage wire harness
Interlock protection of the high-voltage system caused by high-voltage wire harness faults	Damaged connection plug of the high-voltage wire harness	Replace the relevant high-voltage wire harness
	Deformation or bending of the interlock pins at the connection plug of the high-voltage wire harness	Inspect and handle the relevant high-voltage wire harness
	Incorrect installation of the locking device for the high-voltage wire harness plug	Reinstall the relevant high-voltage wire harness
	Damaged locking device for the high-voltage wire harness plug	Replace the relevant high-voltage wire harness

3.12.6 Disassembly and Installation

3.12.6.1 Wire Harness from Motor Controller to High-Voltage Pack

1. Set the power to the OFF position, remove the negative cable of the battery, and wait for 5 minutes Refer to the "Vehicle Maintenance Power Disconnection Procedure".
2. Lift the vehicle and disconnect the plug connecting the motor controller at the rear of the battery pack.
3. Remove the MCU (Motor Control Unit) fixing bracket (with the MCU attached).
4. Take down the MCU assembly along with the high-voltage cable.
5. Remove the MCU maintenance cover plate.
6. Remove the high-voltage cable assembly.



Installation

Perform the installation in the reverse order of the disassembly steps.

Note:

Ensure that the wire harness plug is properly connected to the socket on the motor controller without any looseness.

The installation should be secure and reliable, with no looseness.

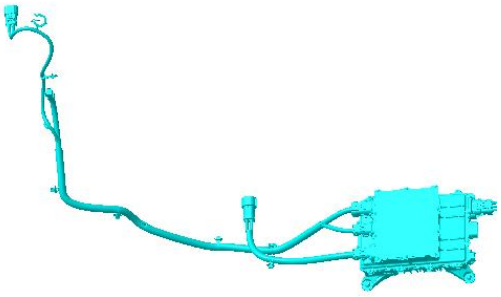
3.12.6.2 PTC High-Voltage Wire Harness Assembly

1. Set the power to the OFF position, remove the negative cable of the battery, and wait for 5 minutes. Refer to the "Vehicle Maintenance Power Disconnection Procedure".
2. Remove the front hood. Refer to the "Front Hood Disassembly and Assembly".
3. Disconnect the PTC high-voltage wire harness plug.
4. Remove the heater and air-conditioner assembly. Refer to the "Heater and Air-Conditioner Assembly Disassembly and Assembly".
5. Remove the PTC high-voltage wire harness assembly.

Installation
Perform the installation in the reverse order of the disassembly steps.
Note:
Ensure that the wire harness plug is properly connected to the socket on the motor controller without any looseness.
The installation should be secure and reliable, with no looseness.

3.12.6.3 PTC & Compressor High-Voltage Wire Harness Assembly

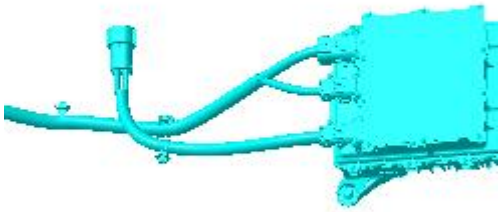
1. Set the power to the OFF position, remove the negative cable of the battery, and wait for 5 minutes. Refer to the "Vehicle Maintenance Power Disconnection Procedure".
2. Remove the front hood. Refer to the "Front Hood Disassembly and Assembly".
3. Disconnect the PTC & compressor high-voltage wire harness plug.
4. Lift the vehicle and remove the lower guard plate of the three-in-one assembly.
5. Remove the PTC & compressor high-voltage wire harness assembly.



Installation
Perform the installation in the reverse order of the disassembly steps.
Note:
- Ensure that the wire harness plug is properly connected to the socket on the motor controller without any looseness.
- The installation should be secure and reliable, with no looseness.

3.12.6.4 OBC to Battery Pack High-Voltage Wire Harness Assembly

1. Set the power to the OFF position, remove the negative cable of the battery, and wait for 5 minutes. Refer to the "Vehicle Maintenance Power Disconnection Procedure".
2. Lift the vehicle and remove the lower guard plate of the three-in-one assembly.
3. Disconnect the OBC high-voltage wire harness plug on the side of the three-in-one assembly.
4. Disconnect the high-voltage wire harness assembly on the side of the battery pack.

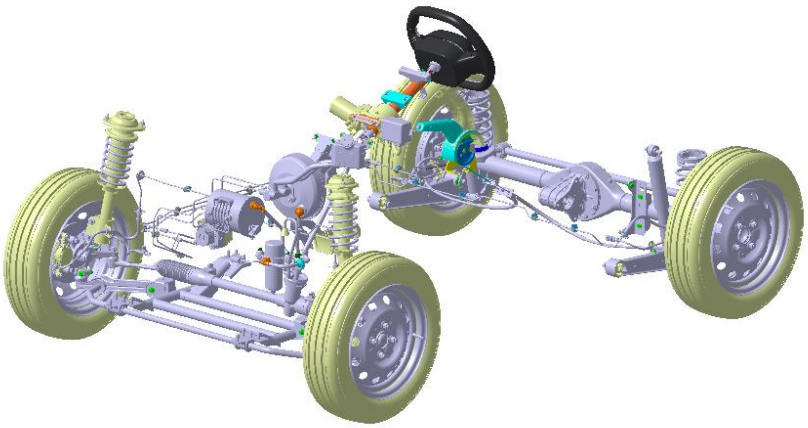


Installation
Perform the installation in the reverse order of the disassembly steps
Note:
- Ensure that the wire harness plug is properly connected to the socket on the motor controller (or relevant component, as the original context might have a slight misnomer here since it's about OBC connection; adjust as per actual component if needed) without any looseness.
- The installation should be secure and reliable, with no looseness.

4. Chassis System

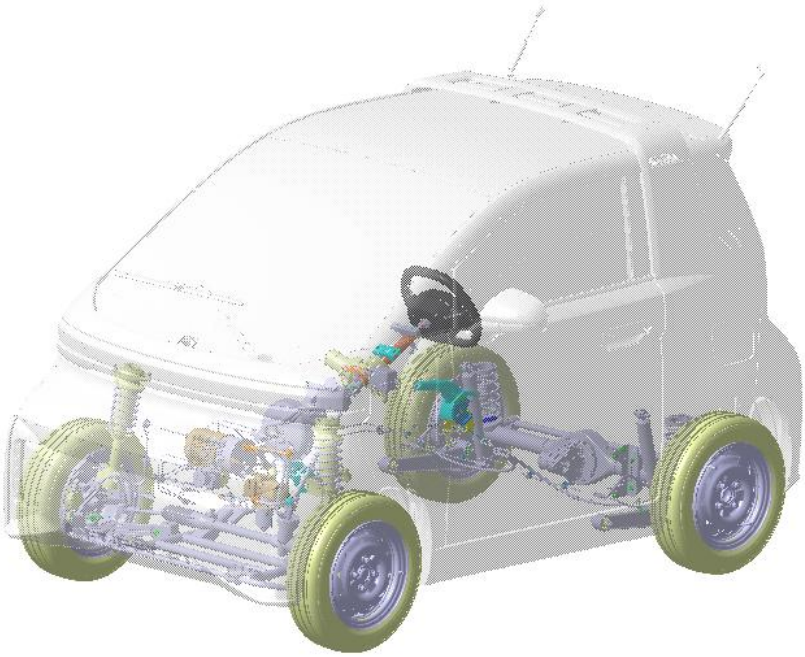
4.1 Overview

Function of the chassis: It supports and mounts the automobile engine as well as its various components and assemblies, forms the overall shape of the vehicle, receives power from the engine to enable the vehicle to move, and ensures normal driving.



4.2 Components of the Chassis System

Composition of the chassis: It consists of four parts, namely the Power system, running gear, steering system, and braking system.



4.3 Working Principle of the Chassis System

4.4 Technical Parameters of Main Components

Connection Location	Quantity	Torque	L6 Low	L6 Medium	L6 High	L7 Low	L7 High
Accelerator pedal mounting bolts	3	9±2	Y	Y	Y	Y	Y
Front swing arm assembly mounted to subframe 1	2	75±5	Y	Y	Y	Y	Y
Front swing arm assembly mounted to subframe 2	2	75±5	Y	Y	Y	Y	Y
Front shock absorber assembly mounted to front steering knuckle 1	4	110±10	Y	Y	Y	Y	Y
Front shock absorber assembly mounted to front steering knuckle 2	4	110±10	Y	Y	Y	Y	Y
Front shock absorber mounted to vehicle body	4	25±3	Y	Y	Y	Y	Y
Connection of subframe front and rear points to vehicle body	8	75±5	Y	Y	Y	Y	Y
Front swing arm to front steering knuckle connection 1	2	75±5	Y	Y	Y	Y	Y
Front swing arm to front steering knuckle connection 2	2	75±5	Y	Y	Y	Y	Y
Front stabilizer bar mounted to front swing arm assembly	2	65±5	Y	Y	Y	Y	Y
Stabilizer bar mounting bracket connected to vehicle body	2	75±5	Y	Y	Y	Y	Y
Stabilizer bar mounting bracket connected to subframe	2	75±5	Y	Y	Y	Y	Y
Steering gear with tie rod assembly fixed to subframe 1	2	110±10	Y	Y	Y	Y	Y
Steering gear with tie rod assembly fixed to subframe 2	2	110±10	Y	Y	Y	Y	Y
Outer ball joint of steering tie rod connected to steering knuckle 1	2	50±5	Y	Y	Y	Y	Y
Outer ball joint of steering tie rod connected to steering knuckle 2	2	/	Y	Y	Y	Y	Y
Toe adjustment nut	2	50±5	Y	Y	Y	Y	Y
Steering column connected to instrument crossbeam	4	23±3	Y	Y	Y	Y	Y
EPS controller connected to instrument crossbeam	2	9±2	N	N	N	Y	Y
Steering intermediate shaft connected to steering gear and steering column	2	32±3	Y	Y	Y	Y	Y
Steering wheel connected to steering column	1	50±10	Y	Y	Y	Y	Y
Rear thrust rod connected to rear axle 1	4	110±10	Y	Y	Y	Y	Y
Rear thrust rod connected to rear axle 2	4	110±10	Y	Y	Y	Y	Y
Rear shock absorber mounted to vehicle body	2	110±10	Y	Y	Y	Y	Y
Rear thrust rod connected to vehicle body 1	2	110±10	Y	Y	Y	Y	Y
Rear thrust rod connected to vehicle body 2	2	110±10	Y	Y	Y	Y	Y
Rear shock absorber connected to rear axle 1	2	110±10	Y	Y	Y	Y	Y
The rear shock absorber is connected to the rear axle 2	2	110±10	Y	Y	Y	Y	Y
Rear stabilizer bar connected to vehicle body 1	1	110±10	Y	Y	Y	Y	Y

Connection Location	Quantity	Torque	L6 Low	L6 Medium	L6 High	L7 Low	L7 High
Rear stabilizer bar connected to vehicle body 2	1	110±10	Y	Y	Y	Y	Y
Rear stabilizer bar connected to rear axle	1	110±10	Y	Y	Y	Y	Y
Oil filling bolt on rear axle	1	45±5	Y	Y	Y	Y	Y
Oil draining bolt on rear axle	1	55±5	Y	Y	Y	Y	Y
Brake pedal connected to vacuum booster	4	25±3	Y	Y	Y	Y	Y
Brake pedal mounted to vehicle body	2	25±3	Y	Y	Y	Y	Y
Brake fluid reservoir mounted to vehicle body	2	9±2	Y	Y	Y	Y	Y
Brake hose connected to front brake	2	35±3	Y	Y	Y	Y	Y
Brake hard pipe fitting	/	18±2	Y	Y	Y	Y	Y
Electronic vacuum pump mounted to vehicle body (L6)	4	9±2	Y	Y	Y	N	N
Electronic vacuum pump mounted to vehicle body (L7)	2	9±2	N	N	N	Y	Y
Vacuum tank mounted to vehicle body	2	9±2	Y	Y	Y	Y	Y
Parking control handle mounted to vehicle body	2	25±3	Y	Y	Y	Y	Y
Rear parking cable mounted to vehicle body	1	9±2	Y	Y	Y	Y	Y
Rear parking cable mounted to thrust rod	2	9±2	Y	Y	Y	Y	Y
Front wheel speed sensor mounted to brake	2	9±2	Y	Y	Y	Y	Y
Rear wheel speed sensor mounted to brake	2	9±2	Y	Y	Y	Y	Y
Wheel installation	16	100±10	Y	Y	Y	Y	Y
Motor bracket to motor	2	25±3	Y	Y	Y	Y	Y
Motor bracket to rear axle 1	2	25±3	Y	Y	Y	Y	Y
Motor bracket to rear axle 2	2	25±3	Y	Y	Y	Y	Y

4.5 Maintenance Operation Guide

Warnings and Precautions

Warnings regarding assistant driving!

—When technicians inspect the reported faulty parts, the vehicle should be driven by an assistant. Otherwise, personal injury may occur.

Warnings regarding disconnecting the 12V battery and high voltage!

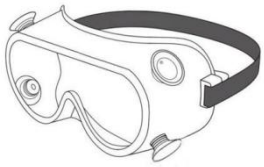
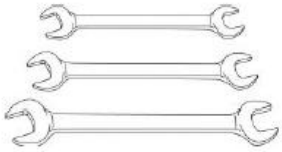
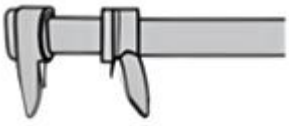
— Before maintaining any electrical components, the ignition key must be in the OFF or LOCK position, and all electrical loads must be "OFF". Disconnect the negative terminal of the 12V battery, disconnect the high-voltage manual service switch of the entire vehicle, and wait for 5 minutes before performing corresponding operations. Unless otherwise specified in the operation procedures, violating these safety instructions may lead to personal injury and/or damage to the vehicle or its components.

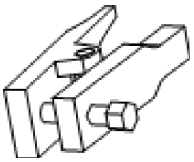
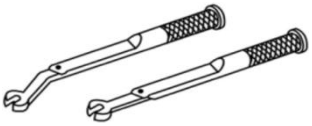
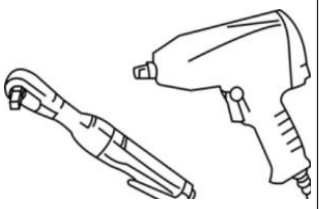
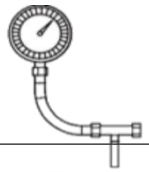
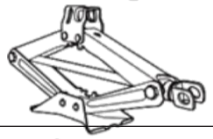
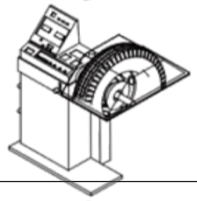
Warnings regarding road testing!

— Conduct road tests of the vehicle under safe conditions and comply with all traffic regulations. Do not attempt any operations that may endanger vehicle control. Violating the above safety instructions may result in severe personal injury and damage to the vehicle.

(1) Cover all painted surfaces and seats with a clean cloth or plastic cover to prevent dust from settling and scratches.
(2) Pay attention to work safety and stay focused on your tasks. When lifting the front or rear wheels, firmly block the remaining wheels. When the work requires two or more staff members, communicate with each other as frequently as possible. Only operate the vehicle when the workshop or work area is well-ventilated.
(3) Before disassembling or taking apart components, carefully inspect them to identify the reasons for maintenance. Follow all safety instructions and precautions and adhere to the corresponding steps.
(4) Mark all disassembled components or place them in order on a parts rack so that they can be reassembled in their original positions.
(5) If special tools are specified, they must be used.
(6) Components must be assembled with the appropriate torque according to established maintenance standards. When tightening a group of bolts or nuts, start from the center or large-diameter bolts and tighten them in a crosswise manner in two or more steps.
(7) When reassembling components, new gaskets, liners, O-rings, and cotter pins must be used.
(8) Use genuine parts and lubricants. When reusing components, carefully inspect them to ensure they are not damaged or degraded and are in good working condition.
(9) Apply or add the specified grease to the components as required. After disassembly, clean all disassembled components with a solvent.
(10) When filling the system with brake fluid, pay special Note to preventing dust and dirt from entering the system.
(11) During maintenance operations, prevent foreign substances such as water from entering the front engine compartment.
(12) Avoid getting lubricating oil or grease on rubber components and pipelines.
(13) After assembly, check whether each component is installed and functioning correctly.

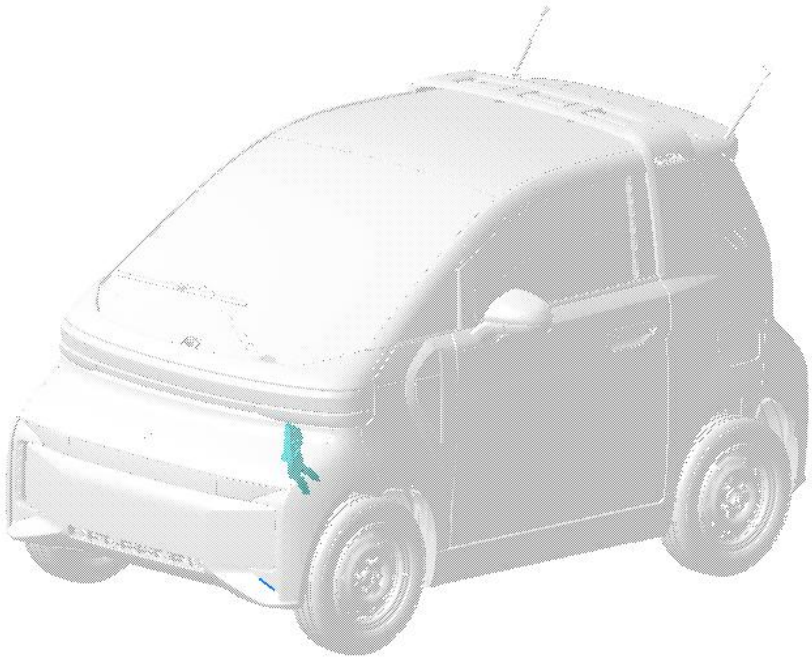
4.6 Maintenance Tools

Serial Number	Tool Name	Tool Schematic Diagram	Purpose Description
1	Insulating Gloves		To be worn when disassembling and assembling high-voltage components
2	Insulating Shoes		To be worn when disassembling and assembling high-voltage components
3	Safety Goggles		To be worn when disassembling and assembling high-voltage components
4	Quick Wrench		For disassembling and assembling fixing bolts/nuts
5	Torque Wrench		For measuring torque when installing fixing bolts/nuts
6	Open-end Wrench		For disassembling and assembling fixing bolts/nuts
7	Digital Multimeter		For inspecting electrical components
8	Shock Absorber Spring Compressor		For disassembling and assembling shock absorber springs

9	Ball Joint Remover		For disassembling ball joints
10	Oil Pipe Wrench		For disassembling and installing brake oil pipes
11	Power Tools		For disassembling and installing bolts and nuts
12	Tire Pressure Gauge		For checking tire pressure
13	Jack		For lifting vehicles
14	Wheel Balancer		For detecting wheel balance
15	Tire Valve Deflation Tool		For deflating tires

4.7 Accelerator Control Device

4.7.1 Component Diagram



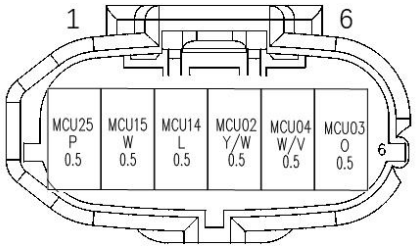
4.7.2 System Working Principle

Accelerator pedal Analysis and Torque analysis:

According to the driver's driving needs and the current vehicle status, the vehicle torque output control should be carried out reasonably. At the same time, when the vehicle decelerates and brakes, energy recovery control is carried out

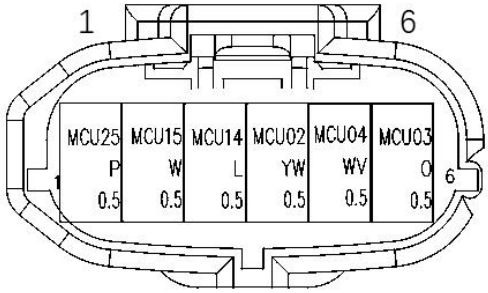
4.7.3 Electrical Connector Information

❖ Accelerator Pedal (L7)



Pin Number	Pin Definition	Wire Color	Wire Diameter (mm)
1	Signal 2	P	0.5
2	Signal Ground	W	0.5
3	5V Power Supply	L	0.5
4	Signal 1	YW	0.5
5	Signal Ground	WV	0.5
6	5V Power Supply	O	0.5

❖ Accelerator Pedal (L6)



Pin Number	Pin Definition	Wire Color	Wire Diameter (mm)
1	Signal 2	P	0.5
2	Signal Ground	W	0.5
3	5V Power Supply	L	0.5
4	Signal 1	YW	0.5
5	Signal Ground	WV	0.5
6	5V Power Supply	O	0.5

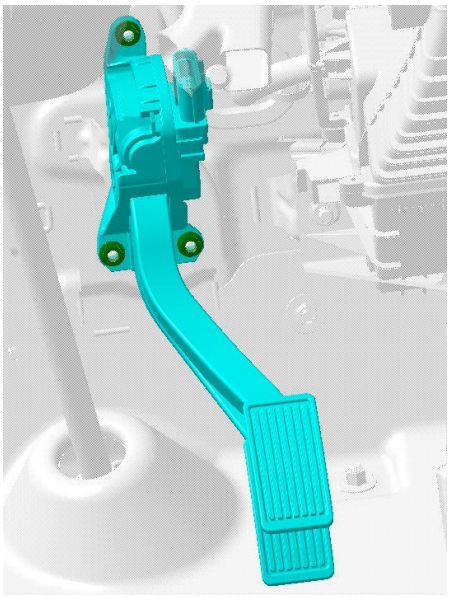
4.7.4Fault code

Serial Number	DTC Display Code	DTC Meaning	Possible Fault Causes	Maintenance Recommendations
1	P143800	"VCU_5VPwrSplyOverUFlt_flg: 5V power supply overvoltage"	1. Internal VCU fault	1. Replace the VCU hardware
2	P143900	"VCU_5VPwrSplyUnderUFlt_flg: 5V power supply under voltage"	1. Internal VCU fault	1. Replace the VCU hardware
3	P144000	"VCU_AccrPed1OverUFlt_flg: Accelerator pedal 1 exceeds upper limit"	"1. Short Circuit between the signal wire and power supply 2. Voltage acquisition fault"	"1. Check the relevant wire harness and connectors 2. Replace the pedal"
4	P144100	"VCU_AccrPed1UnderUFlt_flg: Accelerator pedal 1 falls below lower limit"	"1. Open Circuit in the signal wire 2. Voltage acquisition fault"	"1. Check the relevant wire harness and connectors 2. Replace the pedal"
5	P144200	"VCU_AccrPed2OverUFlt_flg: Accelerator pedal 2 exceeds upper limit"	"1. Short Circuit between the signal wire and power supply 2. Voltage acquisition fault"	"1. Check the relevant wire harness and connectors 2. Replace the pedal"
6	P144300	"VCU_AccrPed2UnderUFlt_flg: Accelerator pedal 2 falls below lower limit"	"1. Open Circuit in the signal wire 2. Voltage acquisition fault"	"1. Check the relevant wire harness and connectors 2. Replace the pedal"
7	P144400	"VCU_AccrPedlUDiffFlt_flg: Proportion of the two accelerator pedals exceeds the limit"	"1. Damage or looseness in the signal wire or connector of one or both Circuits 2. Voltage acquisition fault"	"1. Check the relevant wire harness and connectors 2. Replace the pedal"
8	P144500	"VCU_AccrPedlBothFlt_flg: Both accelerator pedals are faulty"	"1. Damage or looseness in the signal wire or connector of both Circuits 2. Voltage acquisition faults in both Circuits"	"1. Check the relevant wire harness and connectors 2. Replace the pedal"

4.7.5Removal and Installation

Removal

1.Turn the power supply to the OFF position and disconnect the connector of the accelerator pedal switch.



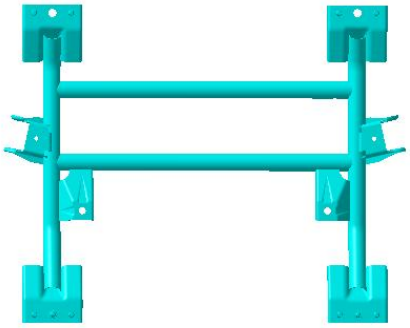
2. Remove the fixing nuts of the accelerator pedal switch and take off the accelerator pedal.

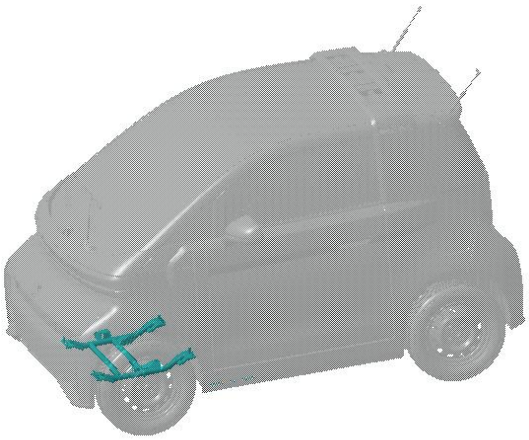
Installation

Carry out the steps in the reverse order of the removal procedure.

4.8 Subframe

4.8.1 Component Diagram





4.8.2 Maintenance Precautions

1. Important Note on Vehicle Lifting

Note:

- Ensure that the lifting equipment is in good condition before lifting the vehicle.
- Check whether the lifting positions are correct before lifting the vehicle. It is prohibited to support any part other than the designated lifting points.
- No personnel are allowed to enter the surrounding area and the bottom of the vehicle during the lifting process.

2. Important Warnings on Road Testing

Warning:

- Conduct road tests of the vehicle under the premise of ensuring safety and comply with all traffic regulations. Do not attempt any operations that may endanger vehicle control.
- Violating the above safety instructions may lead to personal injuries and vehicle damage, etc.

3. Important Note During Maintenance

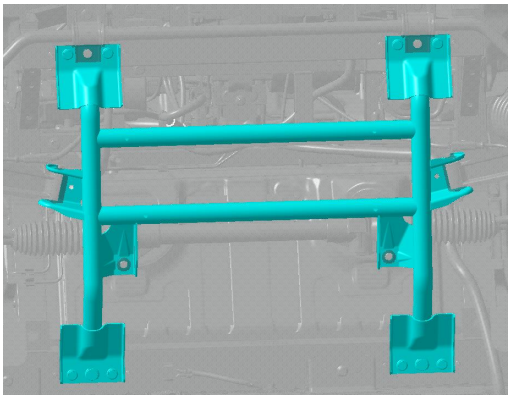
Note:

- Avoid soiling components and prevent foreign objects from entering during the maintenance process.
- Clean the outer surfaces of components before disassembly and assembly.
- Clean the disassembled components (except rubber components) with a cleaning agent and blow-dry them.
- After installation, check the tightening torque of fasteners.

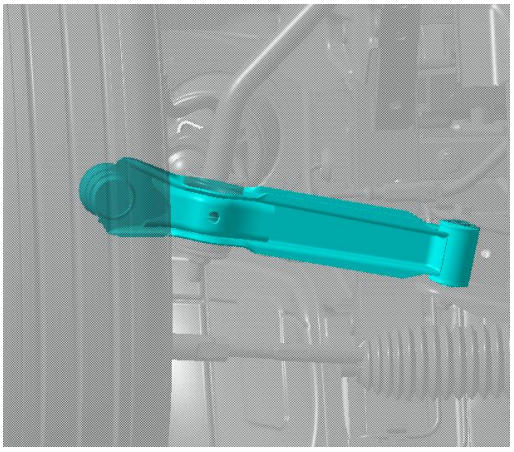
4.8.3 Removal and Installation

Removal

1. Remove the front stabilizer bar assembly. Refer to "Removal and Installation of the Front Stabilizer Bar".

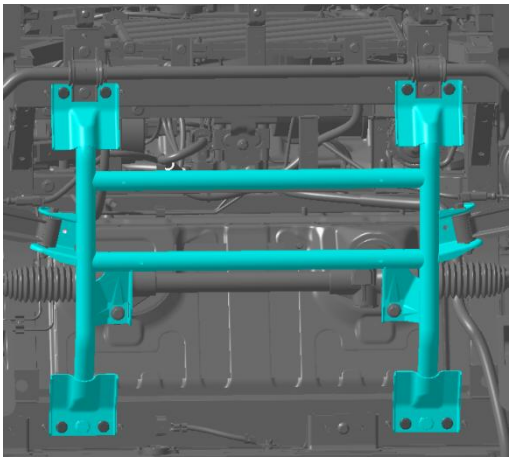


2.Remove the lower control arm assembly. Refer to "Removal and Installation of the Front Lower Control Arm Assembly".

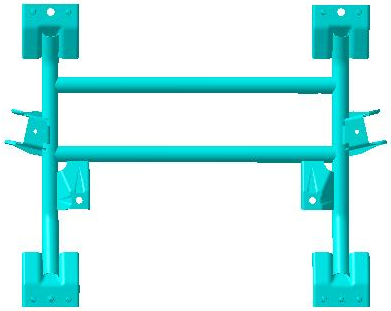


3.Remove the steering gear assembly. Refer to "Removal and Installation of the Steering Gear Assembly".

4.Remove the fixing bolts of the front subframe.



5.With the assistance of a helper, carefully lift off the subframe assembly.



Installation

- Install in the reverse order of removal.

4.9 Suspension System

4.9.1 System Overview

- The front suspension consists of two front shock absorber assemblies (including shock absorber springs), a subframe assembly, as well as accessories such as a front control arm assembly and a lateral stabilizer bar assembly.
  The front control arm is formed by stamping steel plates and then welding them together. Each piece is connected to the subframe with a single bolt.
- The ends of the lateral stabilizer bar are inserted into it and secured with screws.
  The front control arm assembly is connected to the steering knuckle via a ball joint.
  The steering knuckle of the wheel is connected to the suspension assembly and the steering tie-rod ball joint.
  The suspension device is supported at the upper mounting point by rubber bushings mounted on the top strut mount.
- The coil spring is installed between the two spring seats of the suspension device. The piston rod is equipped with a dust cover to prevent dirt or water ingress. To protect the suspension device in a fully compressed state, the piston rod is also fitted with an anti-collision rubber pad.
  The rear suspension mainly consists of a rear axle assembly, coil springs, and shock absorber assemblies. The wheels are connected to the rear suspension via the brakes.
- The drive motor is connected to the rear axle.
- The motor output torque is transmitted through the rear axle input shaft, and then delivered to the left and right half-shafts via the reduction gear mechanism and differential inside the rear axle. The rear axle gear ratio is 8:1 (10:1 for the L6 model).

4.9.2 Working Principles

Working Principles of Suspension System Components

Spring

The stiffness of the spring affects the response of the sprung mass during vehicle operation. A vehicle with a looser spring can completely eliminate bumps and provide an extremely smooth ride, but it is also prone to pitching and squatting during braking and acceleration, and has a tendency to roll and tip during cornering. A vehicle with a tighter spring has slightly less stability on bumpy roads, but the body movement is very small, which means the vehicle can be driven at a faster speed even during cornering. Therefore, although springs may seem simple, designing and implementing these devices in a vehicle to achieve a balance between passenger comfort and vehicle handling is challenging. Springs alone cannot provide an extremely smooth ride because they are excellent at absorbing energy but relatively poor at dissipating it. Therefore, the suspension system requires a component called a shock absorber. Without a damping structure, the spring will rebound and release the absorbed bump energy at an uncontrollable rate and continue to bounce at its own frequency until all the initially applied energy is exhausted. A suspension built on springs alone would cause the vehicle to bounce uncontrollably according to the terrain.

Shock Absorber

It controls unwanted spring movements through a process called damping. The shock absorber slows down and reduces the magnitude of vibratory movements by converting the kinetic energy of suspension movements into heat energy that can be dissipated through hydraulic oil. The upper mount of the shock absorber is connected to the vehicle frame (i.e., the sprung mass), and the lower mount is connected to the axle near the wheel (i.e., the unsprung mass). In a twin-tube design, one of the most common types of shock absorbers, the upper mount is connected to the piston rod, which is connected to the piston located inside a cylinder filled with hydraulic oil. The inner cylinder is called the pressure cylinder, and the outer cylinder is called the oil reservoir. The oil reservoir stores excess hydraulic oil. When the wheel encounters a bumpy road surface and causes the spring to compress and stretch, the spring's energy is transferred to the shock absorber through the upper mount and then down to the piston via the piston rod. The piston has holes through which hydraulic oil can leak when the piston moves up and down inside the pressure cylinder. Since these holes are very small, only a small amount of hydraulic oil can pass through under high pressure. This slows down the movement of the piston, thereby slowing down the movement of the spring. The operation of a shock absorber includes two cycles - the compression cycle and the rebound cycle. The compression cycle occurs when the piston moves downward and compresses the hydraulic oil below it. The rebound cycle occurs when the piston moves upward to the top of the pressure cylinder and compresses the hydraulic oil above it. For a typical vehicle, the resistance in the rebound cycle is greater than that in the compression cycle. Additionally, it should be

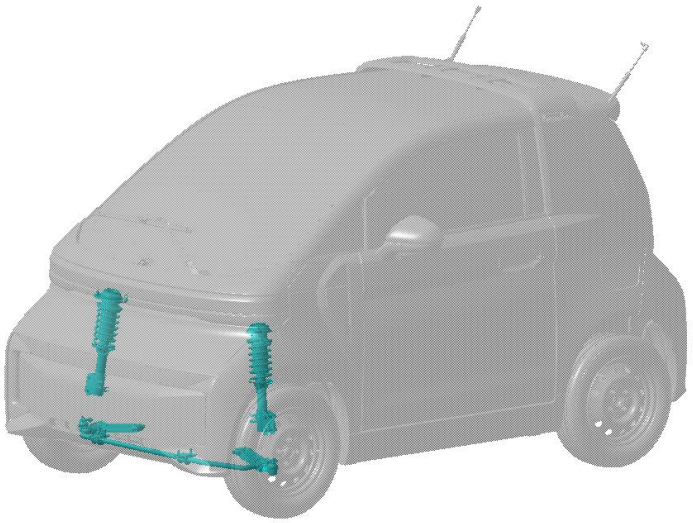
noted that the compression cycle controls the movement of the vehicle's unsprung mass, while the rebound cycle controls the movement of the relatively heavier sprung mass. All modern shock absorbers have speed-sensing capabilities - the faster the suspension moves, the greater the resistance provided by the shock absorber. This allows the shock absorber to adjust according to road conditions and control all unwanted movements that may occur in a moving vehicle, including bouncing, rolling, braking pitch, and acceleration squat.

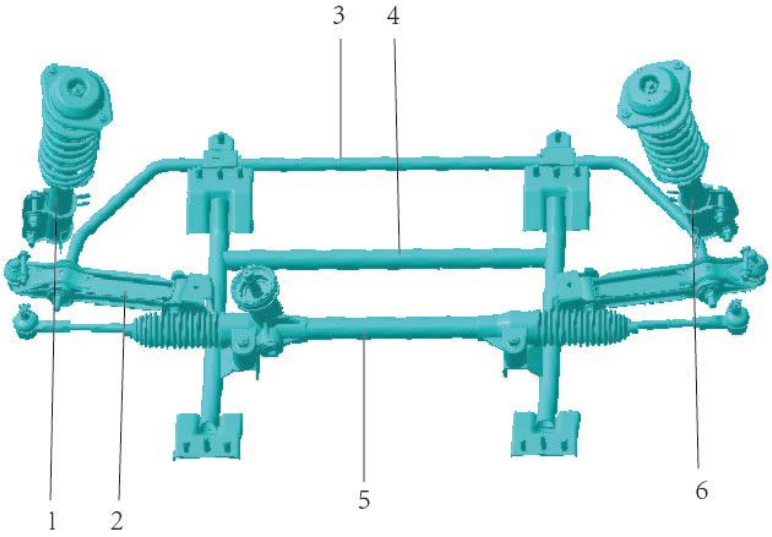
Stabilizer Bar

It is used in conjunction with shock absorbers to provide additional stability to the vehicle while in motion. The stabilizer bar is a metal rod that spans the entire axle and effectively connects the two sides of the suspension. When the suspension on one wheel moves up or down, the stabilizer bar transfers the movement to the other wheel. This makes the ride smoother and reduces the vehicle's tilt. In particular, it counteracts the tendency of the vehicle to roll over during cornering.

4.9.3 Component Diagram

Front suspension component diagram





1-Left front shock absorber	2-Forward swing arm	3- Stabilizer bar assembly
4- Steering Gear Assembly	5-Steering gear assembly	6-Right front shock absorber

4.9.4 Maintenance Precautions

Warnings and Precautions

1.1 Warnings

To avoid property damage, personal injury, or death before performing maintenance in this section, please be sure to follow the instructions below:

(1) Wear necessary personal protective equipment to prevent accidents.

(2) When performing maintenance on chassis components, check whether the safety locks of the lifting equipment are engaged.

(3) Do not weld or repair the load-bearing and guiding components of the suspension.

(4) When disassembling chassis components, be sure to replace self-locking nuts and rusty nuts to ensure safety.

(5) Exercise caution when disassembling and installing coil springs to prevent them from popping out and causing personal injury.

1.2 Precautions

To avoid dangerous operations and vehicle damage before performing maintenance in this section, please be sure to follow the instructions below:

(1) Tighten connecting bolts and nuts to the specified torque.

(2) After installation, ensure that the ball joint pin assembly moves freely without any jamming.

(3) After installation, check the wheel alignment. Adjust the wheel alignment to the standard range if necessary.

(4) Apply grease to the outside of the rubber bushing of the front control arm assembly before pressing it in to prevent damage to the rubber bushing.

(5) When installing the left front shock absorber assembly, align the locating pins of the top connecting plate with the locating holes on the vehicle body.

(6) When installing the front wheel hub bearing retainer, ensure that the opening direction of the retainer faces the opening direction of the front wheel speed sensor.

(7) When disassembling the front subframe welded assembly, use an engine balancing bracket to firmly support the engine and transmission assembly to prevent damage.

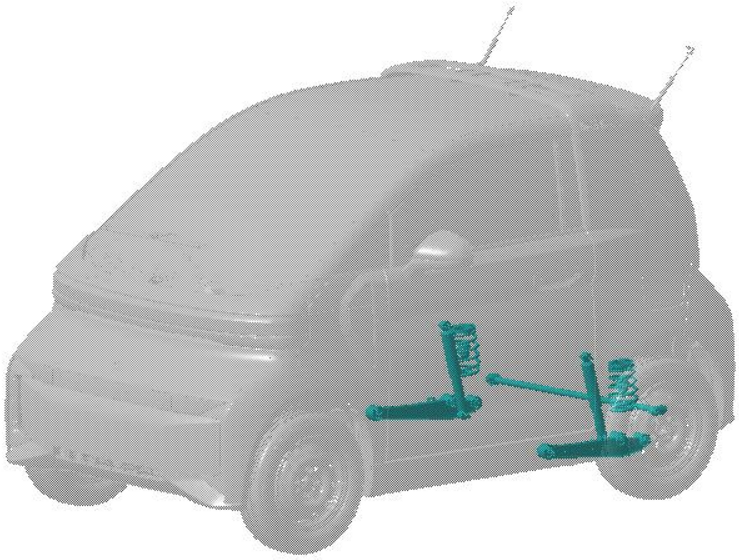
(8) When disassembling and assembling the steering system, suspension system, brakes, tires, etc., turn off the power of the EPS (simply turn off the vehicle's ignition) to avoid reverse impact, which may cause the internal protection Circuit of the EPS to break down.

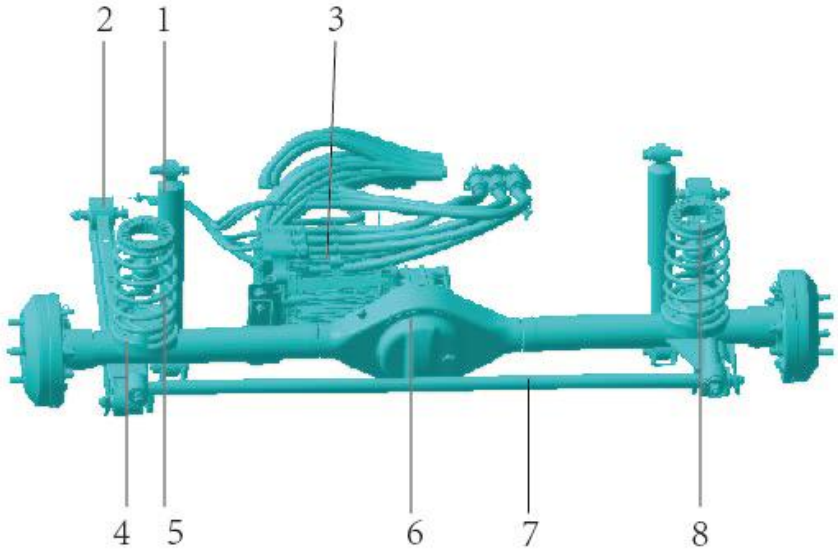
4.9.5 Guidance on Fault Diagnosis

Fault Phenomenon	Possible Causes	Solutions
Heavy Steering	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Low tire pressure	- Inflate the tires to the recommended pressure
Poor Return-to-Center	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Faulty shock absorber	- Repair or replace the shock absorber
	- Worn or damaged stabilizer bar	- Replace the stabilizer bar
	- Worn front sway bar bushings	- Replace the front sway bar bushings
Vehicle Pulls to One Side	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Insufficient steering resistance at the front sway bar ball joint connection	- Replace the front sway bar ball joint
	- Bent front sway bar	- Replace the front sway bar
Steering Wheel Shimmy	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Insufficient steering resistance at the front sway bar ball joint connection	- Replace the front sway bar ball joint
	- Loose or worn front sway bar bushings	- Replace the front sway bar bushings
	- Faulty shock absorber	- Repair or replace the shock absorber
	- Worn or damaged stabilizer bar	- Replace the stabilizer bar
Vehicle Sags	- Faulty shock absorber	- Repair or replace the shock absorber

4.10 Rear suspension

4.10.1 component diagram





Rear suspension assembly drawing

1-Rear shock absorber	2-Thrust rod assembly
3-"Motor"	4-An installation seat is placed on the rear spring
5-Rear helical spring	6-Rear axle
7-Rear balance bar	8-Rear buffer block

4.10.2 Specifications and Parameters

Four-Wheel Alignment Parameters

Front wheel positioning

The rear tilt Angle of the main pin cannot be adjusted

The camber Angle should be adjusted with eccentric bolts when necessary

Vehicle Model	Outward tilt Angle	
ALUMI	Standard Value	Tolerance Range
	0.2° ±0.5°	-0.3°to 0.7°
	0° 12,±30,	-0° 18 to 0° 42,

The front wheels are steered forward

Vehicle Model	Forward beam Angle	
ALUMI	Standard Value	Tolerance Range
	0.1° ±0.083°	0.017° to 0.183°
	0° 6 ,±5,	0° 1,to 0° 11,

Fastener Specifications

Front Suspension

Description	Nm
Bolts connecting the sway arm to the subframe	75±5
Bolts connecting the stabilizer bar to the sway arm	65±5
Bolts connecting the front shock absorber to the front steering knuckle	110±10
Bolts connecting the front shock absorber to the vehicle body	25±3
Bolts connecting the subframe to the vehicle body	75±5
Bolts connecting the sway arm to the front steering knuckle	75±5

Rear Suspension

Description	Nm
Rear shock absorber to body connection bolts	110±10
Rear shock absorber to rear axle connection bolts	110±10
Rear shock absorber to rear axle connection nuts	110±10
Rear stabilizer bar to body connection bolts	110±10
Rear stabilizer bar to body connection nuts	110±10
Rear stabilizer bar to rear axle connection nuts	110±10
Thrust rod to rear axle connection bolts	110±10
Thrust rod to rear axle connection nuts	110±10
Thrust rod to body connection bolts	110±10
Thrust rod to body connection nuts	110±10
Oil filler bolt on rear axle	45±5
Oil drain bolt on rear axle	55±5

Guidance on Fault Diagnosis

Fault Phenomenon	Possible Causes	Solutions
Heavy Steering	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Low tire pressure	- Inflate the tires to the recommended pressure
Poor Return-to-Center	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Faulty shock absorber	- Repair or replace the shock absorber
	- Worn or damaged stabilizer bar	- Replace the stabilizer bar
	- Worn front sway bar bushings	- Replace the front sway bar bushings
Vehicle Pulls to One Side	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Insufficient steering resistance at the front sway bar ball joint connection	- Replace the front sway bar ball joint
	- Bent front sway bar	- Replace the front sway bar
Steering Wheel Shimmy	- Improper front wheel alignment	- Adjust the front wheel alignment
	- Insufficient steering resistance at the front sway bar ball joint connection	- Replace the front sway bar ball joint
	- Loose or worn front sway bar bushings	- Replace the front sway bar bushings
	- Faulty shock absorber	- Repair or replace the shock absorber
	- Worn or damaged stabilizer bar	- Replace the stabilizer bar
Vehicle Sags	- Faulty shock absorber	- Repair or replace the shock absorber

4.10.3 Maintenance Operation Guide

Front wheel alignment inspection

1.Explanation

Check the wheel alignment under no-load conditions.

2. Pre-inspection

Check the following items:

1）Check if the tire pressure is normal and if the tires are worn out.
2）Is the wheel jumping?
3）The end clearance of the wheel bearing shaft.
4）Clearance at the end of the transverse tie rod shaft.
5）Check whether each fixed point of the axle and suspension is loose or deformed.
6）Check for cracks, deformations and other damages in each suspension component, steering knuckle, shock absorber and tie rod.
7）The height of the car body.

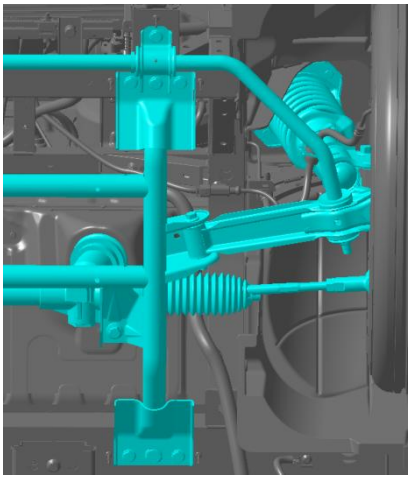
Inspection of the front toe-in of the wheels:

Note:

The wheels must be positioned on a level surface and under no-load conditions.Front wheel toe-in value: 0.1° ± 5 '. If the toe-in value is not within the standard range, please adjust it according to the following steps

1. Check the setting of the toe-in value on the four-wheel alignment instrument.
2. Straighten and secure the steering wheel.
3. Loosen the lock nut at the end of the crossbar.
4. Turn the left and right tie rods clockwise or counterclockwise to adjust the front beam value to the standard value.

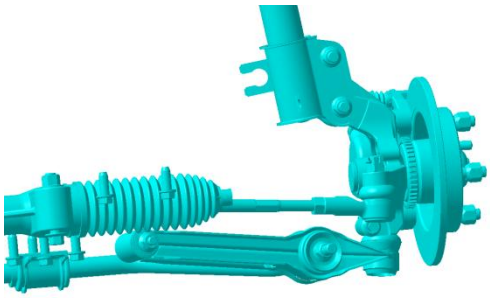
Note: The amount of rotation of the crossbar should be comparable.



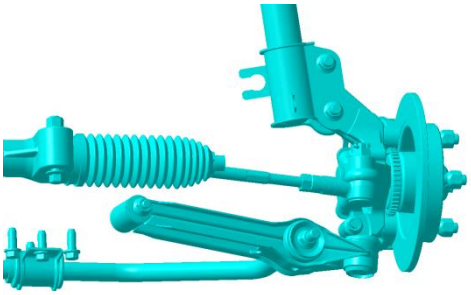
Disassembly and assembly of the front swing arm

Disassembly

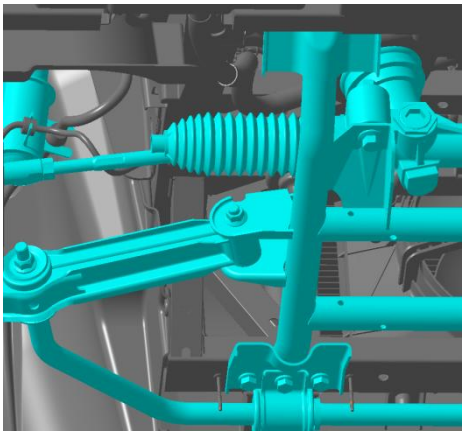
1. Remove the front wheels. "Refer to the disassembly and assembly of the wheels"
2. Remove the stabilizer bar assembly; "Refer to the disassembly and assembly of the stabilizer bar



3. Remove the fixing bolts of the front control arm and the steering knuckle.



4. Remove the fixing bolts of the front control arm and the subframe, and carefully take off the front control arm assembly.

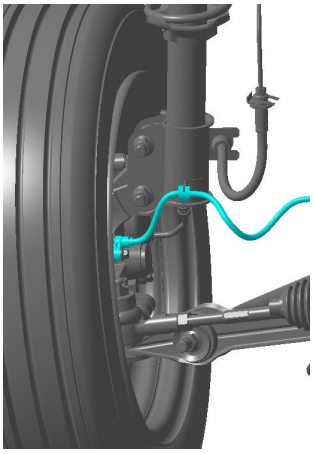


Visual inspection after disassembly
1. Check whether the bushing is worn or damaged. If so, please replace it.
2. Check whether the front swing arm is deformed or otherwise damaged. If so, please replace it.
3. Check whether there are any cracks in the dust cover of the ball head of the front swing arm. If so, please replace it.
4. Check all the fixing bolts and nuts. If it is damaged, please replace it.

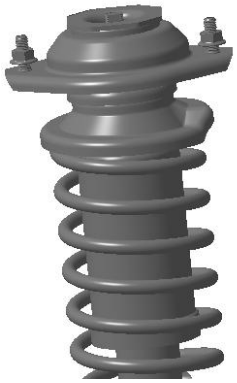
Installation
Install in the reverse order of disassembly.
※ Note :
◆Do not use damaged parts.
◆The bolts between the front bushing of the front swing arm and the fixed bracket should be pre-tightened in advance to prevent the rubber sleeve from twisting and deforming.
◆Under no-load conditions, perform the final tightening of each component removed from the swing arm before disassembly.
◆Check the wheel alignment.

Disassembly and assembly of the front shock absorber

Disassembly
1. Remove the front wheels.Refer to "Disassembly and Assembly of Wheels"
2. Remove the retaining ring that fixes the brake hose and take the brake hose off the bracket.

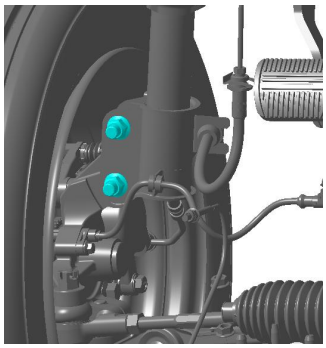


3. Remove the fixing bolts between the shock absorber and the frame.



4. Remove the connecting bolts between the shock absorber and the steering knuckle.

5. Carefully remove the front shock absorber.



Installation
Install in the reverse order of disassembly.
※ Note :
◆Do not use damaged parts.
◆Under no-load conditions, perform the final tightening of each component removed when disassembling the shock absorber.
◆Check the wheel alignment.

Disassembly and assembly of the front shock absorber

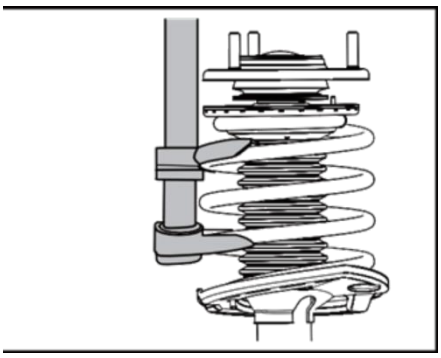
Disintegration

※ Note :

◆Do not damage the shock absorber piston push rod when disassembling the shock absorber components.

1. Remove the decorative cover with a flat-head screwdriver.

2. Use a spring compressor to compress the helical spring until it is fully released.



※ Note :

◆Make sure the compressor is fully installed in place before starting to compress the helical spring.

◆Do not use pneumatic tools when tightening the bolts of the spring compressor.

3.Fix the end of the piston push rod and remove the lock nut of the piston push rod.

※Note :

◆Confirm that the compressed helical spring is loose.

Inspection after disassembly

1.Shock absorber

※Note:

◆Check if the shock absorber is deformed, cracked or damaged. If so, please replace it.

◆Whether the piston push rod is damaged, worn or deformed. If any of the above situations occur, please replace it.

◆Check if the piston is leaking oil. If so, please replace it.

2. Spring spacers, buffer blocks and dust covers.

Check for cracks and whether the rubber parts are worn. If so, please replace it.

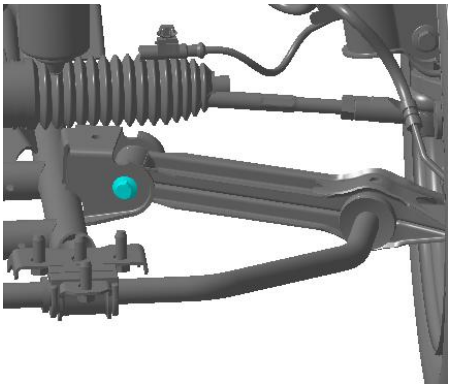
3. Helical spring

Check whether the helical spring has cracks, wear or damage. If so, please replace it.

4. Spring upper support

Check for cracks, wear, deformation and other damages. If so, please replace it.

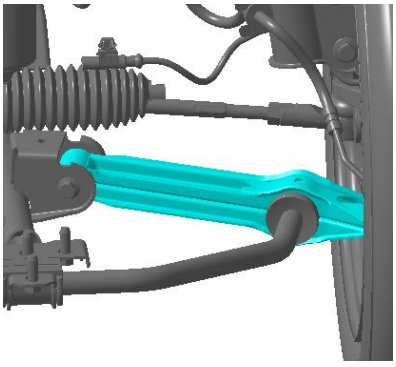
Disassembly and assembly of the lateral stabilizer bar



Disassembly

1. Remove the fixing bolts of the front swing arm and the stabilizer bar.

2. Remove the fixing bolts of the front control arm and the subframe.



3. Carefully remove the front stabilizer bar assembly.

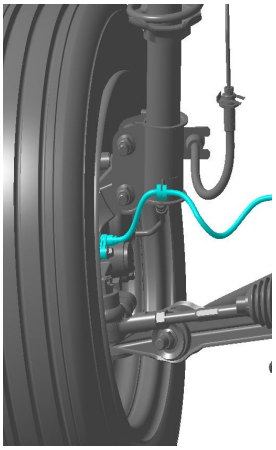
Inspection after disassembly

Check whether the stabilizer bar, stabilizer bar fixing frame and stabilizer bar bushing are deformed or worn. If any, please replace it.

Installation
Proceed in the reverse order of disassembly.
※ Note :
1. Do not use non-reusable parts.
2. When installing the stabilizer bar bushing and the stabilizer bar fixing frame, Note should be paid to the installation direction.
3. Under no-load conditions, perform the final tightening on each component removed before disassembling the stabilizer bar.

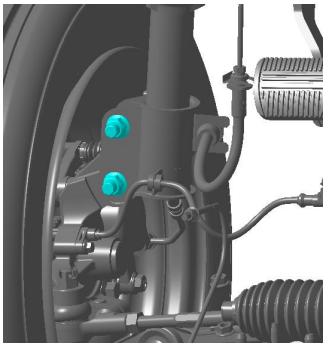
Disassembly and assembly of the front steering knuckle with wheel hub

1. Remove the front wheels.Refer to "Disassembly and Assembly of Wheels"
2. Remove the retaining ring that fixes the brake hose and take the brake hose off the bracket.

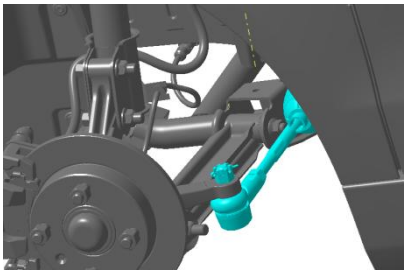


3. Remove the brake caliper before disassembling.
"Disassembly and assembly of the reference front brake caliper"
4. Remove the brake disc."Reference brake disc disassembly and assembly"

5. Remove the fixing bolts of the steering knuckle and shock absorber.



6.Remove the fixing bolts of the steering knuckle and the front control arm, and carefully take off the steering knuckle assembly.



Installation
Proceed in the reverse order of disassembly.
※ Note:
Refer to the general inspection and road test to check the working condition of the vehicle.

Disassembly and assembly of the front subframe

Disassembly

1. Remove the front stabilizer bar assembly.

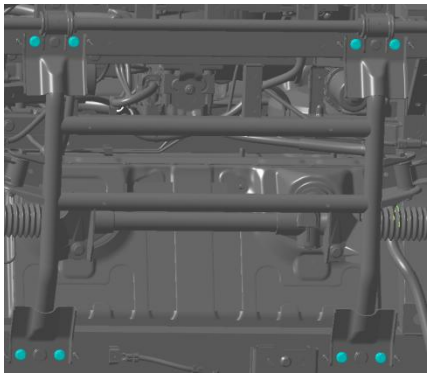
Refer to "Disassembly and Assembly of the Front Stabilizer Bar.

2. Remove the lower swing arm assembly.

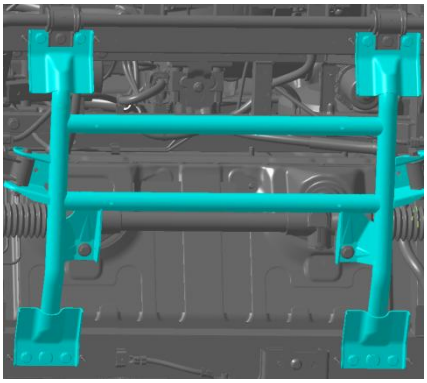
Refer to "Disassembly and Assembly of the Front Lower Control Arm Assembly"

3. Remove the steering gear assembly.

Refer to "Disassembly and Assembly of Steering Gear Assembly"



4. Remove the fixing bolts of the front subframe.



5.With the assistance of the assistant, carefully lift the subframe assembly.

Installation

Install in the reverse order of disassembly.

Inspection of the rear suspension

Check the system

1. Check the system components.

1）Check if there are any obvious signs of mechanical damage in the system. If so, carry out maintenance.

2）Check if the system fasteners (such as bolts or nuts) are loose. If so, re-tighten them.

3）Check whether the connecting bushings are aged or damaged. If so, replace them.

Check the rear shock absorber

2 Check the working condition of the shock absorber after inspection.

Road test inspection.

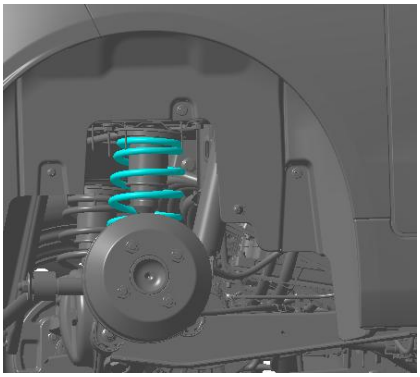
1) Drive the car slowly and apply emergency braking. If the car vibrates severely, it indicates that there is a problem with the shock absorber and it should be replaced.

2) When the shock absorber makes abnormal noises while the vehicle is in motion, first check if the fasteners are loose. If they are loose, tighten the bolts and conduct a road test. If the abnormal noise persists, replace the shock absorber and conduct a road test check. If the abnormal noise disappears, the shock absorber is faulty.

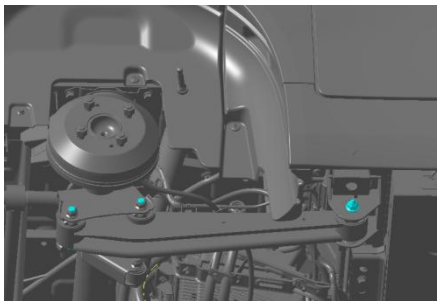
Disassembly and assembly of the thrust rod assembly

Disassembly

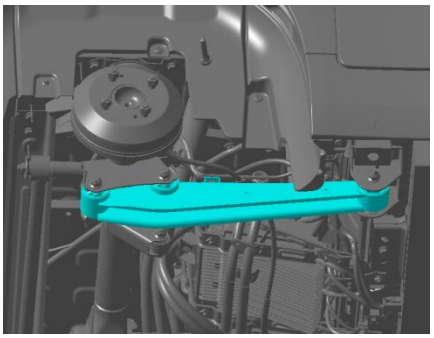
1. To lift the vehicle and lift the rear axle, the rear coil spring must be removed first.



2. Remove the fixing bolts of the thrust rod.



3. Carefully remove the thrust rod assembly.

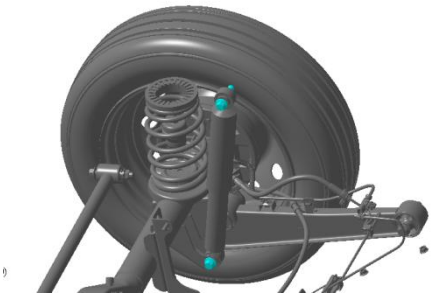


Installation
Install in the reverse order of disassembly.
※ Note:
◆After installation, all bolts must be tightened to the specified torque for inspection.
◆Check for any deformation or damage.

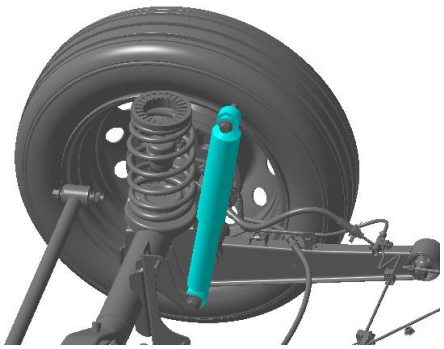
Disassembly and assembly of the rear shock absorber

Disassembly

1. Lift the vehicle, lift the rear axle.
2. Remove the upper and lower fixing bolts of the rear shock absorber.



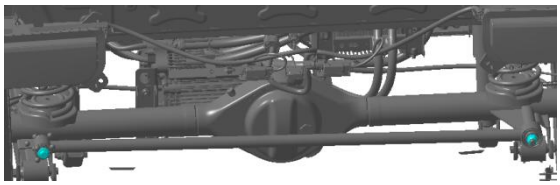
3. Carefully remove the shock absorber assembly.



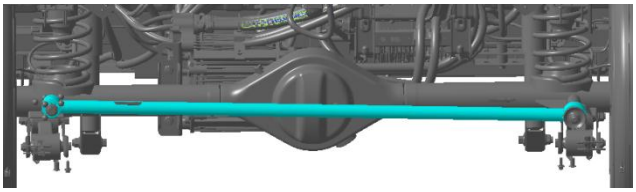
Installation
Install in the reverse order of disassembly.
Note:
◆All bolts must be tightened to the specified torque after installation

Disassembly and assembly of the rear balance bar

Disassembly and assembly
1. Lift the vehicle.
2. Support the rear drive axle with auxiliary tools.
3. Remove the fixing bolts of the rear balance bar.

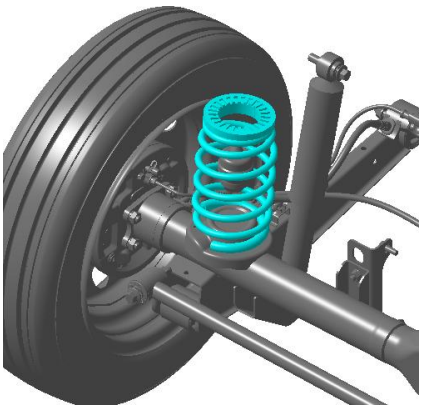


4.With the assistance of an assistant, remove the rear balance bar assembly.



Installation
Install in the reverse order of disassembly.
※ Note:
◆All bolts must be tightened to the specified torque after installation

Disassembly and assembly of the rear helical spring

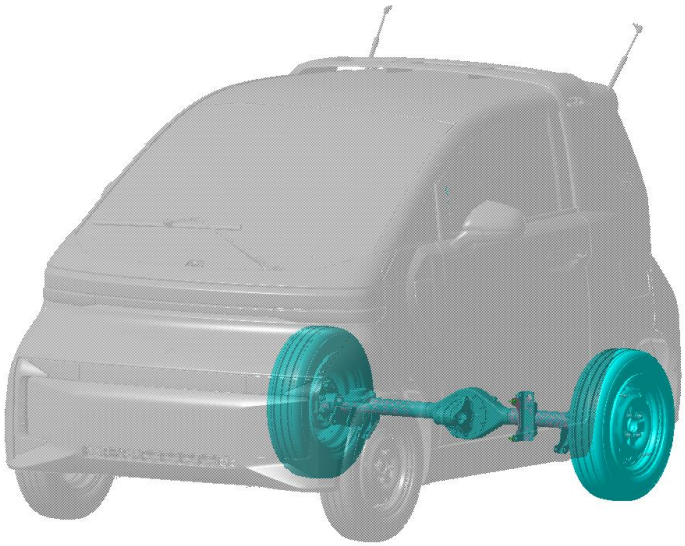


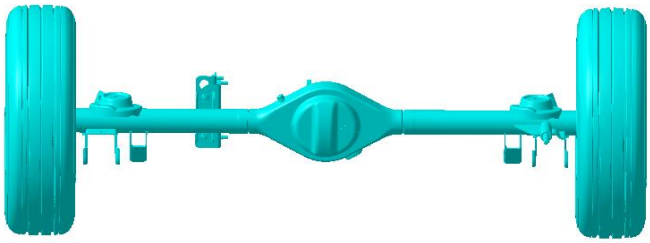
Disassembly and assembly
1. Lift vehicle
2. Remove the bolts at the fixed points under the rear shock absorber. Refer to "Disassembly and Assembly of Rear Shock Absorbers
3. Remove the rear helical spring carefully.

Installation
Install in the reverse order of disassembly.

4.11 Rear drive axle

4.11.1Component drawing





Warnings and precautions
1. Important precautions regarding vehicle lifting
Note:
➢• Before lifting the vehicle, ensure that the lift is in good condition.
➢•Before lifting the vehicle, check whether the lifting position is correct. It is strictly prohibited to support any part other than the lifting point.

➢• When lifting the vehicle, no one is allowed to enter the surrounding area or the bottom.

2. Important warnings regarding road tests

Warning:

➢•Test the vehicle on the road under the premise of ensuring safety and abide by all traffic regulations. Do not attempt any operation that may endanger vehicle control.

3.Important precautions during the maintenance process

Note:

➢• When the drive shaft dust cover is in operation or being removed, it is strictly prohibited to rub against other components for a long time or collide with sharp objects to avoid damage.

➢• During the maintenance process, avoid dirtying the components and prevent foreign objects from entering.

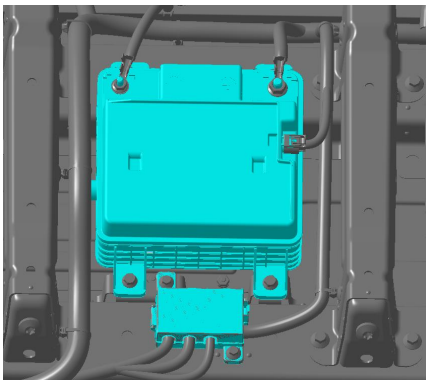
➢• Please clean the outer surfaces of the components before disassembly and assembly.

➢• Disassembled parts (except rubber parts) should be cleaned with a cleaner and dried.

4.11.2 Disassembly and installation

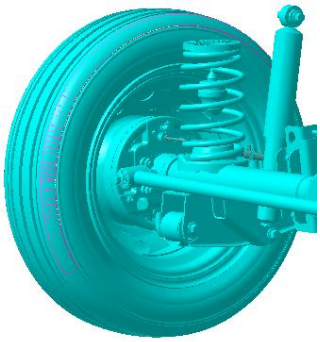
1. Disassembly and installation of the rear drive axle assembly

1.1 Set the power to the OFF position, remove the negative cable of the battery and wait for 5 minutes.



1.2 Remove the two rear rims and the tire assembly.

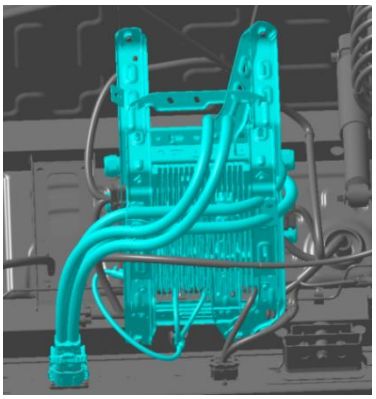
1.3 Disassemble the two rear brake assemblies.



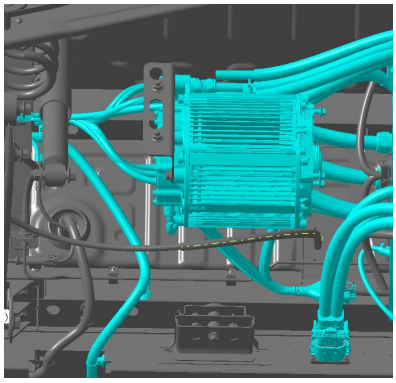
1.4 Remove the MCU fixing bracket (with MCU)

1.5 Remove the MCU maintenance cover plate

1.6 Disassemble the high-voltage wiring harness connector of the MCU output

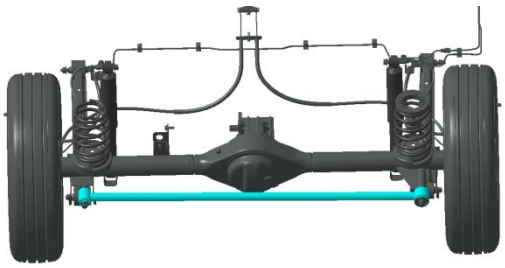


1.7 Disassemble the motor and install the bracket

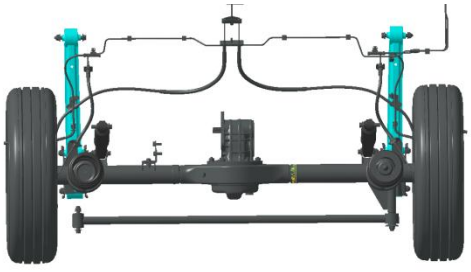


1.8 Disassemble the motor

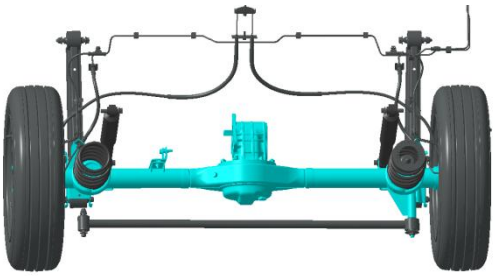
1.9 Remove the two rear shock absorber springs
1.10 Disassemble the two rear shock absorber assemblies



1.11 Disassemble the balance bar



1.12 Disassemble the thrust rod assembly



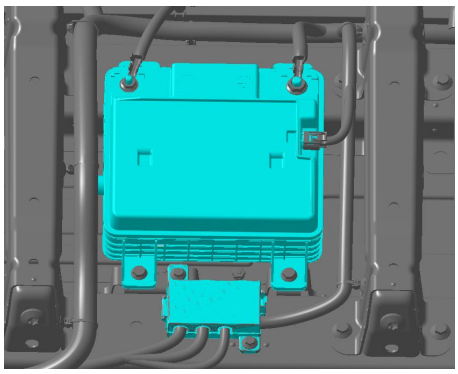
1.13 Remove the oil drain bolt and drain the gear oil

1.14 Disassemble the drive axle assembly

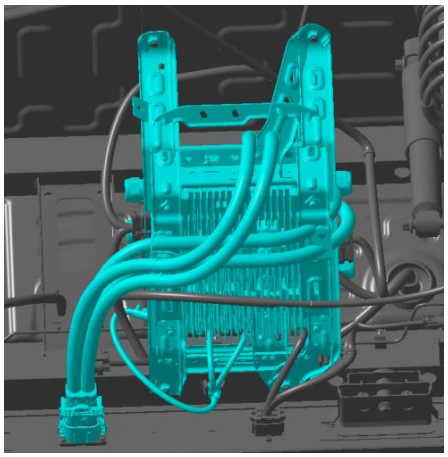
Installation
Install in the reverse order of disassembly.

2.Disassembly and installation of the motor mounting bracket.

2.1 Set the power to the OFF position, remove the negative cable of the battery and wait for 5 minutes.

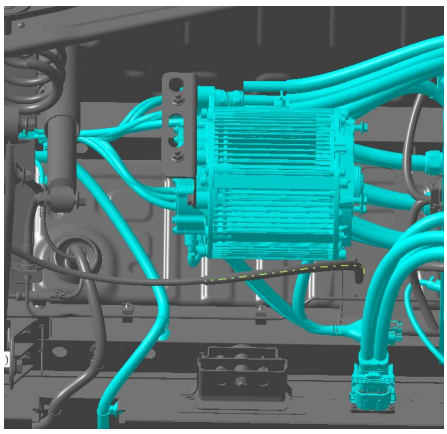


2.2 Remove the MCU fixing bracket (with MCU).
2.3 Disassemble the MCU fixed bracket assembly.



2.4 Remove the MCU maintenance cover plate.
2.5 Disassemble the high-voltage wiring harness connector of the MCU output.

2.6 Disassemble the motor and install the bracket.
2.7 Disassemble the motor bracket.

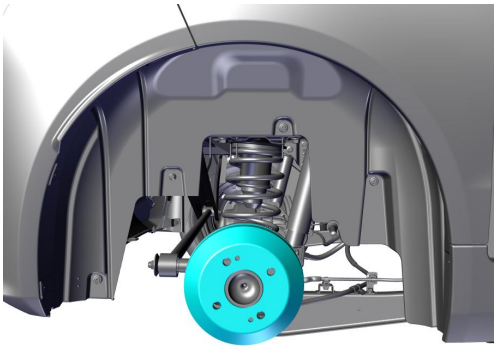


Installation
Install in the reverse order of disassembly.

3.Disassembly and installation of the rear brake friction plate.

3.1 Remove the tire.

3.2 Disassemble the brake drum.



3.3 Remove the upper and lower springs of the brake pads.

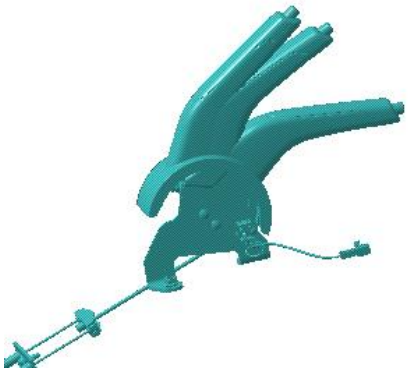
3.4 Remove the pins on both sides of the brake pads and take off the brake friction pads.

Installation
Install in the reverse order of disassembly

4.Disassembly and installation of the hand-pulled cable.

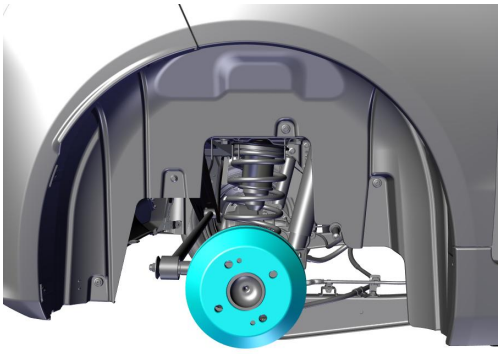
4.1To disassemble the sub-instrument panel, refer to "Sub-instrument Panel Disassembly and Installation".

4.2 Remove the handbrake cable at the rear of the sub-dashboard.



4.3 Lift the vehicle and remove the tires.

4.4 Disassemble the brake drum.



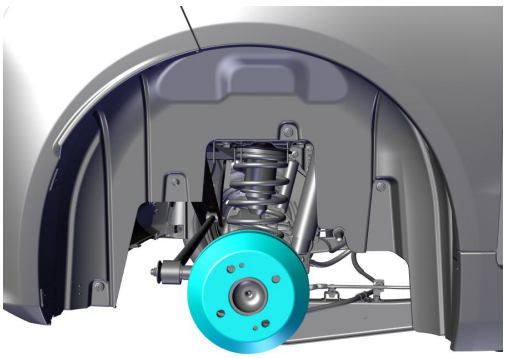
4.5 Remove the upper and lower springs of the brake pads.

4.6 Remove the side pin of the brake pad with the handbrake cable,
take off the brake friction pad and remove the handbrake cable.

Installation
Install in the reverse order of disassembly.

5. Disassembly and installation of brake drums
5.1 Remove the tire

5.2 Disassemble the brake drum



Installation
Install in the reverse order of disassembly.

4.12 Steering system

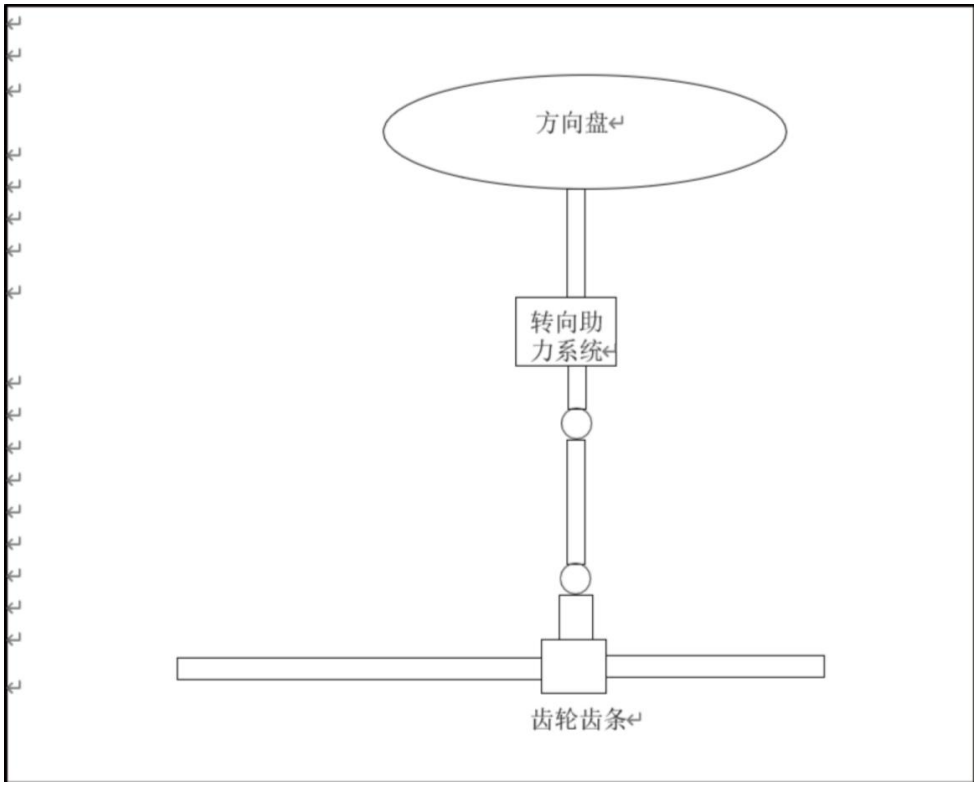
4.12.1 System Description

4.12.1.1System Overview

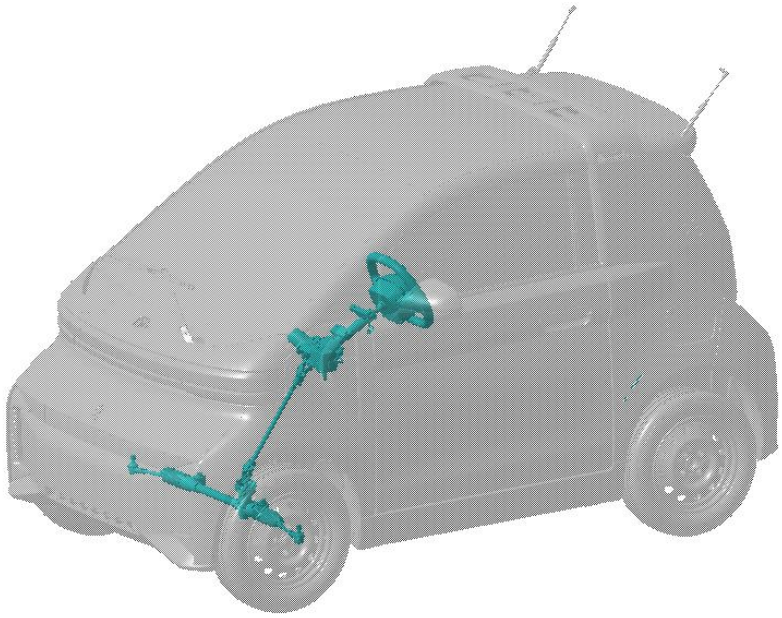
ALUMI It uses a tw六o-spoke steering wheel, rack and pinion steering gear, and a steering column to assist the steering column.

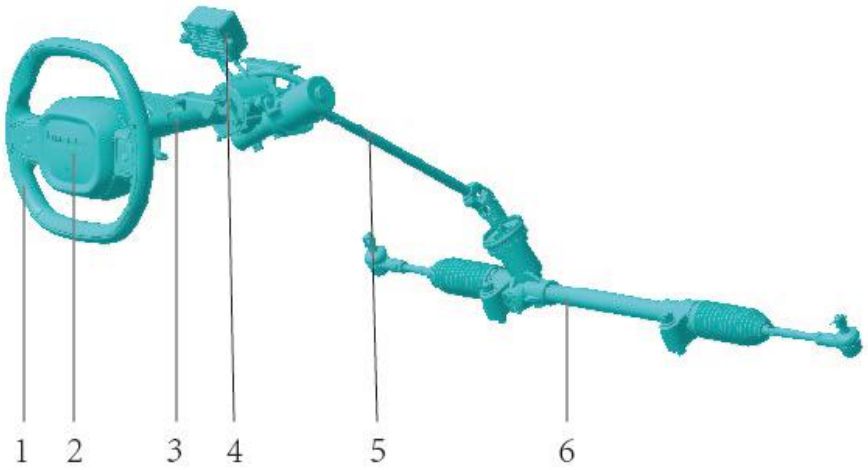
4.12.1.2 Working principle

The rotational action of the steering wheel is transmitted to the steering gear through the steering column. The steering gear converts this rotation into linear motion through the gear rack inside it. This linear motion is transmitted to the wheel steering knuckle through the steering tie rod and the ball joint of the tie rod. The power steering system is of C-EPS type. The electrically controlled power steering motor exerts force on the steering column through the worm gear and worm, and the hand force on the steering wheel can be adjusted.



4.12.2 Component View
The position of EPS system components





1-Steering wheel 2- Speaker cover 3- Directional pipe string
4- EPS controller 5- Steering intermediate shaft 6- Steering gear

Project	Torque (N •m)
Steering tie rod ball joint lock nut	30-55
Universal joint and splined shaft fastening bolts	30-36
The connection nut between the steering column and the pipe beam	20-26
Steering gear and subframe	100-120

4.12.3 Maintenance Operation Guide

Before the maintenance of this chapter, to avoid dangerous operations and damage to the vehicle, please strictly follow the following instructions.
◆Gloves must be worn throughout the assembly of the steering column with intermediate shaft to prevent direct contact of hands with the column from causing rust.
◆During the processes of handling, transporting and assembling the pipe string, it must not be knocked or hit to prevent it from collapsing.
◆When removing the steering column with the intermediate shaft assembly, do not touch the interior parts of the vehicle to avoid scratching them.
◆When disassembling and assembling the steering column, the power supply of the EPS needs to be turned off (the entire vehicle can be turned off and the power disconnected) to avoid reverse impact, which may cause the internal protection Circuit of the EPS to break down.
◆After replacing the column or steering gear, the four-wheel alignment needs to be redone. Once the four-wheel alignment is redone, the steering column must be calibrated for the neutral or zero position.

Steering system inspection
Check the installation status
1. Check the installation of the steering gear assembly, front suspension, axle and steering column.
2. Check whether there is any movement clearance when the steering wheel moves up and down, left and right, and axially.
3. Check whether the fixing nuts and bolts of the steering device assembly are loose.

Check the free travel of the steering wheel
1. Turn the steering wheel so that the front wheels are in a straight forward position, and slightly turn the steering wheel left and right until the front wheels start to move. Measure the movement of the steering wheel on the outer circle.
2. When the measured value exceeds the standard value, check the installation of each joint of the steering column and the steering mechanism. Calibrate or replace the relevant components as the situation requires.

Check the middle position
1. Confirm that the steering device assembly, steering column and steering wheel are installed correctly.
2. After confirming that the steering gear assembly, steering column and steering wheel are installed correctly and the wheels are aligned, perform the middle position check. Please refer to "Front Wheel Alignment Check".
3. Park the car straight ahead and make sure the steering wheel is in the middle position.
4. Loosen the lock nut of the cross pull rod and turn the adjustment rod left and right for fine adjustment to confirm whether the steering wheel is in the middle position.

Check if the steering wheel automatically returns to its original position
※ Note:
◆Make slow and sharp turns to confirm by feeling whether there is no difference in the force applied and the return to position in the left and right directions.
◆This step must be carried out under safe road conditions and traffic conditions, with safety in mind.

1. Turn the steering wheel 90 degrees and drive at a speed of 35km/h for a few seconds.
2. Release the steering wheel and return it to at least 70% of the original position.

Check the dust cover of the ball head
1. Press it with your fingers to check if the dust cover is cracked or damaged.
2. If the dust cover is cracked or damaged, the ball head of the cross pull rod must be replaced.
※ Note:
◆When the dust cover cracks or gets damaged, it may also cause damage to the ball head.

DTC fault code

Serial number	DTC display code	The meaning of DTC	Mature conditions for faults	System performance	Conditions for fault resolution
1	C111131	The main signal of the torque sensor is faulty	The frequency deviation of the main torque signal (±20%) is ≤ 1600Hz or ≥ 2400Hz	The relay is disconnected, cutting off the assist	After the main signal is normal, it needs to be re-ignited and powered ON (IGN ON) to restore the normal function, and historical faults should be stored at the same time.
2	C111362	The main Circuit and auxiliary Circuit of the torque sensor have significant differences	The sum of the duty cycles of T1 and T2 exceeds 100% plus or minus 10%	The relay is disconnected, cutting off the assist	After the main and auxiliary Circuit signals are normal, it is necessary to re-ignite and power ON (IGN ON) to restore the normal function, and at the same time, historical faults should be stored.
3	C11141C	The power supply of the torque sensor is faulty	The 5V voltage of the sensor exceeds the tolerance by ±8%	The relay is disconnected, cutting off the assist	After the sensor voltage is normal, it needs to be re-ignited and powered ON (IGN ON) to restore the normal function, and historical faults should be stored at the same time
4	C111531	The auxiliary Circuit signal of the torque sensor is faulty	The T2 frequency deviation (±25%) is greater than 1500Hz or greater than 2500Hz	The relay is disconnected, cutting off the assist	After the auxiliary Circuit signal is normal, it needs to be reignited and powered ON (IGN ON) to restore the normal function, and historical faults should be stored at the same time.
5	C111654	Angle not calibrated fault	The Angle sensor is not calibrated	It supports normal operation but has no function to return to normal	After the Angle calibration operation is successfully executed, it can return to normal. Once the fault is restored, no historical faults will be stored
6	C112462	Sudden change in vehicle speed signal (invalid vehicle speed report)	The valid bit of the vehicle speed signal is displayed as 0x0	The small assist mode adopts a silent vehicle speed of 60Km/h (calibration to be confirmed).	When the vehicle speed signal returns to normal, the normal function can be restored and historical faults will be stored simultaneously.
7	C114101	The voltage at both ends of the motor is too high or too low	"Motor open Circuit or short Circuit. Motor open Circuit: The motor current is lower than 2A and at this time, please find that the current is greater than 5A and lasts for 3 seconds. Motor short Circuit: The motor current lasts for more than 60A and lasts for 1 second.	The relay is disconnected, cutting off the assist	After the motor signal is normal, it needs to be re-ignited and powered ON (IGN ON) to restore the normal function, and historical faults should be stored at the same time.
8	C114201	The actual current flowing through the motor is much higher than the calculated target current (current following failure).	The difference between the requested current and the actual current is greater than 10A	The relay is disconnected, cutting off the assist	After returning to normal, it is necessary to re-ignite and power ON (IGN ON) to restore the normal function, and at the same time, historical faults should be stored.
9	C114301	The motor current is too high. [Over current protection (not a fault)]	The torque is ≥ 2.5Nm, and the motor current is continuously greater than the Over current protection value of 26A for 2 seconds.	The basic power boost is reduced from 26A to 23A, a 10% decrease in power boost, without affecting the power boost function and the positive return function.	The steering wheel torque drops below 2.5Nm to exit the fault

Serial number	DTC display code	The meaning of DTC	Mature conditions for faults	System performance	Conditions for fault resolution
10	C114501	The actual current flowing through the motor is much lower than the calculated target current (current sensor error).	The difference between the requested current and the actual current is greater than 10A, and the actual current is greater than 10A	The relay is disconnected, cutting off the assist	After returning to normal, it is necessary to re-ignite and power ON (IGN ON) to restore the normal function, and at the same time, historical faults should be stored.
11	C115101	The signal of the Angle sensor is abnormal	The frequency duty cycle signal of the Angle sensor is abnormal	It supports normal operation but has no function to return to normal	After the Angle signal returns to normal, a new ignition and power-on (IGN ON) is required to restore the normal function and store historical faults at the same time.
12	B111717	The battery voltage is too high.	The power supply voltage is higher than 16V	The assistance gradually diminishes to zero	After the battery voltage returns to normal, a new ignition and power-on (IGN ON) is required to restore its normal function and store historical malfunctions at the same time.
13	B111716	The battery voltage is too low.	The power supply voltage is lower than 8.5V	The assistance gradually diminishes to zero	After the battery voltage returns to normal, the assist can be restored to normal. If the current fault turns into a historical fault, re-ignition (IGN ON) is required to power on
14	C11554B	There is a malfunction inside the controller	Drive failure (over-temperature, under-voltage)	The relay is disconnected, cutting off the assist	After the internal fault of the controller returns to normal, the assist can be restored to normal. If the current fault turns into a historical fault, re-ignition (IGN ON) and power-on are required
15	U007300	EPS communication is shut down.	Eight consecutive Bus-off detections were detected	"Small Assist Mode"	If it does not enter the bus-off state for 5 consecutive seconds, it can be restored to normal and historical faults can be stored simultaneously
16	U012200	Lost communication with the VCU node	The VCU3_ ICM1(0x392) signal was not received for 10 consecutive reporting weeks	1. After power-on, the signal number was never received, and there was no base assistance. 2. After power-on and receiving the signal number, a fault occurred, and the assistance remained unchanged.	When 5 frames of VCU messages are continuously received, normal operation can be restored and historical faults can be stored simultaneously
17	U012100	Lost communication with the ABS node	ABS1_ was not received for 10 consecutive reporting weeks	"Small Assist Mode"	When 5 consecutive ABS messages are received, normal operation can be restored and historical faults can be stored simultaneously

Guidance on Fault Diagnosis

Serial number	DTC display code	The meaning of DTC	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
1	C111131	The main signal of the torque sensor is faulty	The wiring harness connector is faulty or the sensor is abnormal	Check the wiring harness or replace the tube posts	"1.When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
2	C111362	The main Circuit and auxiliary Circuit of the torque sensor have significant differences	The wiring harness connector is faulty or the sensor is abnormal	Check the wiring harness or replace the tube posts	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
3	C11141C	The power supply of the torque sensor is faulty	The wiring harness connector is faulty or the sensor is abnormal	Check the wiring harness or replace the tube posts	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
4	C111531	The auxiliary signal of the torque sensor is faulty	The wiring harness connector is faulty or the sensor is abnormal	Check the wiring harness or replace the tube posts	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
5	C111654	Angle not calibrated fault	No Angle zeroing operation was performed	Check if the Angle is set to zero	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
6	C112462	Sudden change in vehicle speed signal (invalid vehicle speed report)	The vehicle speed CAN signal is abnormal	Collect the vehicle speed message and check its numerical changes	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."

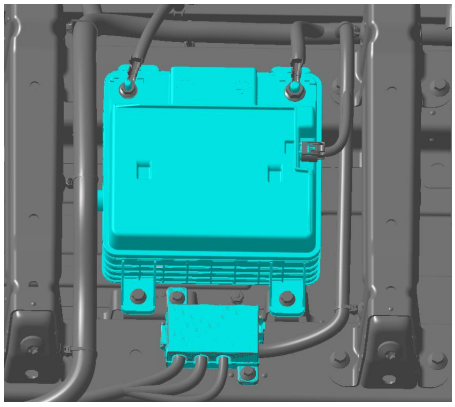
Serial number	DTC display code	The meaning of DTC	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
7	C114101	The voltage at both ends of the motor is too high or too low	The motor is open Circuit or short-Circuited	Check the wiring harness or replace the tube posts	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
8	C114201	The actual current flowing through the motor is much higher than the calculated target current (current following failure).	Short Circuit of MOSFET or motor failure	Replace the pipe string or controller	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
9	C114301	The motor current is too high. [Over current protection (not a fault)]	No faults (a protection mechanism triggered to prevent motor overheating)	N/A	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
10	C114501	The actual current flowing through the motor is much lower than the calculated target current (current sensor error).	Internal hardware failure	Replace the controller	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
11	C115101	The signal of the Angle sensor is abnormal	The Angle sensor is open-Circuited or short-Circuited	Check the wiring harness or replace the tube posts	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."

Serial number	DTC display code	The meaning of DTC	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
12	B111717	The battery voltage is too high.	Power input failure or power source line failure	Check the voltage of the battery	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
13	B111716	The battery voltage is too low.	Power input failure or power source line failure	Check the voltage of the battery	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
14	C11554B	There is a malfunction inside the controller	The internal Detection of the controller is faulty	Replace the controller	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
15	U007300	EPS communication is shut down.	CAN bus short Circuit, short power supply, short ground or vehicle network problem	1. Check the connection of CAN lines. 2. Inspect the vehicle's CAN network.	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."
16	U012200	Lost communication with the VCU node	1. The speed transmission node failed to send the message as required. 2. The connection of the vehicle wiring harness was incorrect.	1. Check if there are any messages on the main line and whether the period is sent as per the protocol. 2. Check if the CANH and CANL wiring harnesses of the entire vehicle are connected normally.	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."

Serial number	DTC display code	The meaning of DTC	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
17	U012100	Lost communication with the ABS node	"1. The vehicle speed sending node failed to send the message as required. 2. The connection of the entire vehicle wiring harness is incorrect."	1. Check if there are any messages on the main line and whether the period is sent as per the protocol. 2. Check if the CANH and CANL wiring harnesses of the entire vehicle are connected normally.	"1、When using the historical fault diagnosis service for clearing After clearing the historical DTC, clear the historical DTC. or 2. When the entire KL15 vehicle has been powered on and off for 40 cycles without such faults, the EPS will automatically clear the historical DTC."

4.12.4 Disassembly and assembly of the steering column

Disassembly
1. Set the power to the OFF position, disconnect the maintenance switch, remove the negative cable of the battery and wait for 5 minutes.



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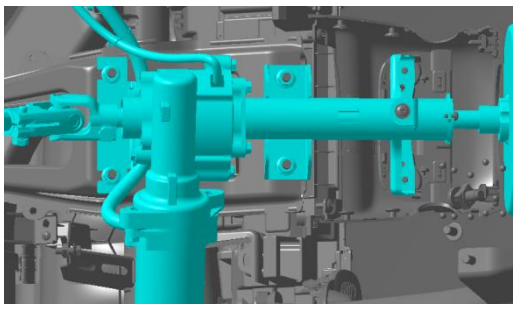
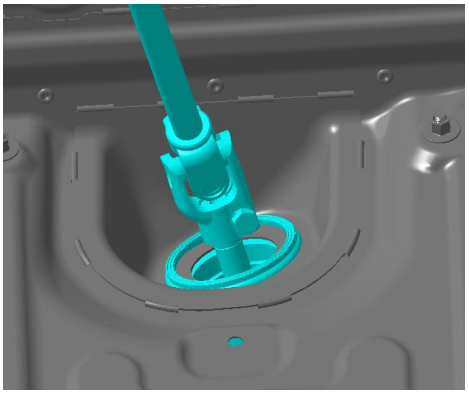
2.Remove the steering wheel.

3. Remove the upper and lower guard plates of the steering wheel.

4. Remove the fixing nut of the upper pipe column.



5.Remove the fixing bolts of the lower steering shaft and the steering gear, and carefully take off the steering column



Inspection after disassembly

1. Check if the steering column has any cracks, deformations or other damages. If any of the above conditions are found, please replace it.
2. Check whether the splines of the steering column shaft are worn or have broken teeth. If any of the above conditions occur, please replace them.

Installation

Proceed in the reverse order of disassembly.

※ Note:

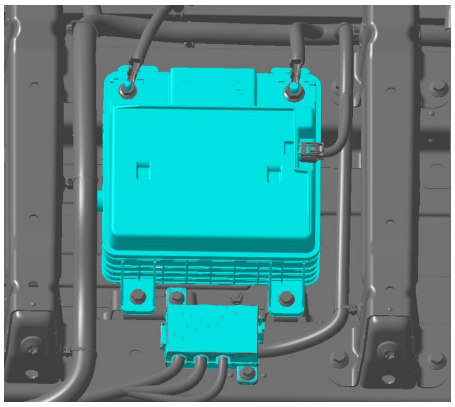
◆Do not reuse non-reusable parts.
◆Keep the steering column assembly in the middle position of the steering wheel.
◆When installing the connecting shaft onto the steering column, please Pay attention to the installation position.

Inspection after installation

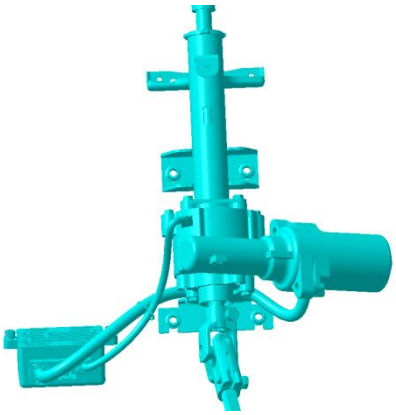
When the vehicle is parked straight, turn the steering wheel left and right to the bottom several times to ensure that the steering wheel operates smoothly.

4.12.5 Disassembly and assembly of the steering gear

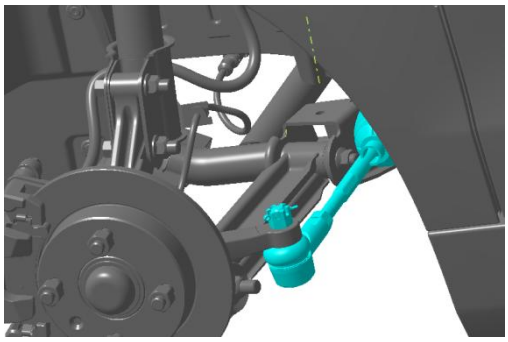
Disassembly
1. Set the power to the OFF position, disconnect the maintenance switch, remove the negative cable of the battery and wait for 5 minutes.



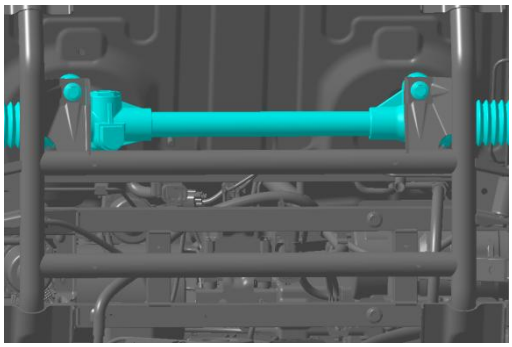
2. Remove the steering column.
Refer to "Steering Column Disassembly and Assembly"



3. Lift the vehicle and remove the fixing bolts of the steering tie rod.



4. Remove the four fixing bolts and nuts of the steering gear and carefully take it off.



Steering gear
1) Check whether the gear rack operates smoothly and whether it is worn.
2) Check the gear preload.

Installation
Proceed in the reverse order of disassembly.
※ Note:
◆Do not reuse non-reusable parts.
◆When connecting the steering gear and the steering column, Pay attention to the installation position.
◆When disassembling the steering gear assembly, keep the tires on a level ground under no-load conditions and finally tighten the nuts and bolts.
◆Check the wheel alignment.

Inspection after installation
Turn the steering wheel left and right several times to confirm if it operates smoothly.

4.12.6 Steering zero point calibration

Steering zero point calibration, also known as steering Angle alignment, is a fundamental parameter of the EPS control system and serves as the reference point for power steering.
1）When the vehicle comes off the production line and is traveling in a straight line, visually inspect the steering wheel. If it is centered, proceed to the next step. If not centered, keep the steering shaft stationary, remove the steering wheel, and insert the steering wheel into the splined shaft of the steering column at the visually positive position.
2）Pre-installed hexagonal flange nuts (Q32312F39), ensuring the steering wheel does not shake.
3）Enter the inspection line, go to the four-wheel alignment station, drive onto the equipment, release the service brake, and release the parking brake. Note: During the above process, the EPS fault light on the main instrument panel showed yellow and kept flashing.

4）Install the level to the steering wheel, observe the bubbles, adjust the steering wheel to a horizontal position (the level shows green), and keep it still.
5）After the level communicates with the four-wheel alignment device to confirm the level status, the four-wheel alignment Detection is initiated.
6）Check the toe-in value of the front wheels: Qualified, proceed to the next step; Unqualified. Adjust the crossbar. The forward beam value is qualified.
7）After the toe-in value of the front wheels is qualified, the steering wheel remains in a fixed state by the centering instrument, and the starting point of the EPS software Angle (zero position) is calibrated with the zero position calibration equipment (commonly known as the small yellow box):
a. When the vehicle is in the "ON" gear, the main instrument panel lights up and the EPS fault light flashes yellow;
b. Connect the zero position calibration device (small yellow box) to the OBD-II connector through the wire harness terminal to achieve communication with the vehicle.

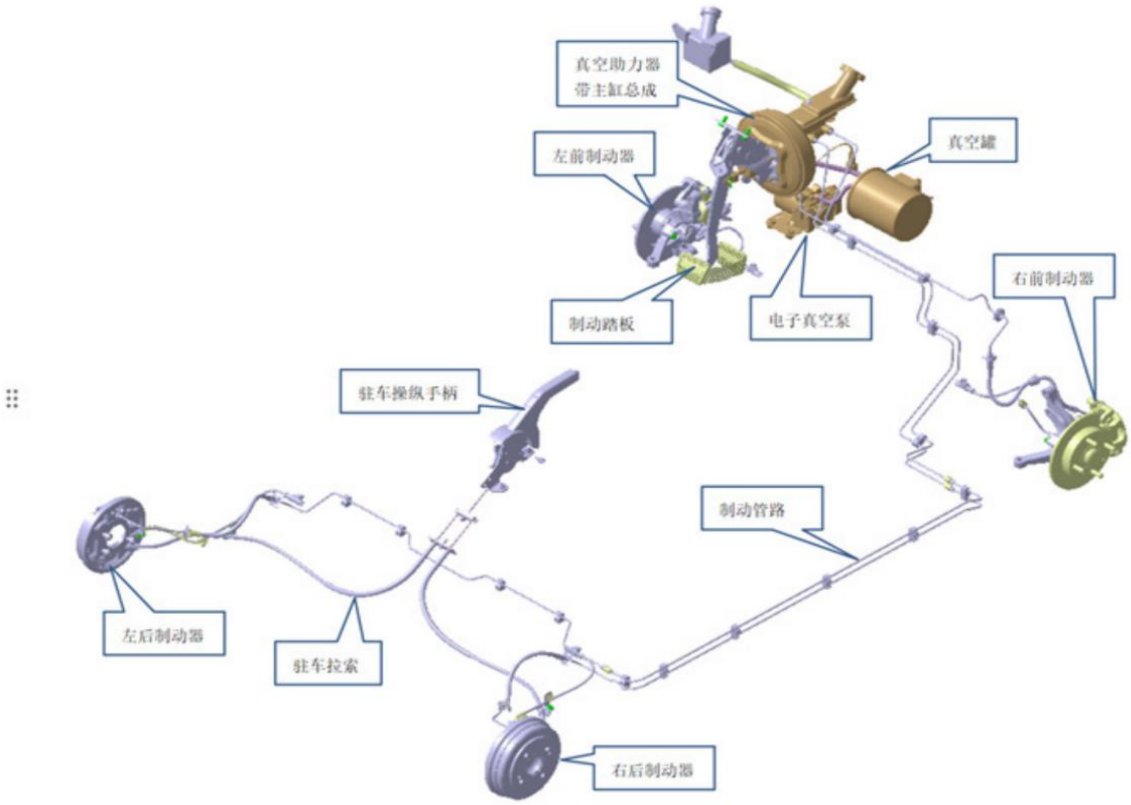
c. Select "Angle Alignment" for the steering wheel zero position calibration device and press the confirmation button (when using this device for the first time, you need to set: communication Settings

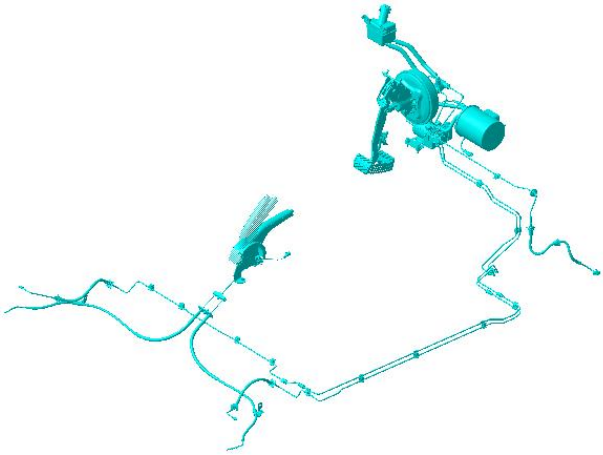
d. When the alignment result "Success" is displayed, return to clear the steering system fault.

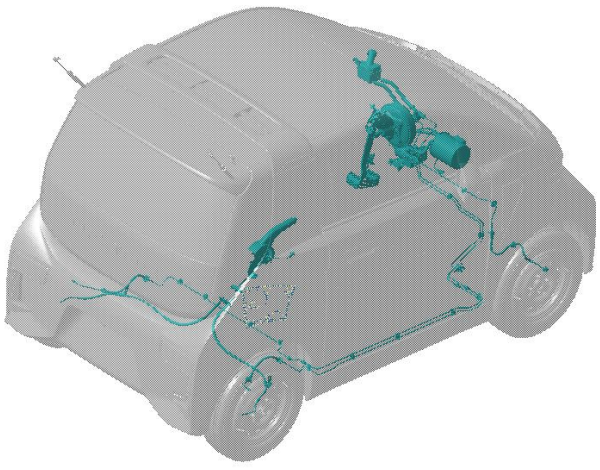
e. After the display fault is successfully cleared, disconnect the zero position calibration device from the vehicle.

The zero point calibration for turning is complete

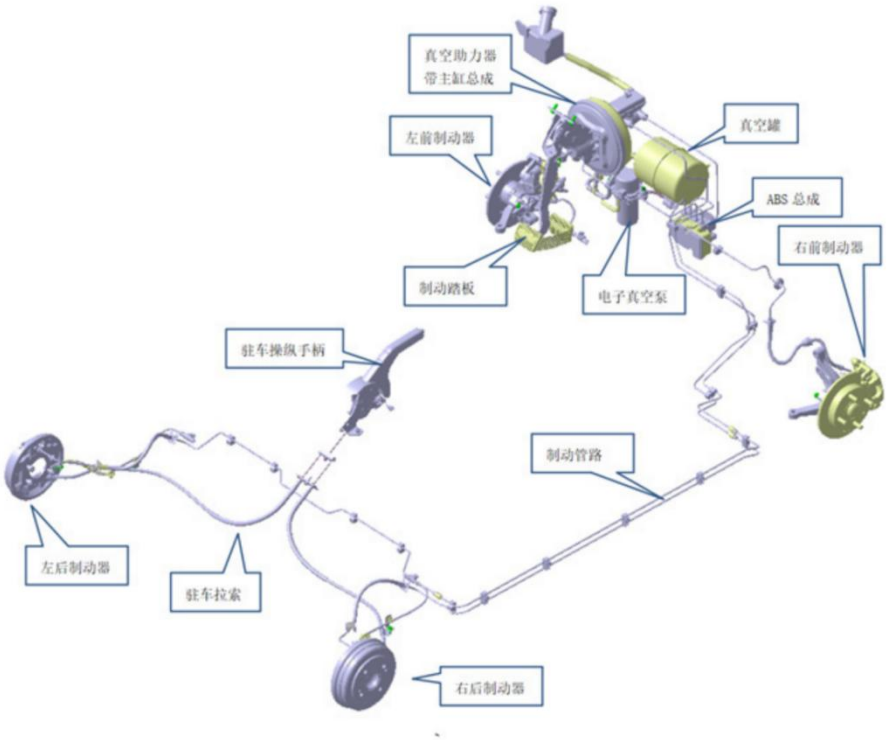
4.13.1 Position diagram of braking components

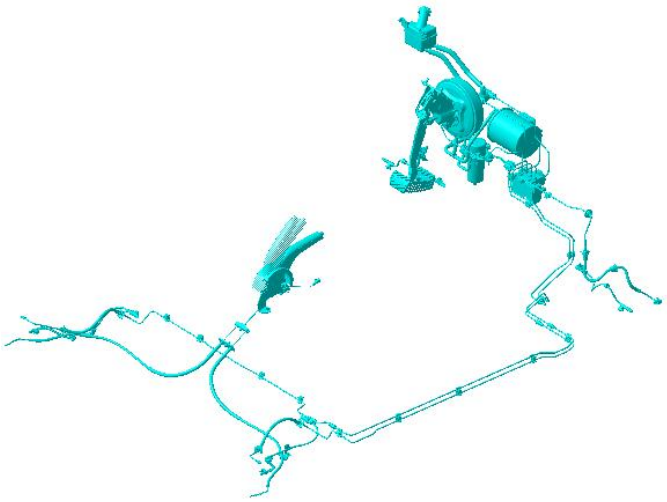


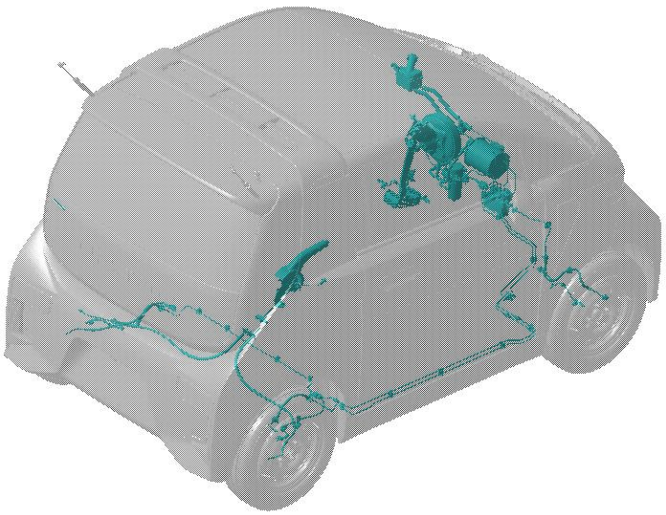




L6







4.13.2 Warnings and precautions

Warning on Handling components of the Anti-lock braking system !!

◆Some components in the anti-lock braking system (ABS) cannot be repaired individually. Attempting to disassemble or disconnect certain system components may cause personal injury and/or abnormal system operation. Only those components that are permitted to be disassembled and installed can be repaired.

Warning about brake dust !!

◆When repairing wheel braking components, please avoid the following operations:

◆It is not allowed to grind the kinetic friction lining.

◆Do not sand the brake friction lining with sandpaper.
◆Do not clean the brake components of the wheels with dry brushes or compressed air.

Warning ! !

◆Some vehicle models or after-sales brake components may contain fibers, which can be mixed with dust. Inhaling dust containing fibers can seriously harm the body. Please clean any dust on the actuating parts with a damp cloth.

Warnings about brake fluid !!

◆Brake fluid is composed of polyethylene glycol and is highly hygroscopic and prone to moisture absorption. Do not use brake fluid from open containers that may be contaminated by water. Using inappropriate or contaminated brake fluid may cause system failure, vehicle loss of control and personal injury.

Warning about the irritation of brake fluid !!

◆Brake fluid is irritating to the skin and eyes. The following measures should be taken in case of contact:
◆Eye contact - Rinse thoroughly with water.
◆Skin contact - Wash with soap and water.

Warning about brake pipe replacement !!

◆When replacing the brake tubes, please install and fix them carefully. Be sure to use the correct fasteners; otherwise, it may cause damage to the brake tubes and the braking system, resulting in personal injury.

Important precautions for adding brake fluid to the braking system

◆When adding brake fluid to the brake master cylinder reservoir, only brake fluid from clean and sealed brake fluid containers that comply with DOT 4 should be used. Failure to use the recommended brake fluid can lead to contamination, thereby damaging the rubber seals and/or rubber gaskets inside the hydraulic brake system components.

Important precautions for brake calipers

◆When removing the brake calipers, a steel wire should be used to support them to prevent damage to the brake tubes.

Important precautions for ABS

◆Before conducting conductive welding, the connectors need to be disconnected from the ABS controller.
◆Pay special Note to the installation of each part of the ABS. For instance, incorrect wiring positions, bolt positions, as well as wire harnesses, connectors, fasteners and brackets can cause the system to be subject to electromagnetic interference and fail to operate normally.
◆Do not charge the battery with a fast charger when the battery connection wires are not disconnected, as this will cause damage to the battery or ABS parts.
◆To disconnect the ABS controller connector, one click to activate the "OFF" mode.
◆ The ABS controller with pump assembly can only be replaced as a whole and cannot be disassembled for maintenance.
◆Do not hang anything related to the suspension on the wheel speed sensor wiring harness, otherwise the wheel speed sensor will be damaged.
◆The ABS controller must not be operated in an environment above 105℃.
◆Petroleum-based liquids must not be used in the brake master cylinder. Petroleum will cause the rubber components in the braking system to expand and deform.
◆Before diagnosing the ABS system, it is essential to ensure that the service braking system is functioning properly and free of any faults.

4.13.3 DTC fault code

Serial number	DTC display code	The meaning of DTC	Mature conditions for faults	System performance	Conditions for fault resolution
1	C100016	"ECU Voltage Supply Low voltage"	1.Service 85 is not activated 2.KL15 on 3. ABS SelfTest has Compeleted.	Display DTC	"1.Trigger Condition：ADC_VBAT >= 9.5 3.Detection time ： 1s"
2	C100017	"ECU Voltage Supply ExCessive Low voltage "	1.Service 85 is not activated 2.KL15 on 3. ABS SelfTest has Compeleted.	Display DTC	"1.Trigger Condition：ADC_VBAT >= 8.5 3.Detection time ： 750ms"
3	C100018	"ECU Voltage Supply High voltage ECU "	1.Service 85 is not activated 2.KL15 on 3. ABS SelfTest has Compeleted.	Display DTC	"1.Trigger Condition：ADC_VBAT <= 15.5 3.Detection time ： 1s"
4	C100019	"ECU Voltage Supply ExCessive High voltage ECU "	1.Service 85 is not activated 2.KL15 on 3. ABS SelfTest has Compeleted.	Display DTC	"1.Trigger Condition：ADC_VBAT<= 17.5 3.Detection time ： 250ms"
5	C100004	"ECU Hardware Error "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	There were no motor faults or solenoid valve faults, and the system was restored immediately
6	C100062	"EEPROM read/ write failure "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The simulation unit has no faults and is immediately restored
7	C105049	"Abnormal operation of ABS "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	If either ABS or EBD is not activated, it will recover after 60 seconds

8	C103213	"Front Left WSS Open Circuit or Short Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	" Integrated The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to normal, while the vehicle speed is above 20Km/h"
9	C103212	"Front Left WSS Short Circuit or Open Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	" Integrated The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to normal, while the vehicle speed is above 20Km/h"
10	C103202	"Internal ECU collection left Front wheel speed sensor The DMA buffer of the (WSS) pulse signal generates an overflow"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the wheel speed pulse is detected to be normal, and the vehicle speed exceeds 30km/ h
11	C100C96	"Front Left WSS Signal Missing "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
12	C101449	"Front Left WSS Signal OutOfRange"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.

13	C10182F	"Front Left WSS Signal ErratiC "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
14	C101E29	"Front Left WSS Signal Noise"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
15	C10314A	"Front Left Tyre Mis-matCh "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
16	C103513	"Front Right WSS Open Circuit or Short Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	" Integrated The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to normal, while the vehicle speed is above 20Km/h"
17	C103512	"Front Right WSS Short Circuit or Open Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	" Integrated The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to normal, while the vehicle speed is above 20Km/h"

18	C103502	"Front Right WSS DMA buffer overflow"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the wheel speed pulse is detected to be normal, and the vehicle speed exceeds 30km/ h
19	C100D96	"Front Right WSS Signal Missing"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
20	C101549	"Front Right WSS Signal OutOfRange"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
21	C101B2F	"Front Right WSS Signal Erratic"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
22	C101D29	"Front Right WSS Signal Noise"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
23	C10344A	"Front Right Tyre Mis -matCh "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.

24	C103813	"Rear Left WSS Open Circuit or Short Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	Integrated The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to normal, while the vehicle speed is above 20Km/h
25	C103812	"Rear Left WSS Short Circuit or Open Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	Integrated The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to normal, while the vehicle speed is above 20Km/h
26	C103802	"Rear Left WSS DMA buffer overflow"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the wheel speed pulse is detected to be normal, and the vehicle speed exceeds 30km/ h (the recovery condition has not been done).
27	C100E96	" Rear Left WSS Signal Missing"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
28	C101749	"Rear Left WSS Signal OutOfRange"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.

29	C103701	"Rear Left WSS Signal Erratic "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
30	C103702	"Rear Left WSS Signal Noise "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
31	C10374A	"Rear Left Tyre Mis-match "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.
32	C103B13	"Rear Right WSS Open Circuit or Short Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	Integrated: The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to positive At the same time, the vehicle speed exceeds 20Km/h.
33	C103B12	"Rear Right WSS Short Circuit or Open Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	"Integrated: The ASIC dedicated chip detected that the lane opening sign position of the wheel speed sensor was 0, and the vehicle speed was higher than 20Km/ h at the same time. Discrete type The partial pressure value has returned to positive At the same time, the vehicle speed exceeds 20Km/h.

34	C103B02	"Rear Right WSS DMA buffer overflow"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the wheel speed pulse is detected to be normal, and the vehicle speed exceeds 30km/ h
35	C100F96	"Rear Right WSS Signal Missing"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle accelerates to 60kph, meeting the conditions for fault recovery.
36	C103A00	"Rear Right WSS Signal OutOfRange"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle accelerates to 60kph, meeting the conditions for fault recovery.
37	C103A01	"Rear Right WSS Signal Erratic"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle accelerates to 60kph, meeting the conditions for fault recovery.
38	C101F29	"Rear Right WSS Signal Noise "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle accelerates to 60kph, meeting the conditions for fault recovery.
39	C103A4A	"Rear Right Tyre Mis-match"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle accelerates to 60kph, meeting the conditions for fault recovery.

40	C109904	"WSS Front or Rear alxe swapped"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle accelerates from 15Km/h to 40km/h, fully meeting the conditions for fault recovery.
41	C119904	"Multiple WSS Failure"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the vehicle accelerates from 15Km/h to 40km/h, fully meeting the conditions for fault recovery.
42	C104024	"BLS Always active"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, after the fault is eliminated, the following operations can be carried out: 1. Confirm that the BLS operation is normal 2. Press the brake pedal and hold for more than 0.1 seconds; Release the brake pedal and hold for more than 0.1 seconds.
43	C104023	"BLS never active"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, after the fault is eliminated, the following operations can be carried out: Confirm that the BLS is working properly. Press the brake pedal to ensure that the master cylinder pressure is greater than 30bar and remains so for more than 1 second.
44	C101013	"Front Left Inlet Valve Open Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored

45	C101012	"Front Left Inlet Valve Short Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
46	C10101D	"Front Left Inlet Valve Overheat "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds
47	C101113	"Front Left Outlet Valve Open Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
48	C101112	"Front Left Outlet Valve Short Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
49	C10111D	"Front Left Outlet Valve Overheat"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds
50	C101413	"Front Right Inlet Valve Open Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored

51	C101412	"Front Right Inlet Valve Short Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
52	C10141D	"Front Right Inlet Valve Overheat "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds
53	C101513	"Front Right Outlet Valve Open Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
54	C101512	"Front Right Outlet Valve Short Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
55	C10151D	"Front Right Outlet Valve Overheat "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds
56	C101813	"Rear Left Inlet Valve Open Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored

57	C101812	"Rear Left Inlet Valve Short Circuit"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
58	C10181D	"Rear Left Inlet Valve Overheat "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds
59	C101913	"Rear Left Outlet Valve Open Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
60	C101912	"Rear Left Outlet Valve Short Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
61	C10191D	"Rear Left Outlet Valve Overheat "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds

62	C101C13	"Rear Right Inlet Valve Open Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
63	C101C12	"Rear Right Inlet Valve Short Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
64	C101C1D	"Rear Right Inlet Valve Overheat "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds
65	C101D13	"Rear Right Outlet Valve Open Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored
66	C101D12	"Rear Right Outlet Valve Short Circuit "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	During the current ignition cycle, if the chip malfunctions for no reason after 60ms, it can be restored

67	C101D1D	"Rear Right Outlet Valve Overheat "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free recovery time of 1.2 seconds
68	C109513	"Valve High Side Open "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the chip has no faults and is immediately restored
69	C109512	"Valve High Side Over current "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	In the current ignition cycle, the chip has no faults and is immediately restored
70	C102004	"Motor Fault"	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free duration of 100ms
71	C102104	"Motor Relay Fault "	1.Service 85 is not activated 2.KL15 on 3.ECU supply voltage value is bewteen 9V and 16V 4. ABS SelfTest has Compeleted.	Display DTC	The current ignition cycle has a fault -free duration of 100ms
72	U007300	"CAN Bus off"	" Communication kernel activation"	Display DTC	Messages were sent continuously and normally for 100ms

Fault diagnosis

Serial number	DTC display code	The meaning of DTC	Possible causes of malfunction	Self-recovery conditions for fault codes	Maintenance suggestions
1	C100016	"ECU Voltage Supply Low voltage"	"1.Trigger Condition： ADC_VBAT <= 9 3.Detection time ： 1s"	"1.Trigger Condition： ADC_VBAT >= 9.5 3.Detection time ： 1s"	Check the power supply voltage and replace the battery
2	C100017	"ECU Voltage Supply ExCessive Low voltage "	"1.Trigger Condition： ADC_VBAT <= 8 3.Detection time ： 500ms"	"1.Trigger Condition： ADC_VBAT >= 8.5 3.Detection time ： 750ms"	Check the power supply voltage and replace the battery
3	C100018	"ECU Voltage Supply High voltage"	"1.Trigger Condition： ADC_VBAT >= 16 3.Detection time ： 1s"	"1.Trigger Condition： ADC_VBAT <= 15.5 3.Detection time ： 1s"	Check the power supply voltage and replace the battery
4	C100019	"ECU Voltage Supply ExCessive High voltage "	"1.Trigger Condition： ADC_VBAT >= 18 3.Detection time ： 500ms"	"1.Trigger Condition： ADC_VBAT<= 17.5 3.Detection time ： 250ms"	Check the power supply voltage and replace the battery
5	C100004	"ECU Hardware Error "	"1.Trigger Condition The motor fault or a certain solenoid valve fault was fed back through the SPI chip, and the duration was 50ms. 2.Possible root Cause 1. Chip hardware failure. 2. There is a fault in the coil. 3. There is a fault with the motor. 3.Detection time :50ms（Report immediately） "	There were no motor faults or solenoid valve faults, and the system was restored immediately	Replace the hardware
6	C100062	"EEPROM read/ write failure "	"1.Trigger Condition The SPI line transmission fails 2.Possible root Cause The ECU IIC line is damaged. There are problems in the program Flash simulation unit 3.Detection time :50ms（Report immediately） "	The simulation unit has no faults and is immediately restored	"1. Check whether the read/write format range is correct 2. Replace the software "

7	C105049	"ABS system failure "	"1.Trigger Condition： Excessive control of ABS. An error will be reported if the ABS/EBD control time of one or more rounds exceeds 60 seconds. High Note: a. When the slip ratio of a certain wheel exceeds 85% and the ABS/EBD continuously maintains pressure or depressurizes for 2 seconds, an error is reported. b. An error will be reported if one or more wheels are under ABS/EBD control for more than 60 seconds. 2. Low note: When the slip ratio of a certain wheel exceeds 85% and the ABS/EBD continuously maintains pressure or depressurizes for 5 seconds, an error is reported. 2.Possible root Cause： 1. The oil Circuit of the sub-pump is reversed. 2. The wheel speed sensor is connected in reverse. 3. The brake does not return to its original position. 3.Detection time :60s"	If either ABS or EBD is not activated, it will recover after 60 seconds	"1: Check if the oil pipe is connected correctly. Step 2: If there are no issues with step 1, please update the ESC program or replace the ECU"
8	C103213	"The left front wheel speed sensor is open (discrete component, which may contain a short Circuit fault)"	"1.Trigger Condition Hall sensor: The ASIC dedicated chip detects that the open Circuit marker position of the left front wheel speed sensor is 1. Magnetoelectric sensor: Detects that the diagnostic voltage of the left front wheel in the diagnostic Circuit is between 1.7V and 2.5V. There are no discrete components : The partial pressure value of the left front wheel speed sensor was detected to be between 0.2v and 0.4V for a duration of 100ms. 2.Possible root Cause 1. The signal line of the wheel speed sensor is disconnected. 2. The power supply line is disconnected. 3.The internal acquisition Circuit of the ECU is faulty 3.Detection time Hall sensor: 50ms // 800ms = 80*10ms; Magnetoelectric sensor: 2.5 seconds // None"	" Integrated The ASIC dedicated chip detected that the open Circuit marker of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/ h. Discrete type The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h"	Check whether the power supply line of the wheel speed sensor is normal

9	C103212	"Front Left WSS Short Circuit or Open Circuit"	"1.Trigger Condition
			Hall sensor: The ASIC dedicated chip detects that the short power supply flag bit of the left front wheel speed sensor is 1.
			The ASIC dedicated chip detects that the short ground marker bit of the left front wheel speed sensor is 1.
			//Magnetoelectric sensor: Detects that the diagnostic voltage of the left front wheel in the diagnostic Circuit is between 3.1V and 4.8V.
			Discrete device :
			The partial voltage value of the left front wheel speed sensor was detected to be between 4.99v and 5V, and the duration was 500ms.
			2.Possible root Cause
			1. Short-Circuit the signal line and power line of the wheel speed sensor.
			2. Short-Circuit the power supply line of the wheel speed sensor to ground.
			3.Detection time
			Hall sensor: 50ms (3s) // Magnetoelectric sensor: 2.5s
				" Integrated
				The ASIC dedicated chip detected that the open Circuit marker of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/ h.
				Discrete type
				The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h"
					Check whether the power supply line of the wheel speed sensor is normal

10	C103202	The DMA buffer inside the ECU that collects the pulse signal from the left front wheel speed sensor (WSS) generates an overflow	"1.Trigger Condition The DMA buffer for collecting the pulse signal of the left front wheel speed sensor (WSS) overflowed 100 times for 10ms, and the duration was 100ms. Regulations require that sensor failures related to ABS should be reported when the vehicle speed does not exceed 15kph. 2.Possible root Cause 1. The chip has an overflow. 2. There is a fault in the coil. 3. There is a fault with the motor. 3.Detection time 100ms"	In the current ignition cycle, the wheel speed pulse is normal and the vehicle speed exceeds 30km/h	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged "

11	C100C96	"Front Left WSS Signal Missing "	"1.Trigger Condition Low-speed monitoring mode: The vehicle speed reaches 3.3m/s (12km/h), the speed of four-wheel drive reaches 5.8m/s(21km/h), the wheel speed is less than 0.5m/s, and it lasts for a certain period of time. Dynamic monitoring mode: The vehicle speed reaches 12m/s (43.2km/h), the wheel speed is less than 0.5m/s and lasts for a certain period of time. 2.Possible root Cause 1. The Circuit of the wheel speed sensor is open. 2. The Circuit of the wheel speed sensor is short-Circuited to the power supply or ground. 3. The wheel speed sensor deviates from the installation bracket. 4）The receiving signal amplifier in the ECU is faulty. 5）The gear ring is missing. 6）The wheel speed sensor is not installed. 7）The gap between the wheel speed sensor and the gear ring is too large. 3.Monitoring ACtive Condition 1.ABS/EBD was not triggered 2. No wheel slippage (wheel acceleration/wheel slippage) 3. No external interference 4）There are no low-voltage faults 4.Detection time 1. Hall type wheel speed sensor：2.5s "	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged "
12	C101449	"Front Left WSS Signal Out Of Range The signal of the left front wheel speed sensor is out of range.	"1.Trigger Condition The signal value of the left front wheel speed exceeded 296km/h. 2.Possible root Cause 1. The wheel speed error was caused by the unreasonable installation of the gear ring. 2. The wheel speed error was caused by the unreasonable installation of the sensor head. 3. The wheel speed error is caused by foreign objects between the gear ring and the sensor head. 4）Wheel speed error caused by software anomaly. 3.Detection time ： 1s"	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged"

13	C10182F	"Front Left WSS Signal Erratic "	"1.Trigger Condition If the temporary variable of the wheel speed increment is greater than 2km/h, the vibration of the driving wheels is not true. 1. When the vehicle speed is lower than 20km/h, if the acceleration of the left front wheel is greater than a threshold (consisting of a threshold and a compensation value (determined based on the road bump)), and the gradient change difference of the acceleration of the left front wheel is greater than 5m/s ², the instability level is calculated in combination with the brake pedal opening or BLS condition. 2. When the vehicle speed exceeds 20km/h, if the acceleration of the left front wheel is greater than a threshold (consisting of a threshold and a compensation value (determined based on the road bump)), and the gradient change difference of the acceleration of the left front wheel is greater than 5m/s ², the instability level is calculated in combination with the brake pedal opening or BLS condition. 2.Possible root Cause 1. The wheel speed error was caused by the unreasonable installation of the gear ring. 2. The wheel speed error was caused by the unreasonable installation of the sensor head. 3. The wheel speed error is caused by foreign objects between the gear ring and the sensor head. 3.Detection time When the wheel acceleration meets the following conditions and the counter accumulates to 80m/s ², LV4------delta +20 60m/s2,LV3------delta +10 45m/s2,LV2------delta +5 30m/s2,LV1------delta +2 < 6m/s2：LV0------delta -1 When the counter accumulates to 800, a fault is reported "	"1. The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged "
14	C101E29	"Front Left WSS Signal Noise"	"1.Trigger Condition When the absolute value of the wheel acceleration of the left front wheel (g_whl_spd_raw after wheel speed pulse calculation) exceeds 980m/s ² 2.Possible root Cause 1. Unreasonable excessive wheel acceleration. 2. Unreasonable signals along the gradient are caused by pulse impact on the wheels at low speeds. 3. Unreasonable high-frequency and intense signal fluctuations. 3.Detection time 1. When the brake pedal signal is valid, apply the brake for 20 seconds. 2. Under the condition that the brake pedal signal is not effective or ineffective, when the brake is not applied for 5 seconds. 3.When there is noise at three or more wheel speeds simultaneously, the monitoring duration is 1 second. "	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	1. Check the wiring harness and the wheel speed sensor wiring harness. 2. Update the software. 3. Replace the hardware

15	C10314A	"Front Left Tyre Mis-match "	"1.Trigger Condition （A: Only for single rounds） The wheel sensor speed < VehiCle speed *83%, Or the wheel sensor speed > VehiCle speed *117% 2.Possible root Cause The model of the left front tire does not match.3.Detection time ： 10s"	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. Duration: 20 seconds for recovery"	Check if the tires are well -matched

16	C103513	"Front Right WSS Open Circuit or Short Circuit
		"
			"1.Trigger Condition
			Hall sensor: The ASIC dedicated chip detects that the open Circuit marker position of the right front wheel speed sensor is 1.
			// Magnetoelectric sensor: The diagnostic voltage of the right front wheel in the diagnostic Circuit is detected to be between 1.7V and 2.5V.
			
			Discrete devices :
			The partial pressure value of the right front wheel speed sensor was detected to be between 0.2v and 0.4V for a duration of 100ms.
			2.Possible root Cause
			1. The signal line of the wheel speed sensor is disconnected.
			2.The power supply line is disconnected.
			3.The internal acquisition Circuit of the ECU is faulty
			3.Detection time
			Hall sensor: 50ms (800ms) // Magnetoelectric sensor: 2.5s
				Integrated:
				The ASIC dedicated chip detected that the open Circuit marker of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/ h.
				Discrete type
				The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h.
					Check whether the power supply line of the wheel speed sensor is normal

17	C103512	"Front Right WSS Short Circuit or Open Circuit
		"
			"1.Trigger Condition
			Hall sensor: The ASIC dedicated chip detects that the short power supply flag bit of the right front wheel speed sensor is 1.
			The ASIC dedicated chip detects that the short ground marker bit of the right front wheel speed sensor is 1.
			// Magnetoelectric sensor: The diagnostic voltage of the right front wheel in the diagnostic Circuit is detected to be between 3.1V and 4.8V.
			Discrete device :
			The partial voltage value of the right front wheel speed sensor was detected to be between 4.99v and 5V, and the duration was 500ms.
			2.Possible root Cause
			1. Short-Circuit the signal line and power line of the wheel speed sensor.
			2. Short-Circuit the power supply line of the wheel speed sensor to ground.
			3.Detection time
			Hall sensor: 50ms(3s) // Magnetoelectric sensor: 2.5 seconds
				" "Integrated:
				The ASIC dedicated chip detected that the open Circuit marker of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/ h.
				Discrete type
				The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h."
					Check the wheel speed sensor
					Check if the power supply line is normal

18	C103502	"The DMA buffer inside the ECU that collects the pulse signal from the right front wheel speed sensor (WSS) generates an overflow"	"1.Trigger Condition The DMA buffer for collecting the pulse signal from the right front wheel speed sensor (WSS) overflowed 100 times for 10ms and lasted for 100ms. Regulations require that sensor failures related to ABS should be reported when the vehicle speed does not exceed 15kph.2.Possible root Cause 1. The chip has an overflow. 2. There is a fault in the coil. 3. There is a fault with the motor. 3.Detection time 100ms"	In the current ignition cycle, the wheel speed pulse is normal and the vehicle speed exceeds 30km/h	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged "
19	C100D96	"Front Right WSS Signal Missing "	"1.Trigger Condition Low-speed monitoring mode: The vehicle speed reaches 3.3m/s (12km/h), the speed of four-wheel drive reaches 5.8m/s(21km/h), the wheel speed is less than 0.5m/s, and it lasts for a certain period of time. Dynamic monitoring mode: The vehicle speed reaches 12m/s (43.2km/h), the wheel speed is less than 0.5m/s and lasts for a certain period of time.2.Possible root Cause 1. The Circuit of the wheel speed sensor is open-Circuited. 2. The Circuit of the wheel speed sensor is short-Circuited to the power supply or ground. 3. The wheel speed sensor deviates from the installation bracket. 4) The receiving signal amplifier in the ECU is faulty. 5) Missing gear ring. 6) The wheel speed sensor is not installed. 7) The gap between the wheel speed sensor and the gear ring is too large. 3.Monitoring ACtive Condition 1.ABS/EBD was not triggered 2. No wheel slippage (wheel acceleration/wheel slippage) 3. No external interference 4）There are no low-voltage faults 4.Detection time 1. Hall wheel speed sensor: 2.5 seconds	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged "
20	C101549	"Front Right WSS Signal Out Of Range"	"1.Trigger Condition The signal value of the right front wheel speed exceeded 296km/h. 2.Possible root Cause 1. The wheel speed error was caused by the unreasonable installation of the gear ring. 2. The wheel speed error was caused by the unreasonable installation of the sensor head. 3. The wheel speed error is caused by foreign objects between the gear ring and the sensor head. 4）Wheel speed error caused by software anomaly. 3.Detection time：1s"	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged "

21	C101B2F	"Front Right WSS Signal Erratic"	"1.Trigger Condition If the temporary variable of the wheel speed increment is greater than 2km/h, the vibration of the driving wheels is not true. 1. When the vehicle speed is lower than 20km/h, if the acceleration of the right front wheel is greater than a threshold (consisting of a threshold and a compensation value (determined based on the road bump)), and the gradient change difference of the acceleration of the right front wheel is greater than 5m/s ², the instability level is calculated in combination with the brake pedal opening or BLS condition. 2. When the vehicle speed exceeds 20km/h, if the acceleration of the right front wheel is greater than a threshold (consisting of a threshold and a compensation value (determined based on the road bump)), and the gradient change difference of the acceleration of the right front wheel is greater than 5m/s ², the instability level is calculated in combination with the brake pedal opening or BLS condition. 2.Possible root Cause 1. The wheel speed error was caused by the unreasonable installation of the gear ring. 2. The wheel speed error was caused by the unreasonable installation of the sensor head. 3. The wheel speed error is caused by foreign objects between the gear ring and the sensor head. 3.Detection time When the wheel acceleration meets the following conditions and the counter accumulates to 80m/s ²，LV4------delta +20 60m/s2,LV3------delta +10 45m/s2,LV2------delta +5 30m/s2,LV1------delta +2 < 6m/s2：LV0------delta -1 When the counter accumulates to 800, a fault is reported "	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. . "	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged"
22	C101D29	"Front Right WSS Signal Noise "	"1.Trigger Condition When the absolute value of the wheel acceleration of the right front wheel (g_whl_spd_raw after wheel speed pulse calculation) exceeds 980m/s ². 2.Possible root Cause 1. Unreasonable excessive wheel acceleration. 2. Unreasonable signals along the gradient caused by pulse impact on the wheels at low speeds. 3. Unreasonable high-frequency and intense signal fluctuations. 3.Detection time 1. When the brake pedal signal is valid, apply the brake for 20 seconds. 2. Under the condition that the brake pedal signal is not effective or ineffective, when the brake is not applied for 5 seconds. 3.When there is noise at three or more wheel speeds simultaneously, the monitoring duration is 1 second"	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	1. Check the wiring harness and the wheel speed sensor wiring harness. 2. Update the software. 3. Replace the hardware.

23	C10344A	"Front Right Tyre Mis-match "	"1.Trigger Condition （A: Only for single rounds） The wheel sensor speed < VehiCle speed *83%, Or the wheel sensor speed > VehiCle speed *117% 2.Possible root Cause The model of the right front tire does not match. 3.Detection time：10s"	"1. The current ignition cycle has been activated, and the vehicle has accelerated to 60kph, fully meeting the conditions for fault recovery. Duration: 20 seconds for recovery	Check if the tires are well-matched

24	C103813	"Rear Left WSS Open Circuit or Short Circuit"	"1.Trigger Condition
			Hall sensor: The ASIC dedicated chip detects that the open Circuit marker position of the left rear wheel speed sensor is 1.
			// Magnetoelectric sensor: The diagnostic voltage of the left rear wheel in the diagnostic Circuit is detected to be between 1.7V and 2.5V.
			Discrete device :
			The partial pressure value of the left rear wheel speed sensor was detected to be between 0.2v and 0.4V and the duration was 100ms.
			2.Possible root Cause
			1.The signal line of the wheel speed sensor is disconnected.
			2. The power supply line is disconnected.
			3. Fault in the internal acquisition Circuit of the ECU
			3.Detection time
			Hall sensor: 50ms (800ms) // Magnetoelectric sensor: 2.5s
				" Integrated The ASIC dedicated chip detected that the open Circuit marker of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/ h.
				Discrete type The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h"
					Check whether the power supply line of the wheel speed sensor is normal

25	C103812	"Rear Left WSS Short Circuit or Open Circuit"	"1.Trigger Condition
			Hall sensor: The ASIC dedicated chip detects that the short power supply flag bit of the left rear wheel speed sensor is 1.
			The ASIC dedicated chip detects that the short ground marker bit of the left rear wheel speed sensor is 1.
			// Magnetoelectric sensor: Detects that the diagnostic voltage of the left rear wheel in the diagnostic Circuit is between 3.1V and 4.8V.
			Discrete devices :
			The partial voltage value of the left rear wheel speed sensor was detected to be between 4.99v and 5V, and the duration was 500ms.
			2.Possible root Cause
			1. Short-Circuit the signal line and power line of the wheel speed sensor.
			2. Short-Circuit the power supply line of the wheel speed sensor to ground.
			3.Detection time
			Hall sensor: 50ms(3s) //Magnetoelectric sensor: 2.5 seconds"
				" Integrated The ASIC dedicated chip detected that the short-Circuit flag bit of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/h
				Discrete type The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h"
					Check whether the power supply line of the wheel speed sensor is normal

26	C103802	"The DMA buffer inside the ECU that collects the pulse signal from the left rear wheel speed sensor (WSS) generates an overflow"	"1.Trigger Condition The DMA buffer for collecting the pulse signal of the left rear wheel speed sensor (WSS) overflowed 100 times for 10ms, and the duration was 100ms. Regulations require that sensor failures related to ABS should be reported when the vehicle speed does not exceed 15kph.2.Possible root Cause 1. The chip has an overflow. 2. There is a fault in the coil. 3. There is a fault with the motor. 3.Detection time 100ms"	In the current ignition cycle, the wheel speed pulse is detected to be normal, and the vehicle speed exceeds 30km/h (the recovery condition has not been done).	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.
27	C100E96	" Rear Left WSS Signal Missing"	"1.Trigger Condition Low-speed monitoring mode: The vehicle speed reaches 3.3m/s (12km/h), the speed of four-wheel drive reaches 5.8m/s(21km/h), the wheel speed is less than 0.5m/s, and it lasts for a certain period of time. Dynamic monitoring mode: The vehicle speed reaches 12m/s (43.2km/h), the wheel speed is less than 0.5m/s and lasts for a certain period of time.2.Possible root Cause 1. The Circuit of the wheel speed sensor is open-Circuited. 2. The Circuit of the wheel speed sensor is short-Circuited to the power supply or ground. 3. The wheel speed sensor deviates from the installation bracket. 4) The receiving signal amplifier in the ECU is faulty. 5) Missing gear ring. 6) The wheel speed sensor is not installed. 7) The gap between the wheel speed sensor and the gear ring is too large. 3.Monitoring Active Condition 1.ABS/EBD was not triggered 2. No wheel slippage (wheel acceleration/wheel slip rotation) 3. No external interference 4）There are no low-voltage faults 4.Detection time 1. Hall type wheel speed sensor：2.5s "	The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.

28	C101749	"Rear Left WSS Signal OutOfRange"	"1.Trigger Condition The signal value of the left rear wheel speed exceeded 296km/h. 2.Possible root Cause 1. The wheel speed is incorrect due to the unreasonable installation of the gear ring. 2. Wheel speed error caused by unreasonable installation of the sensor head. 3. Wheel speed error caused by foreign objects between the gear ring and the sensor head.4）Wheel speed error caused by software anomaly. 3.Detection time：1s"	The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.

29	C103701	"Rear Left WSS Signal Erratic "	"1.Trigger Condition If the temporary variable of the wheel speed increment is greater than 2km/h, the vibration of the driving wheels is not true. When the vehicle speed is lower than 20km/h, the acceleration of the left rear wheel is greater than a threshold (consisting of a threshold and a compensation value (determined based on the road bump)), and the difference in the gradient change of the acceleration of the left rear wheel is greater than 5m/s ². In combination with the opening degree of the brake pedal or the condition of BLS, Calculate the instability level. 2. When the vehicle speed exceeds 20km/h, the acceleration of the left rear wheel is greater than a threshold (consisting of a threshold and a compensation value (determined based on the road surface bump)), and the gradient change difference of the acceleration of the left rear wheel is greater than 5m/s ². Whether the brake pedal opening or BLS conditions are met, Calculate the instability level.2.Possible root Cause 1. The wheel speed is incorrect due to the unreasonable installation of the gear ring. 2. Wheel speed error caused by unreasonable installation of the sensor head. 3. Wheel speed error caused by foreign objects between the gear ring and the sensor head. 3.Detection time When the wheel acceleration meets the following conditions and the counter accumulates to 80m/s ²，LV4------delta +20 60m/s2,LV3------delta +10 45m/s2,LV2------delta +5 30m/s2,LV1------delta +2 < 6m/s2：LV0------delta -1 When the counter accumulates to 800, a fault is reported 3.Detection time ： 5s"	The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.

30	C103702	"Rear Left WSS Signal Noise"	"1.Trigger Condition When the absolute value of the wheel acceleration of the left rear wheel (g_whl_spd_raw after wheel speed pulse calculation) exceeds 980m/s ². 2.Possible root Cause 1. Unreasonable excessive wheel acceleration. 2. Unreasonable signals along the gradient caused by pulse impact on the wheels at low speeds. 3. Unreasonable high-frequency and intense signal fluctuations. 3.Detection time 1. When the brake pedal signal is valid, apply the brake for 20 seconds. 2. Under the condition that the brake pedal signal is effective or ineffective, when the brake is not applied, it lasts for 5 seconds. 3.When noise occurs simultaneously at three or more wheel speeds, the monitoring duration is 1 second"	The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.	1. Check the wiring harness and the wheel speed sensor wiring harness. 2. Update the software. 3. Replace the hardware.
31	C10374A	"Rear Left Tyre Mis-match "	"1.Trigger Condition （A: Only for single rounds） The wheel sensor speed < VehiCle speed *83%, Or the wheel sensor speed > VehiCle speed *117% 2.Possible root Cause The model of the left rear tire does not match. 3.Detection time：10s"	The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, meeting the conditions for fault recovery.	Check if the tires are well-matched

32	C103B13	"Rear Right WSS Open Circuit or Short Circuit"	"1.Trigger Condition
			Hall sensor: The ASIC dedicated chip detects that the open Circuit marker position of the right rear wheel speed sensor is 1.
			// Magnetoelectric sensor: The diagnostic voltage of the right rear wheel in the diagnostic Circuit is detected to be between 1.7V and 2.5V.
			Discrete device :
			The partial pressure value of the right rear wheel speed sensor was detected to be between 0.2v and 0.4V for a duration of 100ms.
			2.Possible root Cause
			1.The signal line of the wheel speed sensor is disconnected.
			2. The power supply line is disconnected.
			3. Fault in the internal acquisition Circuit of the ECU
			3.Detection time
			Hall sensor: 50ms (800ms) //
			Magnetoelectric sensor: 2.5s
				"Integrated:
				The ASIC dedicated chip detected that the open Circuit marker of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/ h.
				Discrete type
				The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h.
					Check the wheel speed sensor
					Check if the power supply line is normal

33	C103B12	"Rear Right WSS Short Circuit or Open Circuit "	"1.Trigger Condition Hall sensor: The ASIC dedicated chip detects that the short power supply flag bit of the right rear wheel speed sensor is 1. The ASIC dedicated chip detects that the short ground marker bit of the right rear wheel speed sensor is 1.// Magnetoelectric sensor: The diagnostic voltage of the right rear wheel in the diagnostic Circuit is detected to be between 3.1V and 4.8V. Discrete device : The partial voltage value of the right rear wheel speed sensor was detected to be between 4.99v and 5V, and the duration was 500ms.2.Possible root Cause 1. Short-Circuit the signal line and power line of the wheel speed sensor. 2. Short-Circuit the power supply line of the wheel speed sensor to ground. 3.Detection time Hall sensor：50ms (3s) //Magnetoelectric sensor：2.5s"	"Integrated: The ASIC dedicated chip detected that the open Circuit marker of the wheel speed sensor was 0, and at the same time, the vehicle speed was higher than 20Km/ h. Discrete type The partial pressure value returns to normal, while the vehicle speed exceeds 20Km/h.	Check the wheel speed sensor Check if the power supply line is normal
34	C103B02	"Rear Right WSS DMA buffer overflow"	"1.Trigger Condition The DMA buffer for collecting the pulse signal from the right rear wheel speed sensor (WSS) overflowed 100 times for 10ms, and the duration was 100ms. Regulations require that sensor failures related to ABS should be reported when the vehicle speed does not exceed 15kph. 2.Possible root Cause 1. The chip has an overflow. 2. There is a fault in the coil. 3. There is a fault with the motor. 3.Detection time 100ms"	In the current ignition cycle, the wheel speed pulse is normal and the vehicle speed exceeds 30km/h	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.

35	C100F96	"Rear Right WSS Signal Missing "	"1.Trigger Condition Low-speed monitoring mode: The vehicle speed reaches 3.3m/s (12km/h), the speed of four-wheel drive reaches 5.8m/s(21km/h), the wheel speed is less than 0.5m/s, and it lasts for a certain period of time. Dynamic monitoring mode: The vehicle speed reaches 12m/s (43.2km/h), the wheel speed is less than 0.5m/s and lasts for a certain period of time. 2.Possible root Cause 1. The Circuit of the wheel speed sensor is open-Circuited. 2. The Circuit of the wheel speed sensor is short-Circuited to the power supply or ground. 3. The wheel speed sensor deviates from the installation bracket. 4) The receiving signal amplifier in the ECU is faulty. 5) Missing gear ring. 6) The wheel speed sensor is not installed. 7) The gap between the wheel speed sensor and the gear ring is too large. 3.Monitoring Active Condition 1.ABS/EBD was not triggered 2. No wheel slippage (wheel acceleration/wheel slippage) 3. No external interference 4）There are no low-voltage faults 4.Detection time 1. Hall type wheel speed sensor：2.5s "	"1. The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.
36	C103A00	"Rear Right WSS Signal Out Of Range"	"1.Trigger Condition The signal value of the right rear wheel speed exceeded 296km/h. 2.Possible root Cause 1. The wheel speed is incorrect due to the unreasonable installation of the gear ring. 2. Wheel speed error caused by unreasonable installation of the sensor head. 3. Wheel speed error caused by foreign objects between the gear ring and the sensor head.4）Wheel speed error caused by software anomaly. 3.Detection time：1s"	"1. The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.

37	C103A01	"Rear Right WSS Signal Erratic "	"1.Trigger Condition If the temporary variable of the wheel speed increment is greater than 2km/h, the vibration of the driving wheels is not true. 1. When the vehicle speed is lower than 20km/h, the acceleration of the right rear wheel is greater than a threshold (consisting of a threshold and a compensation value (determined based on the road bump)), and the difference in the gradient change of the acceleration of the right rear wheel is greater than 5m/s ². In combination with the opening degree of the brake pedal or the condition of BLS, Calculate the instability level. 2.Possible root Cause 1. The wheel speed is incorrect due to the unreasonable installation of the gear ring. 2. Wheel speed error caused by unreasonable installation of the sensor head. 3. Wheel speed error caused by foreign objects between the gear ring and the sensor head. 3.Detection time When the wheel acceleration meets the following conditions and the counter accumulates to 80m/s ²，LV4------delta +20 60m/s2,LV3------delta +10 45m/s2,LV2------ delta +5 30m/s2,LV1------delta +2 < 6m/s2：LV0------delta -1 When the counter accumulates to 800, a fault is reported "	"1. The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged.
38	C101F29	"Rear Right WSS Signal Noise"	"1.Trigger Condition When the absolute value of the wheel acceleration of the right rear wheel (g_whl_spd_raw after wheel speed pulse calculation) exceeds 980m/s ². 2.Possible root Cause 1. Unreasonable excessive wheel acceleration. 2. Unreasonable signals along the gradient caused by pulse impact on the wheels at low speeds. 3. Unreasonable high-frequency and intense signal fluctuations. 3.Detection time 1. When the brake pedal signal is valid, apply the brake for 20 seconds. 2. Under the condition that the brake pedal signal is effective or ineffective, when the brake is not applied, it lasts for 5 seconds. 3.When there is noise at three or more wheel speeds simultaneously, the monitoring duration is 1 second"	"1. The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	1. Check the wiring harness and the wheel speed sensor wiring harness. 2. Update the software. 3. Replace the hardware.

39	C103A4A	"Rear Right Tyre Mis-match "	"1.Trigger Condition （A: Only for single rounds ） The wheel sensor speed < Vehicle speed *83%, Or the wheel sensor speed > Vehicle speed *117% 2.Possible root Cause The model of the right rear tire does not match.3.Detection time ： 10s"	"1. The current ignition cycle has been reversed, and the vehicle has accelerated to 60kph, fully meeting the fault recovery conditions. "	Check if the tires are well-matched
40	C109904	"WSS Front or Rear alxe swapped"	"1. The brake pedal signal is effective 2. The brake pedal was not pressed 3.1.KmPh(1.5) < Front axle wheel speed difference < KmPh(4) 2. -KmPh(4) < Rear axle wheel speed difference < -KmPh(1.5) or 1.-KmPh(4) < Front axle wheel speed difference < -KmPh(1.5) 2. KmPh(1.5) < Rear axle wheel speed difference < KmPh(4)"	"In the current ignition cycle, the vehicle accelerates from 15Km/h to 40km/h, meeting the conditions for fault recovery. "	1. Check if the wheel speed sensor is installed properly. 2. Check the wiring harness and the wheel speed sensor wiring harness.
41	C119904	"Multiple WSS Failure "	1. There are multiple faults with the wheel speed sensors	"In the current ignition cycle, the vehicle accelerates from 15Km/h to 40km/h, meeting the conditions for fault recovery."	"1. Whether the power supply of the ECU is normal 2. Check whether the wheel speed sensor on the HCU is damaged "
42	C104024	"BLS Always active"	"1.Trigger Condition ： Case1：When the engine is operating normally, the BLS and the accelerator pedal signal are both 1, the main cylinder pressure is less than 5bar, and the vehicle speed is greater than 3m/s. Case2：When the engine is operating normally, both the BLS and the accelerator pedal signal are 1, the vehicle's calculated acceleration is greater than 1m/ s ², and the vehicle speed is greater than 3m/s. Case3：When the engine is operating normally, both the BLS and the accelerator pedal signal are 1, the value of the integrated longitudinal acceleration sensor is greater than 1m/s ², and the vehicle speed is greater than 3m/s. 2.Possible root Cause ： 1.BLS hardware failure 2.The internal acquisition Circuit of the ECU is faulty. 3.Detection Time： ESC：Any two of Case1, Case2, and Case3 are fulfilled and last for more than 60 seconds. ABS：Case2 meets the conditions and lasts for more than 60 seconds. "	" In the current ignition cycle, after the fault is eliminated, the following operations can be carried out: 1. Confirm that the BLS is working properly 2. Press the brake pedal and hold for more than 0.1 seconds; Release the brake pedal and hold for more than 0.1 seconds. "	"Consult the driver about the operation steps when a malfunction occurs to avoid the situation of driving with both feet at the same time. 2: If there are no issues in Step 1, please check whether the BLS terminals are connected in reverse 3: If there are no issues in Step 2, please check whether the BLS hardware is faulty 4: If all the above steps are confirmed to be problem-free, please replace the ECU."

43	C104023	"BLS Never actice"	" A、Trigger Condition Case1：In the absence of valve body and motor action, BLS= 0, and the vehicle's calculated vehicle acceleration value is less than -2m/s ² (vehicle deceleration). Case2：When there is no valve body or motor action, BLS= 0, but the pressure in the master cylinder exceeds a certain threshold. (Compensated: 1Mpa, uncompensated: 2.5Mpa), and the 0x132 message EBSDrvMod electronic brake assist system operation mode =0x0: unmanned/by-wire braking (EBS Only) (This condition only applies to EBS configuration) B、Possible root Cause 1.BLS hardware failure. 2.The BLS line is disconnected or short-Circuited to ground. 3.The internal acquisition Circuit of the ECU is faulty. C、Detection time ESC： 1.Both Case E1 and Case E2 are satisfied simultaneously 2. The duration exceeds 1 second. ABS： 1.Case1 meets the conditions; 2. The duration exceeds 1.5 seconds. "	" In the current ignition cycle, after the fault is eliminated, the following operations can be carried out: Confirm that the BLS is working properly. Press the brake pedal to ensure that the master cylinder pressure is greater than 30bar and remains so for more than 1 second. "	"Please check whether the BLS terminals are connected in reverse 2: If there are no issues in Step 1, please check whether the BLS Circuit is broken or short-Circuited 3: If there are no issues in Step 2, please check whether the BLS hardware is faulty 4: If all the above steps are confirmed to be problem-free, please replace the ECU."
44	C101013	"Front Left Inlet Valve Open Circuit "	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the liquid inlet valve of the left front wheel is not welded 3. The number of turns in the coil of the left front wheel intake valve is incorrect 4.The driving sequence of the left front wheel intake valve coil is incorrect. 3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the left front wheel intake valve is incorrect."
45	C101012	"Front Left Inlet Valve Short Circuit"	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected.2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the liquid inlet valve of the left front wheel is not welded 3. The number of turns in the coil of the left front wheel intake valve is incorrect 4. The driving sequence of the coil of the left front wheel intake valve is incorrect. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."

46	C10101D	"Front Left Inlet Valve Overheat"	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"1. The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours "
47	C101113	"Front Left Outlet Valve Open Circuit "	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the left front wheel drain valve is not welded 3. The number of turns in the coil of the left front wheel drain valve is incorrect 4. The driving sequence of the left front wheel drain valve coil is incorrect. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
48	C101112	"Front Left Outlet Valve Short Circuit "	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected. 2.Possible root Cause 1.The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the left front wheel drain valve is not welded 3. The number of turns in the coil of the left front wheel drain valve is incorrect 4. The driving sequence of the left front wheel drain valve coil is incorrect.3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
49	C10111D	"Front Left Outlet Valve Overheat "	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"1. The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours "

50	C101413	"Front Right Inlet Valve Open Circuit "	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right front wheel liquid inlet valve is not welded 3. The number of turns of the right front wheel liquid inlet valve coil is incorrect 4. The driving sequence of the right front wheel liquid inlet valve coil is incorrect. 3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
51	C101412	"Front Right Inlet Valve Short Circuit "	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right front wheel liquid inlet valve is not welded 3. The number of turns of the right front wheel liquid inlet valve coil is incorrect 4. The driving sequence of the right front wheel liquid inlet valve coil is incorrect. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
52	C10141D	"Front Right Inlet Valve Overheat "	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"1. The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours "
53	C101513	"Front Right Outlet Valve Open Circuit "	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right front wheel drain valve is not welded 3. The number of turns of the right front wheel drain valve coil is incorrect 4. The driving sequence of the right front wheel drain valve coil is incorrect.. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."

54	C101512	"Front Right Outlet Valve Short Circuit "	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right front wheel drain valve is not welded 3. The number of turns of the right front wheel drain valve coil is incorrect 4. The driving sequence of the right front wheel drain valve coil is incorrect. 3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
55	C10151D	"Front Right Outlet Valve Overheat "	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"1. The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours"
56	C101813	"Rear Left Inlet Valve Open Circuit"	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected.2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the liquid inlet valve of the left rear wheel is not welded 3. The number of turns in the coil of the left rear wheel inlet valve is incorrect 4. The driving sequence of the left rear wheel liquid inlet valve coil is incorrect. 3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
57	C101812	"Rear Left Inlet Valve Short Circuit"	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the liquid inlet valve of the left rear wheel is not welded 3. The number of turns in the coil of the left rear wheel inlet valve is incorrect 4. The driving sequence of the left rear wheel liquid inlet valve coil is incorrect. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
58	C10181D	"Rear Left Inlet Valve Overheat"	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"1. The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours "

59	C101913	"Rear Left Outlet Valve Open Circuit "	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the left rear wheel drain valve is not welded 3. The number of turns of the left rear wheel drain valve coil is incorrect 4. The driving sequence of the left rear wheel drain valve coil is incorrect. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
60	C101912	"Rear Left Outlet Valve Short Circuit"	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the left rear wheel drain valve is not welded 3. The number of turns of the left rear wheel drain valve coil is incorrect 4. The driving sequence of the left rear wheel drain valve coil is incorrect. 3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
61	C10191D	"Rear Left Outlet Valve Overheat "	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"1.The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours"
62	C101C13	"Rear Right Inlet Valve Open Circuit "	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected.2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right rear wheel liquid inlet valve is not welded 3. The number of turns in the coil of the right rear wheel liquid inlet valve is incorrect 4. The driving sequence of the right rear wheel liquid inlet valve coil is incorrect.. 3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."

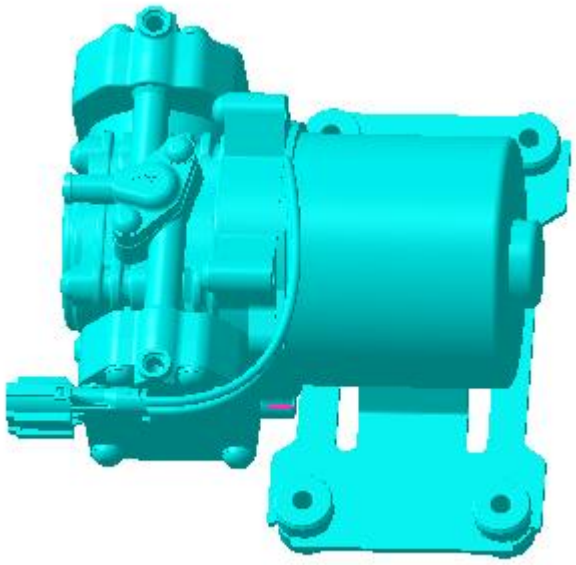
63	C101C12	"Rear Right Inlet Valve Short Circuit "	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right rear wheel liquid inlet valve is not welded 3. The number of turns in the coil of the right rear wheel liquid inlet valve is incorrect 4. The driving sequence of the right rear wheel liquid inlet valve coil is incorrect. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
64	C101C1D	"Rear Right Inlet Valve Overheat"	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours "
65	C101D13	"Rear Right Outlet Valve Open Circuit "	"1.Trigger Condition The ASIC chip open-Circuit fault flag bit was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right rear wheel drain valve is not welded 3. The number of turns in the coil of the right rear wheel drain valve is incorrect 4. The driving sequence of the right rear wheel drain valve coil is incorrect. 3.Detection time :60ms "	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
66	C101D12	"Rear Right Outlet Valve Short Circuit "	"1.Trigger Condition The short-Circuit fault flag bit of the ASIC chip was detected. 2.Possible root Cause 1. The opening sequence of the lower side of the solenoid valve is incorrect 2. The coil of the right rear wheel drain valve is not welded 3. The number of turns in the coil of the right rear wheel drain valve is incorrect 4. The driving sequence of the right rear wheel drain valve coil is incorrect. 3.Detection time :60ms"	1. The current ignition cycle occurs. After 60ms, if there is no fault with the chip, it can be restored	"1. The opening sequence of the lower side of the solenoid valve is incorrect. 2. The coil of the liquid inlet valve of the left front wheel is not welded. 3. The number of turns of the coil of the liquid inlet valve of the left front wheel is incorrect."
67	C101D1D	"Rear Right Outlet Valve Over heat "	"1.Trigger Condition The temperature is above 120℃. 2.Possible root Cause 1. The solenoid valve overheats due to prolonged operation. 3.Detection time ： 1.2s"	1.The current ignition cycle has a fault-free recovery time of 1.2 seconds	"The number of turns of the liquid outlet valve coil is incorrect 2. Reduce working hours"

68	C109513	"Valve High Side Open"	"1.Trigger Condition The relevant fault flag bit on the high side of the ASIC chip was detected.2.Possible root Cause 1.. Over pressure on the high side of the solenoid valve 2. The high side of the solenoid valve is overheated 3. Leakage current on the high side of the solenoid valve 4. The power supply on the high side of the solenoid valve is disconnected 3.Detection time：immediately "	1. The current ignition cycle is smooth and the chip has no faults. It will be restored immediately	"1. The solenoid valve coil is poorly welded. 2. Open the solenoid valve coil. 3. The wire diameter of the solenoid valve coil is too small "
69	C109512	"Valve High Side Over Current "	"1.Trigger Condition： The relevant fault flag bit on the high side of the ASIC chip was detected. 2.Possible root Cause 1. Over pressure on the high side of the solenoid valve 2. Over current on the high side of the solenoid valve 3. The high side of the solenoid valve is overheated 4. Leakage current on the high side of the solenoid valve 3.Detection time：immediately "	1. The current ignition cycle is smooth and the chip has no faults. It will be restored immediately	"1. Over current in the solenoid valve coil. 2. Short Circuit of solenoid valve coil. 3. Short Circuit of the freewheeling diode in the solenoid valve coil "
70	C102004	"Motor Fault"	"1.Trigger Condition： The relevant fault flag bits of the motor in the ASIC chip have been detected. (With specific fault conditions)2.Possible root Cause 1. The timing sequence of the motor switch is incorrect 2. The fuse of the motor has failed 3. The power supply line of the motor is open-Circuited 4. The motor drive current is over current 5. The motor throws the load 3.Detection time:immediately（100ms） "	The current ignition cycle has a fault-free duration of 100ms	"1. The timing sequence of the motor switch is incorrect. 2. The fuse of the motor has failed; 3. The power supply line of the motor is open Circuit; 4. Motor drive current; 5. Motor load ejection; "
71	C102104	"Motor Relay Fault "	"1.Trigger Condition： 1. The relevant fault flag bits of the motor in the ASIC chip have been detected. (With specific fault conditions) 2.Over current： 46A（None） 3.Over temperature： 210° C（None） 2.Possible root Cause 1.The timing sequence of the motor switch is incorrect 2. The fuse of the motor has failed 3. The power supply line of the motor is open-Circuited 4. The motor drive current is over current 5. The motor throws the load 3.Detection time："Immediately (100ms)	The current ignition cycle has a fault-free duration of 100ms	Insurance disconnected

72	U007300	"CAN Bus off"	Two consecutive bus off events occur (for the definition of consecutive, see the communication specification)	Messages were sent continuously and normally for 100ms	Replace the software

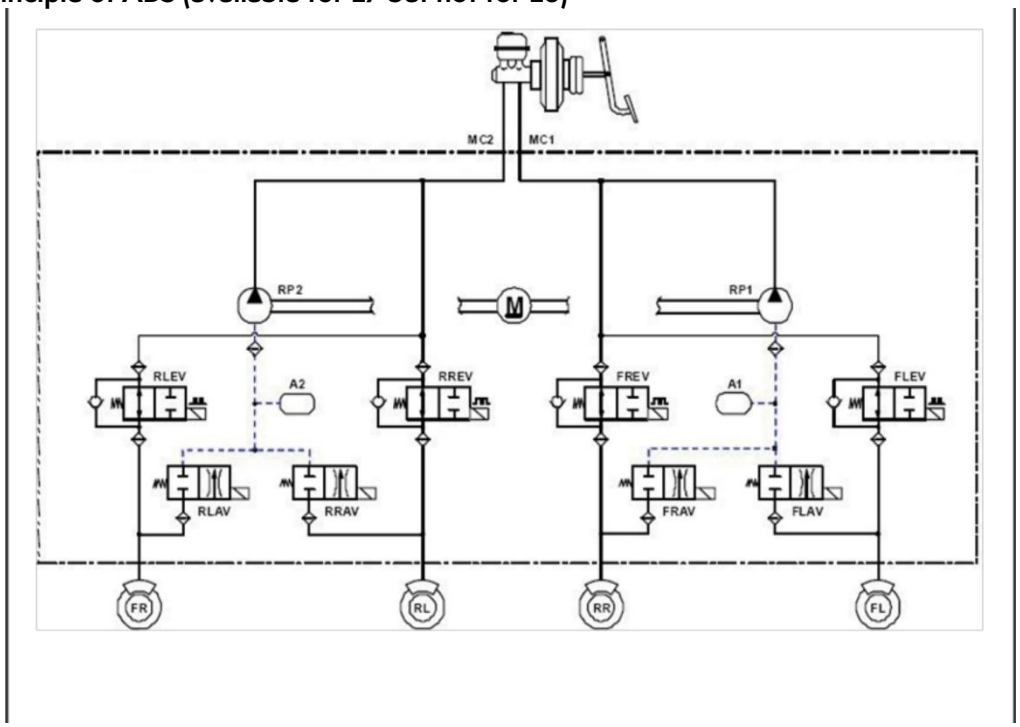
4.13.4 Electric vacuum pump

L7 Vacuum pump



L6 Vacuum pump

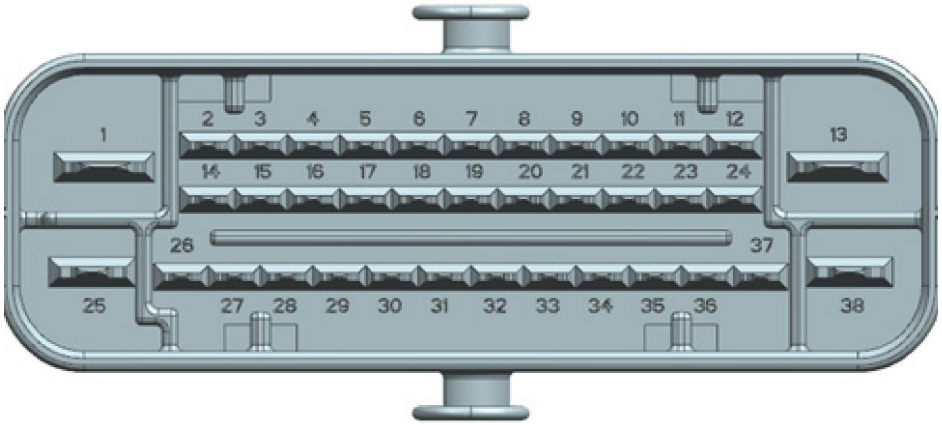
The working principle of ABS (available for L7 but not for L6)



The meanings of the Chinese and English abbreviations in the picture are as follows:

MC1	The first Circuit of the brake master cylinder	RR	Right rear wheel
MC2	The second Circuit of the brake master cylinder	FLEV	Left front wheel oil inlet valve
M	Motor	FLAV	Left front wheel oil outlet valve
RP1	Reflux pump 1	FREV	Right front wheel oil inlet valve
RP2	Reflux pump 2	FRAV	Right front wheel oil outlet valve
A1	Accumulator 1	RLEV	Left rear wheel oil inlet valve
A2	Accumulator 2	RLAV	Left rear wheel oil outlet valve
FL	Left front wheel	RREV	Right rear wheel oil inlet valve
FR	Right front wheel	RRAV	Right rear wheel oil outlet valve
RL	Left rear wheel		

Information on electrical connectors



Stitch	Definition
1	Positive terminal of the motor power supply
2	Hard wire output for wheel speed signal (optional)
3	Warning Light 1
4	Right front wheel speed sensor - signal
5	/
6	K-line (optional)
7	/
8	Left front wheel speed sensor - signal
9	/
10	/
12	/
13	/
14	Motor and coil ground
15	CAN0 LOW
16	Tire pressure reset signal
17	Right front wheel speed sensor - power supply
18	Right rear wheel speed sensor - power supply
19	Left rear wheel speed sensor - signal
20	Left front wheel speed sensor - power supply

Manual exhaust

1. Press the brake pedal 3 to 5 times, or until the brake pedal force increases significantly, to eliminate the residual vacuum in the vacuum booster.
2. Check the brake fluid level in the brake fluid tank assembly. The fluid level should be between the "MAX" and "MIN" lines.
3. Lift the vehicle.
4. Clean the area near the exhaust plug and open the exhaust plug cover. Install a transparent plastic hose on the brake exhaust plug and place the other outer end of the hose into the brake fluid drain container.
5. System exhaust: After continuously pressing the brake pedal several times, keep it in the depressed state. Use an oil pipe wrench to loosen the exhaust plug until liquid flows out. When there are no more bubbles in the braking fluid flowing out, tighten the exhaust plug.

Repeat the above operation until no more bubbles come out of the hose.

◆Select the motion test and perform the corresponding operations according to the prompt information of the diagnostic instrument.

※ Note：

◆During the exhaust process, constantly observe the fluid level in the brake fluid reservoir to keep it within the specified range at all times. Brake fluid discharged from the system must not be reused. Tighten the exhaust plug to the specified torque.

Exhaust sequence . .

Left rear brake → right front brake → right rear brake → left front brake. Follow steps (4) to (5).

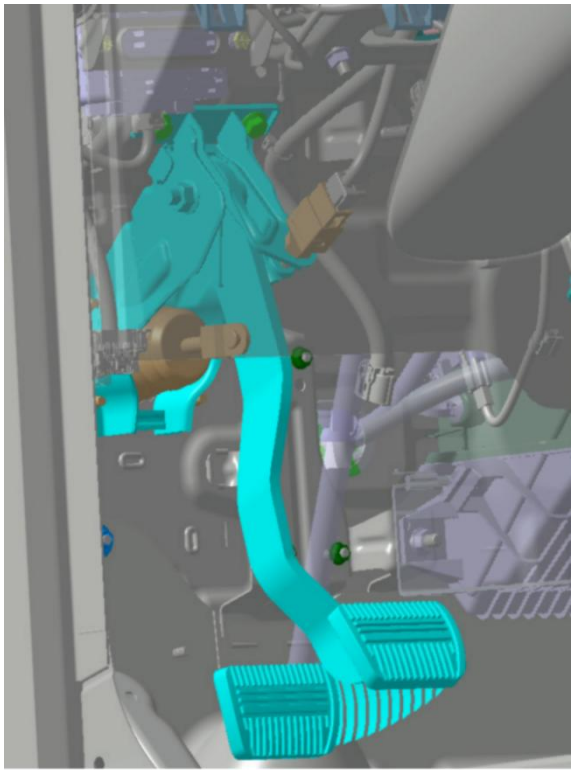
Fault diagnosis

Fault phenomenon	Possible causes of malfunction	Solution measures
The vehicle veered to one side when braking	The pressure of the left and right tires is insufficient	Adjustment
	The front wheel adjustment is incorrect	Adjustment
	Poor contact of the brake lining	Adjustment
	There is grease or oil on the surface of the brake lining	Replace
	The brake caliper is not installed correctly	Adjustment
	There is a fault with the self-adjusting mechanism	Adjustment
Insufficient braking force	The brake fluid is insufficient or contaminated	Supplement or replace
	There is air in the braking system	System exhaust
	There is a fault with the brake vacuum booster	Adjustment
	Poor contact of the brake lining	Adjustment
	There is grease or oil on the surface of the brake lining	Replace
	There is a fault with the self-adjusting mechanism	Adjustment
	The dragging of the brake lining causes the braking rotating parts to overheat	Adjustment
	Brake line limit	Adjustment
The pedal travel increases (the distance from the pedal to the floor decreases)	There is air in the braking system	System exhaust
	Brake fluid leakage	Adjustment
	There is a fault with the self-adjusting mechanism	Adjustment
	The clearance between the push rod and the master cylinder is too large	Adjustment
Braking lag	The parking brake was not fully released	Release
	Improper adjustment of the parking brake	Adjustment
	The return spring of the brake pedal is worn	Replace
	Limit of the return oil port of the brake master cylinder	Adjustment
	The sliding parts are insufficiently lubricated	Lubrication
	There are defects in the check valve of the brake master cylinder or the return spring of the piston	Replace
	The clearance between the push rod and the brake master cylinder is too small	Adjustment

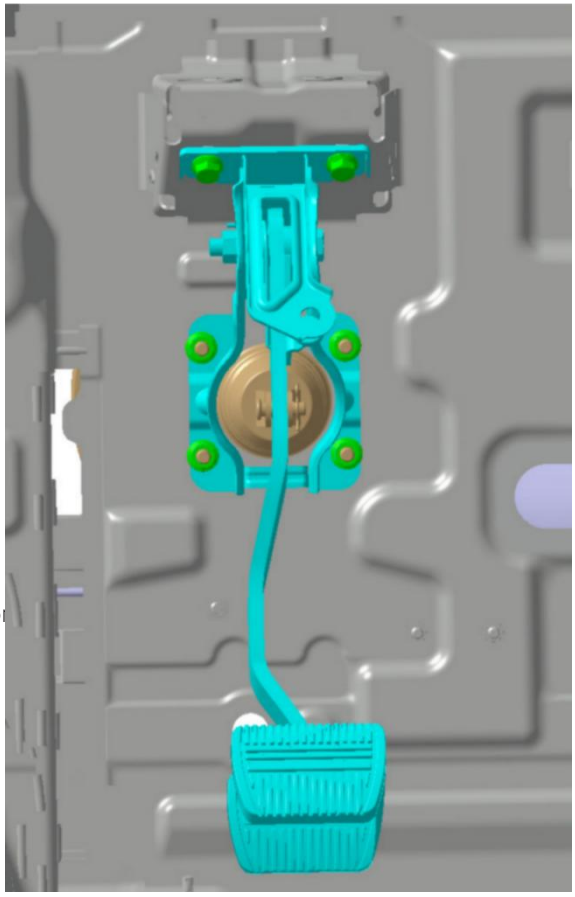
4.13.5 Disassembly and installation

1. Disassembly and installation of the brake pedal

1.1 Set the power to the OFF position and disengage the brake pedal switch connector.



1.2 Remove the brake pedal and the four fixing nuts of the front fender.



1.3 Remove the two fixing nuts of the brake pedal and the fro fender. Remove the brake pedal assembly

Installation
Proceed in the reverse order of the disassembly steps.
Torque:

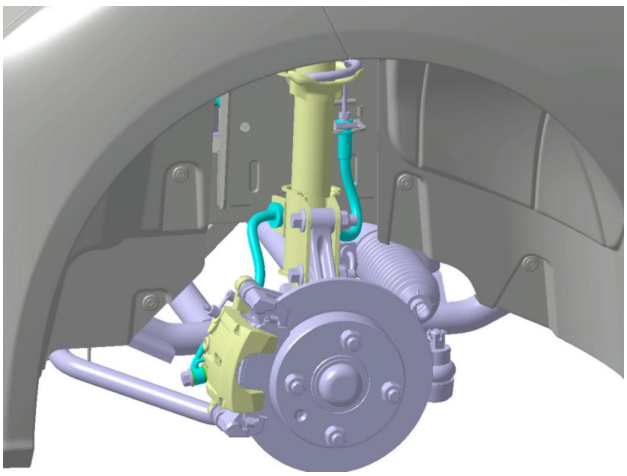
2. **Disassembly and installation of the left front brake hose**

Explanation

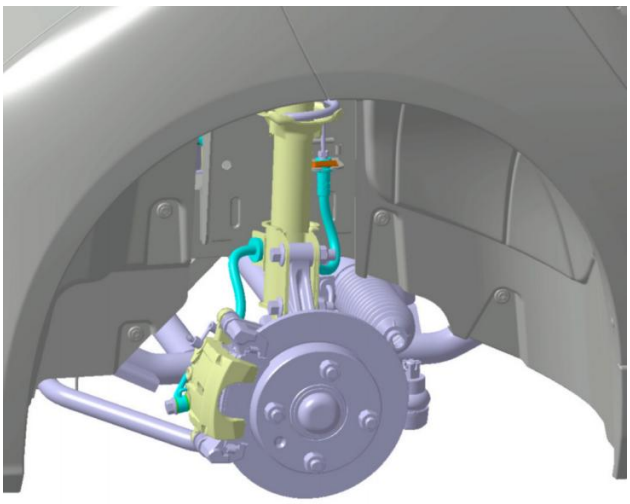
This disassembly and installation takes the left side as an example. For the disassembly and installation on the right side, please refer to the left side for execution.

Disassembly

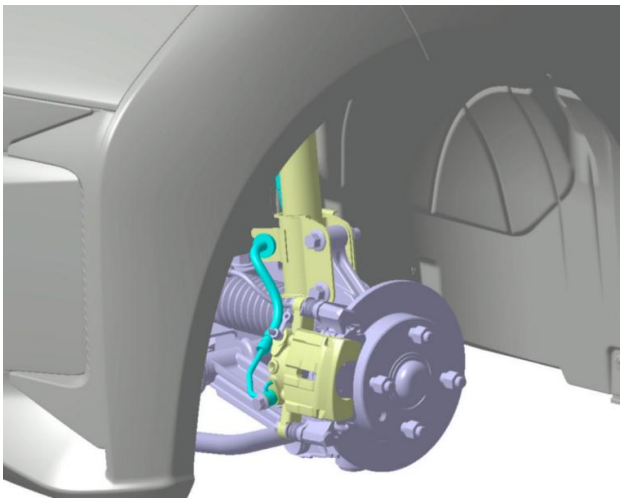
1. Remove the left front wheel assembly. See: Tire Assembly.
2. Drain the brake fluid. See: Brake System drain Fluid filling.
3. Remove the connecting bolts between the front brake hose and the brake hard pipe.



4. Remove the brake U-shaped spring plate and disengage the brake hose.

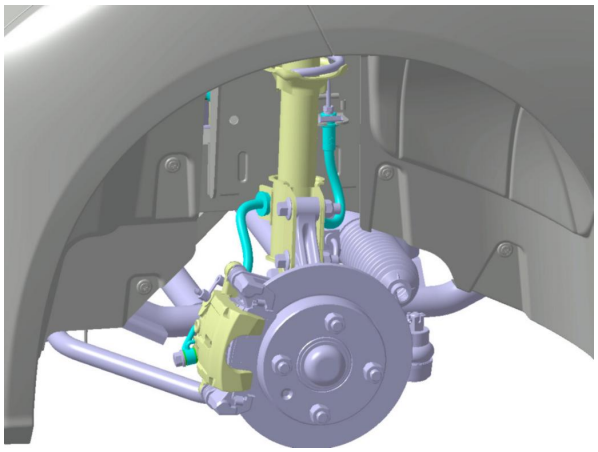


5. Remove the rubber sleeve that fixes the front brake hose.

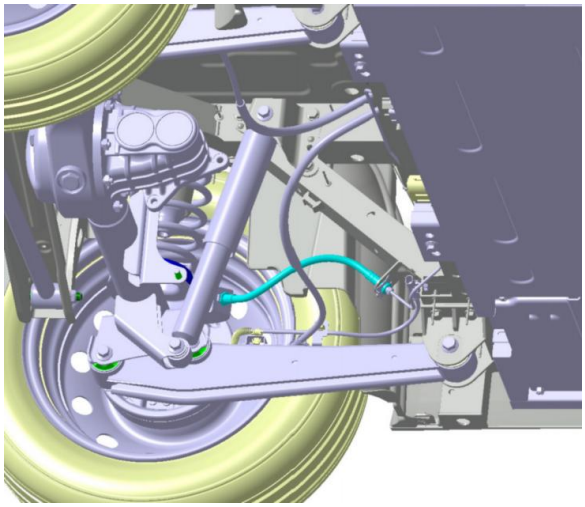


6 Remove the brake hose fixing bolts from the front

brake caliper and then remove the left front brake hose.



Installation
1. To install the left front brake hose, first pre-tighten it by hand and then use a tool to fasten the fixing bolts of the front brake hose.
Torque: Brake hose and front brake (35±3Nm)
2. Before installing the brake hose, install the brake U-shaped spring plate.
3. First, pre-screw it all the way by hand, and then tighten the connecting bolts between the brake hard pipe and the brake hose.
Torque: Brake hard pipe joint (18±2Nm)
4. Brake fluid refilling. See: Brake System venting and Filling
5. Install the left front wheel assembly. See: Tire Assembly

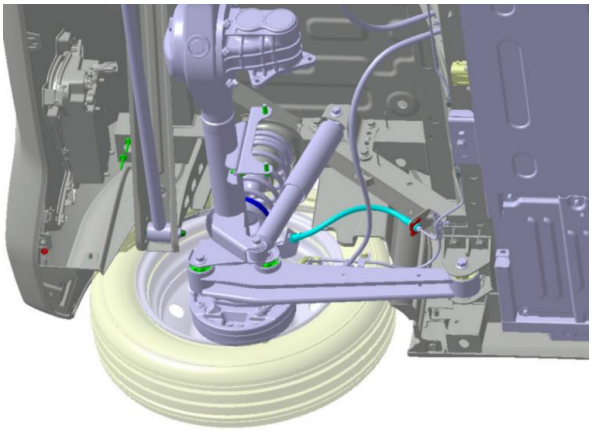


3. Right front brake hose
Disassembly and installation instructions：
For disassembly and installation on the right side, please refer to the instructions on the left side.

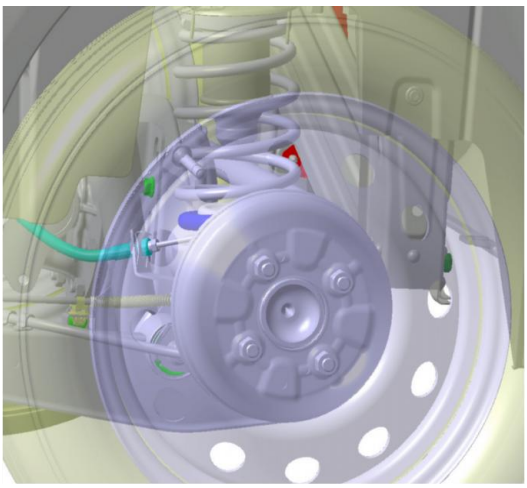
4.Left rear brake hose
Disassembly and installation Disassembly
1. Drain the brake fluid. See: Brake System venting and Filling

2. Remove one fixing bolt.

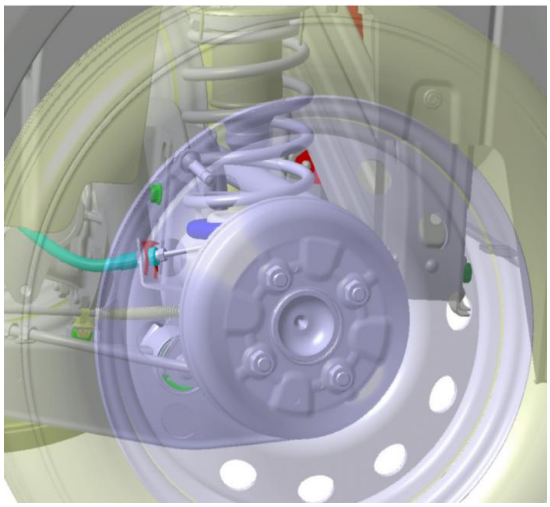
3. Remove the brake U-shaped spring plate and disengage the brake hose.



4. Remove one fixing bolt and take off the left rear brake hose



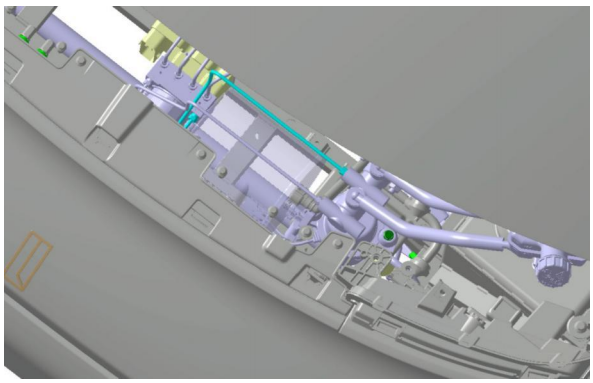
5.Remove the brake U-shaped spring plate and disengage the brake hose.



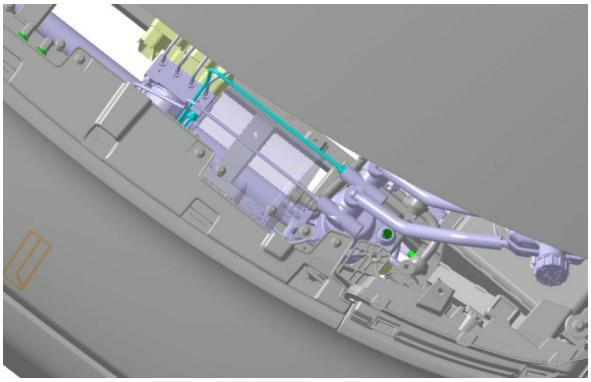
Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (18±2Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

5. Disassembly and installation of the first oil outlet hard pipe

1. Drain the brake fluid. See: Brake System drain Fluid filling
2. Remove the front panel protective device. See: Front fender cover device
3. Remove the connecting bolt between the first oil outlet hard pipe and the brake master cylinder.



4. Remove the connecting bolts between the first oil outlet hard pipe and the ABS controller assembly..

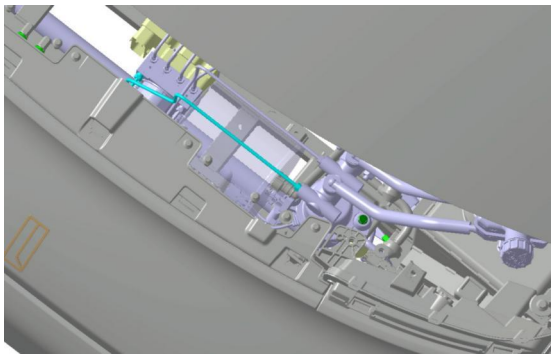


5. Remove the first hard oil outlet pipe.

Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (35±3Nm)
Torque: Brake hard pipe joint and ABS controller assembly (35±3Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

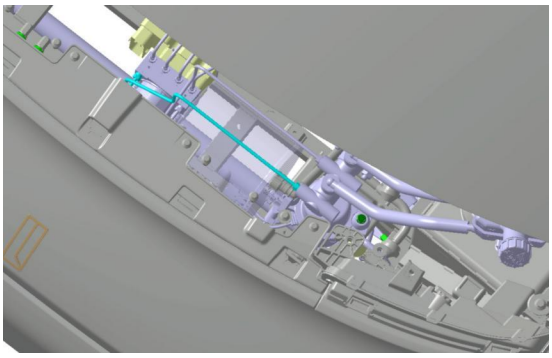
6.Disassembly and installation of the second oil outlet hard pipe

Disassembly
1. Drain the brake fluid. See: Brake System drain Fluid filling
2. Remove the front panel cover device. See: Front fender cover device



3. Remove the connecting bolts between the second oil outlet hard pipe and the brake master cylinder.

4. Remove the connecting bolts between the second oil outlet hard pipe and the ABS controller assembly.

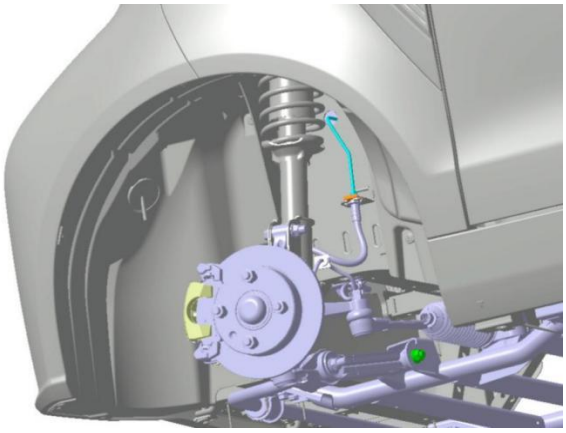


5. Remove the second oil outlet hard pipe.

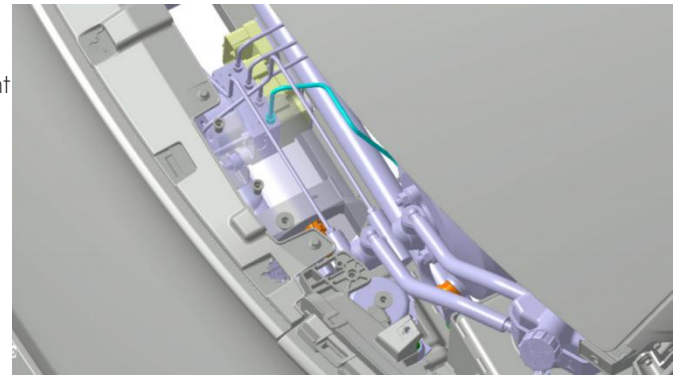
Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (35±3Nm)
Torque: Brake hard pipe joint and ABS controller assembly (35±3Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

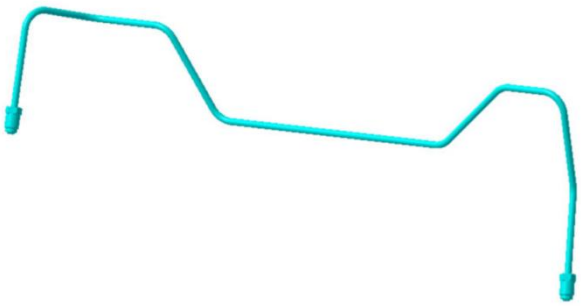
7. Left front brake hard pipe (with ABS)

Disassembly
1. Remove the left front wheel assembly. See: Tire Assembly
2. Drain the brake fluid. See: Brake System drain Fluid filling
3. Remove the front panel protective device. See: Front fender cover device
4. Remove the connecting bolts between the front brake hose and the left front brake hard pipe.



5. Remove the connecting bolts between the left front brake hard pipe and the ABS controller assembly.





Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (18±2Nm)
Torque: Brake hard pipe joint and ABS controller assembly (35±3Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

8.Right front brake hard pipe (with ABS)

Explanation:
For the disassembly and installation of the right front brake hard pipe, please refer to the disassembly and installation of the right front brake hard pipe.

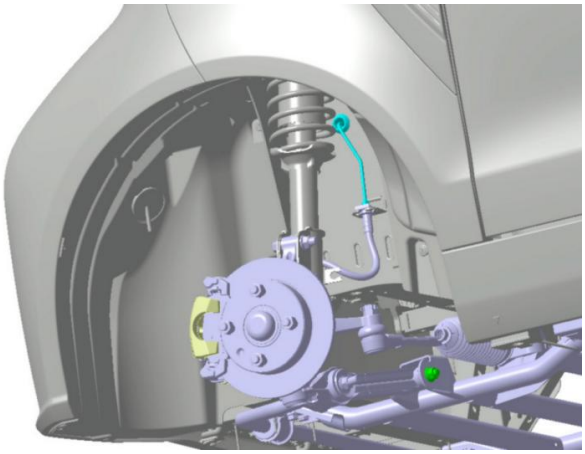
9.Left front brake hard pipe (without ABS)

Disassembly
1. Remove the left front wheel assembly. See: Tire Assembly

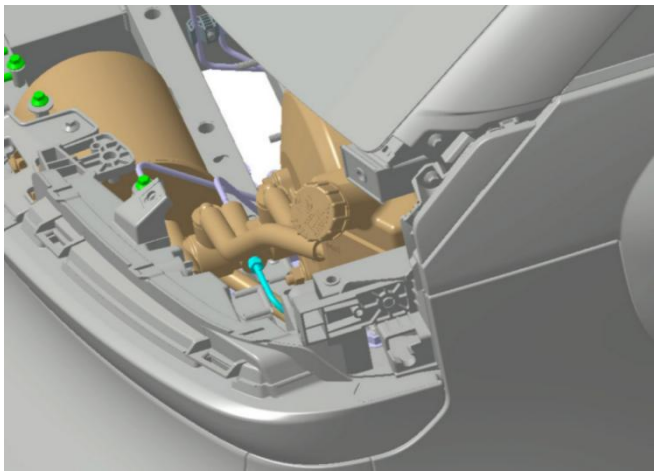
2. Drain the brake fluid. See: Brake System drain Fluid filling

3. Remove the front panel protective device. See: Front fender cover device

4. Remove the connecting bolts between the front brake hose and the left front brake hard pipe.



5.Remove the connecting bolt between the left front brake hard pipe and the brake master cylinder.



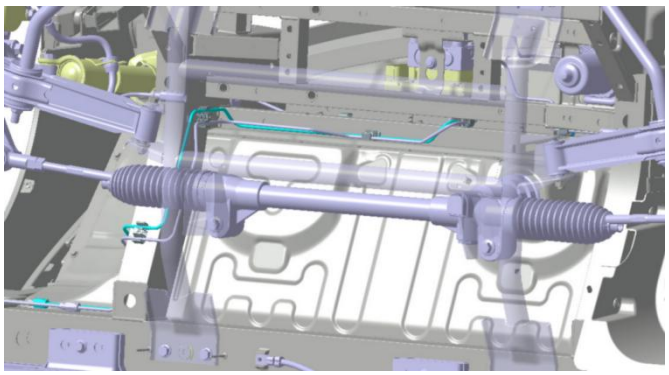
Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (18±2Nm)
Torque: Brake hard pipe joint and brake master cylinder (35±3Nm)2. Brake fluid refilling. See: Brake System venting and Filling

10.Right front brake hard pipe (without ABS)

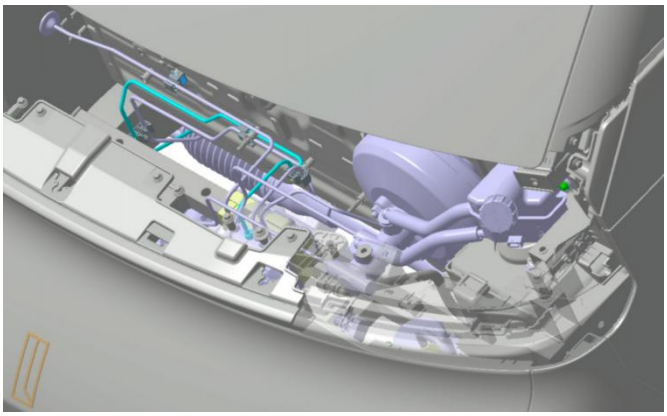
Explanation:
For the disassembly and installation of the right front brake hard pipe, please refer to the disassembly and installation of the right front brake hard pipe.

11. Left rear brake hard pipe I (with ABS)

Disassembly
1. Drain the brake fluid. See: Brake System drain Fluid filling
2. Remove the front panel protective device. See: Disassembly and installation of the front panel device
3. Remove the connecting bolts between the left rear brake hard pipe I and the left rear brake hard pipe II.



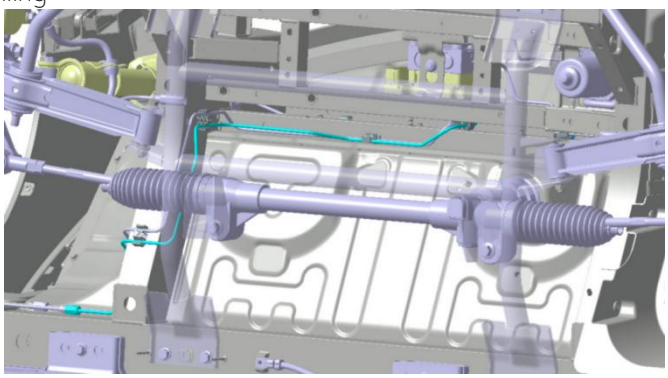
4. Remove the connecting bolts between the left rear brake hard pipe I and the ABS controller assembly.



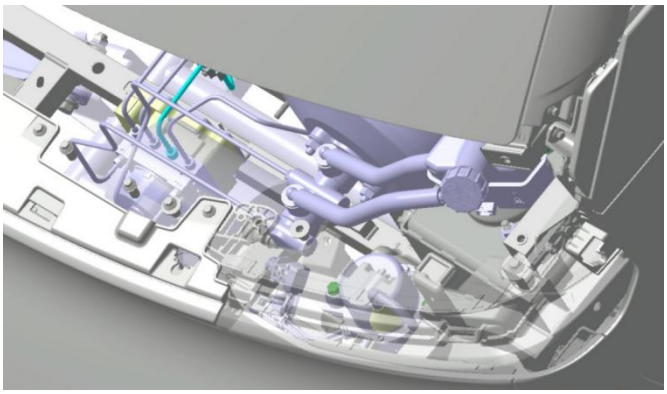
Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (35±3Nm)
Torque: Brake hard pipe joint and ABS controller assembly (35±3Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

12.Right rear brake hard pipe I (with ABS)

Disassembly
1. Drain the brake fluid. See: Brake System drain Fluid filling
2. Remove the front panel protective device. See: Disassembly and installation of the front panel device
3. Remove the connecting bolts between the right rear brake hard pipe I and the right rear brake hard pipe II.



4. Remove the connecting bolts between the right rear brake hard pipe I and the ABS controller assembly.

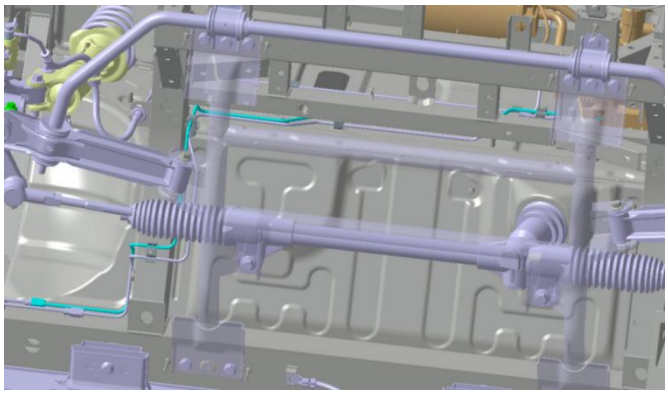


Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (35±3Nm)
Torque: Brake hard pipe joint and ABS controller assembly (35±3Nm)
2. Add brake fluid. See: Brake System venting and Filling

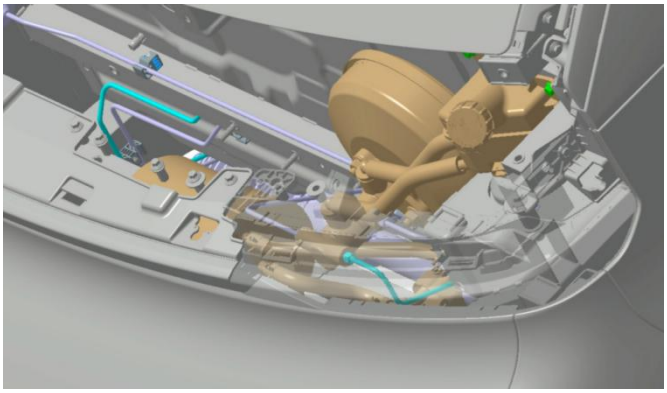
13. Left rear brake hard pipe I (without ABS)

Disassembly

1. Drain the brake fluid. See: Brake System drain Fluid filling
2. Remove the front panel protective device.
See: Disassembly and installation of the front panel device
3. Remove the connecting bolts between the left rear brake hard pipe I and the left rear brake hard pipe II.



4. Remove the connecting bolt between the left rear brake hard pipe I and the brake master cylinder.



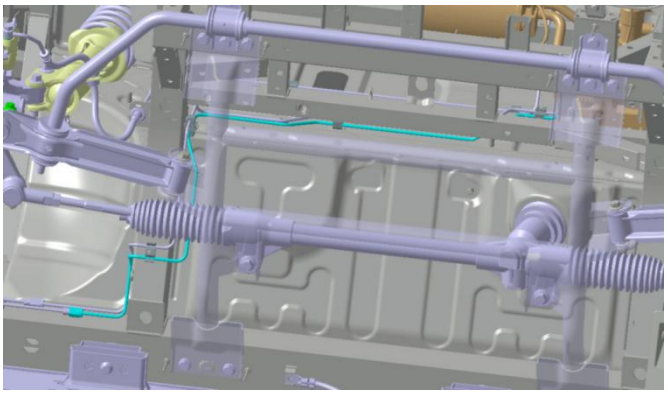
Installation

1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (35±3Nm)
Torque: Brake hard pipe joint and brake master cylinder (35±3Nm)
2. Add brake fluid. See: Brake System venting and Filling

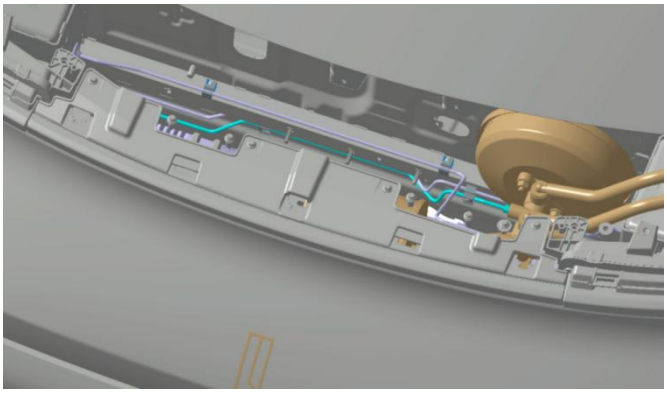
14. Right rear brake hard pipe I (without ABS)

Disassembly

1. Drain the brake fluid. See: Brake System drain Fluid filling
2. Remove the front panel cover device. See: Disassembly and installation of the front panel device
3. Remove the connecting bolts between the right rear brake hard pipe I and the right rear brake hard pipe II.



4. Remove the connecting bolt between the right rear brake hard pipe I and the brake master cylinder.



Installation

1. Install in the reverse order of disassembly

Torque: Brake hard pipe joint (35±3Nm)

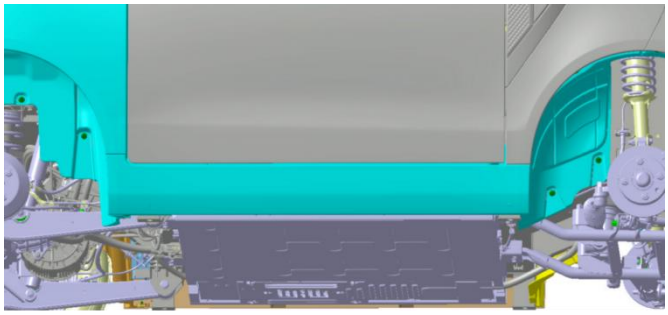
Torque: Brake hard pipe joint and brake master cylinder (35±3Nm)

2. Brake fluid refilling. See: Brake System venting and Filling

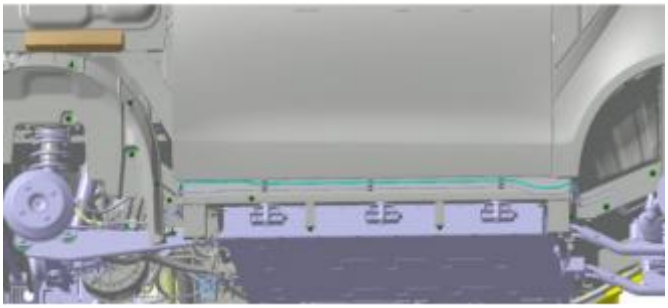
15.Left rear brake hard pipe II

Disassembly

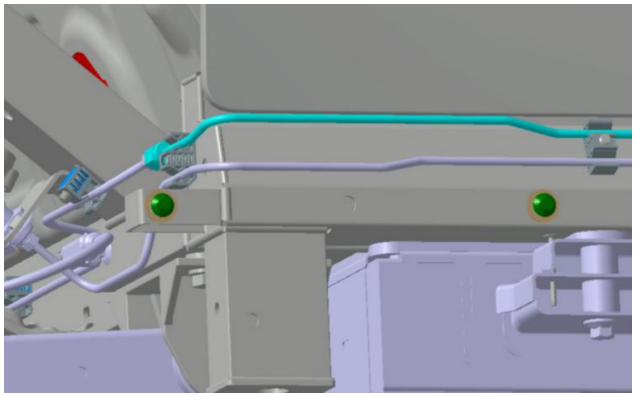
1. Remove the right front and right rear wheel assemblies. See: Tire Assembly
2. Remove the right front wheel arch. See: Disassembly and assembly of the right front wheel arch
3. Drain the brake fluid. See: Brake System drain Fluid filling
4. Remove the lower right threshold. See: Disassembly and assembly of the lower right threshold
5. Remove the right front wheel arch. See: Disassembly and assembly of the right front wheel arch
6. Remove the main body of the outer office on the right side. See: Disassembly and assembly of the outer office on the right side



7. Remove the connecting bolt of the left rear brake hard pipe II



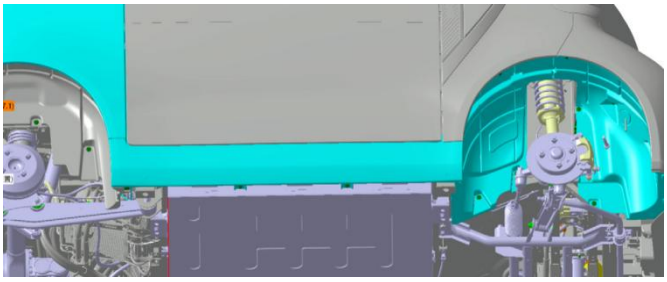
8. Remove the left rear brake hard tube II clamp and take out the left rear brake hard tube III.



Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (18±2Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

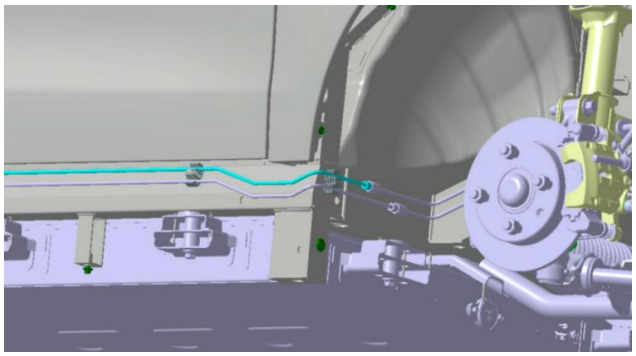
16.Right rear brake hard pipe II

Disassembly
1. Remove the right front wheel assembly.
See: Tire Assembly
2. Remove the right front wheel arch.
See: Disassembly and assembly of the right front wheel arch
3. Drain the brake fluid. See: Brake System drain Fluid filling
4. Remove the lower right threshold. See: Disassembly and assembly of the lower right threshold

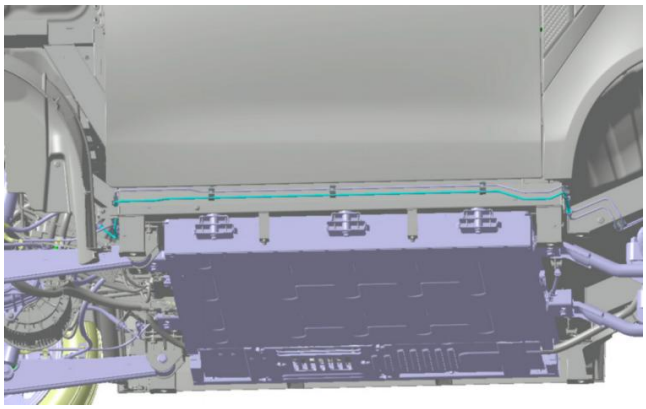


5. Remove the main body of the outer box on the right side. See: Disassembly and assembly of the outer office on the right side

6. Remove the connecting bolts of the right rear brake hard pipe II



7. Remove the right rear brake hard tube II clamp and take out the left rear brake hard tube II.



Installation
1. Install in the reverse order of disassembly
Torque: Brake hard pipe joint (18±2Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

17.Left rear brake hard pipe III

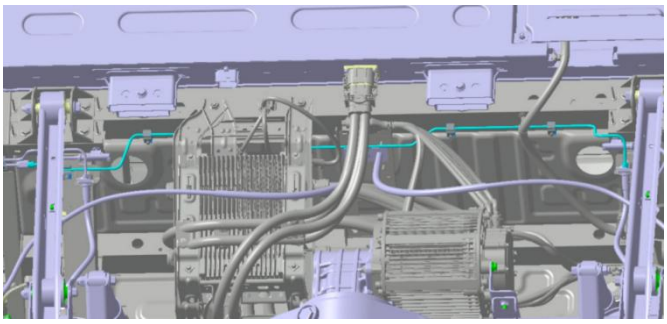
Disassembly

1. Remove the right rear wheel assembly. See: Tire Assembly

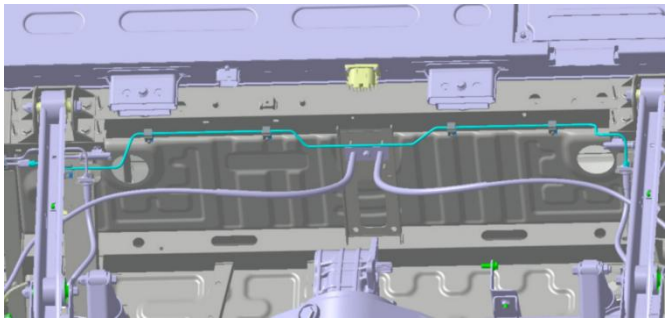
2. Remove the right rear wheel arch. See: Disassembly and assembly of the right rear wheel arch

3. Drain the brake fluid. See: Brake System drain Fluid filling

4. Remove the connecting bolt of the left rear brake hard pipe III



5. Remove the left rear brake hard tube III clamp and take out the left rear brake hard tube III.



Installation

1. Install in the reverse order of disassembly

Torque: Brake hard pipe joint (18±2Nm)

2. Brake fluid refilling. See: Brake System venting and Filling

18.Parking control handle

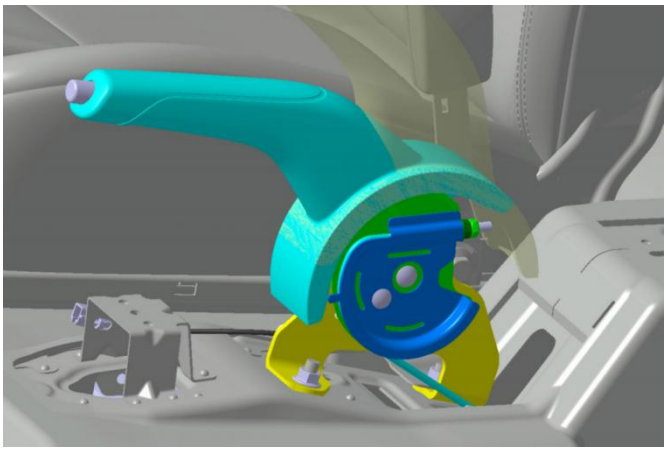
Disassembly

1. Remove the driver's seat. See: Driver's seat disassembly and assembly

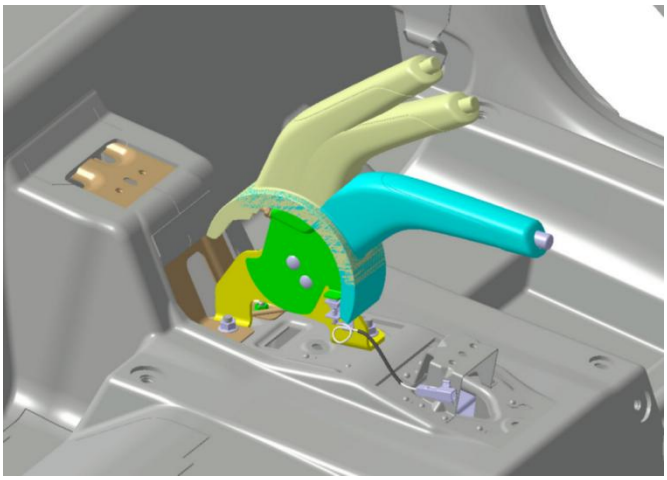
2. Remove the sub-assembly of the secondary instrument. See: Disassembly and assembly of sub-instrument assemblies

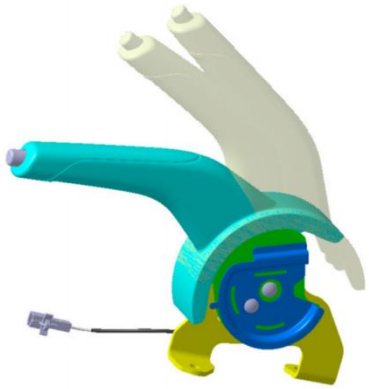
3. Disconnect the wiring harness connection plug and remove the fixing clips.

4. Remove the adjusting nut of the front parking cable 1 and take out the front parking cable 1



5.Remove the two connecting bolts between the parking control handle and the seat mounting bracket，Remove the parking control handle





Installation
1. Install in the reverse order of disassembly
Torque: Parking control handle and seat mounting brac
2.Adjust the parking control handle Adjustment:

19.Vacuum booster with master cylinder assembly (L6)

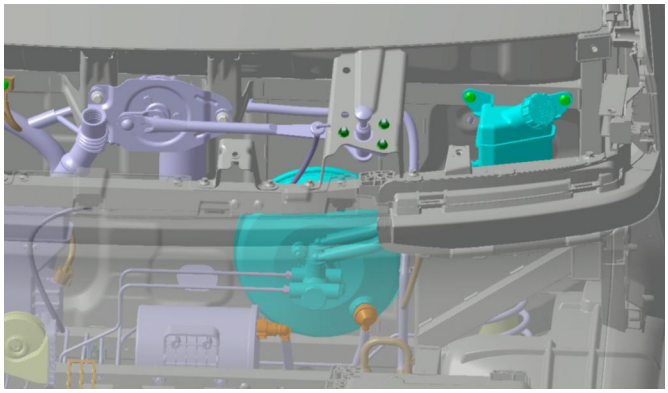
Disassembly and installation

Disassembly

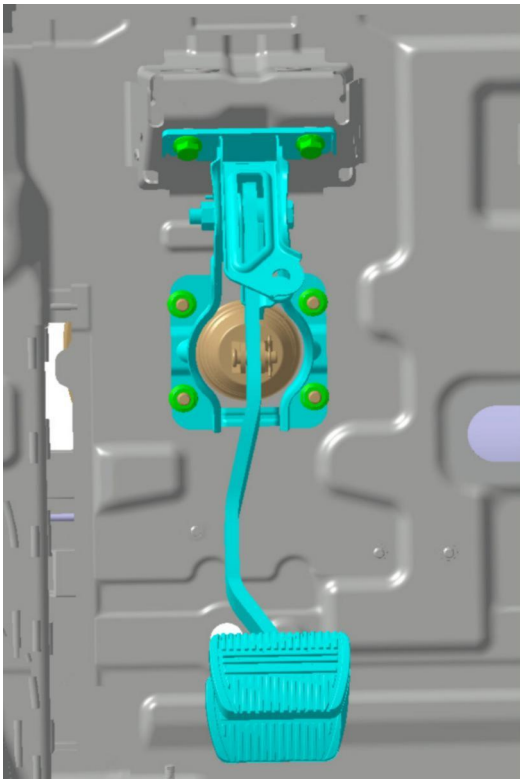
1.Drain the brake fluid. See: Brake System drain Fluid filling

2.Remove the front panel cover device. See: Disassembly and installation of the front panel device

3. Remove the connecting pipe on the brake master cylinder.



4.Remove the retaining ring connecting the brake master cylinder and the brake pedal pin, and take out the connecting pin.



5.Remove the four fixing nuts of the vacuum booster and the front panel, and take out the vacuum booster with the main cylinder assembly

Installation

1. Install in the reverse order of disassembly

Torque: Vacuum booster and front fender fixing nut (18±2Nm)

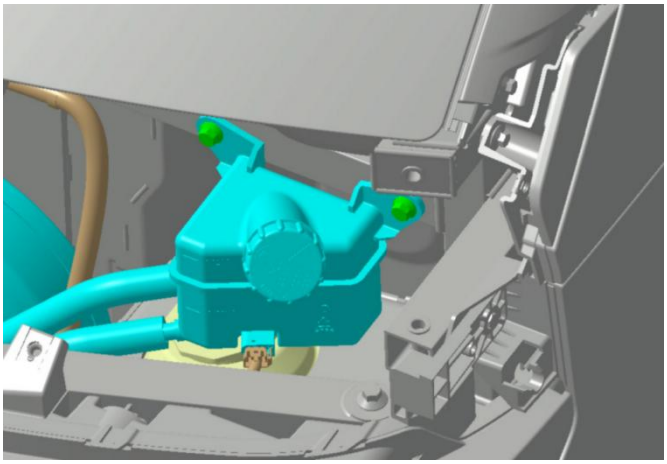
2. Brake fluid refilling. See: Brake System venting and Filling

20. Brake fluid reservoir

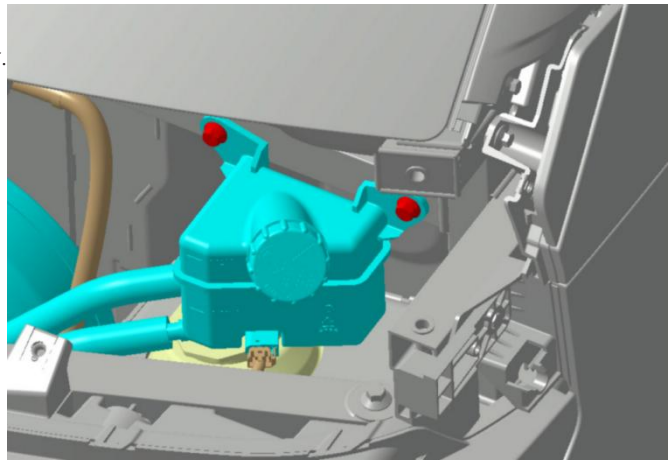
Disassembly and installation

Disassembly

1. Remove the front panel cover device. See: Disassembly and installation of the front panel device
2. Drain the brake fluid. See: Brake System drain Fluid filling
3. Disconnect the connection joint of the liquid level sensor.

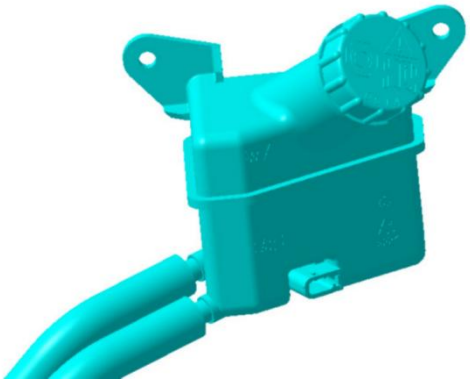


4. Remove the two fixing nuts of the brake fluid reservoir.



Installation

1.Install in the reverse order of disassembly
Torque: Brake hard pipe joint (18±2Nm)
2.Brake fluid refilling. See: Brake System venting and Filling



21.Brake master cylinder

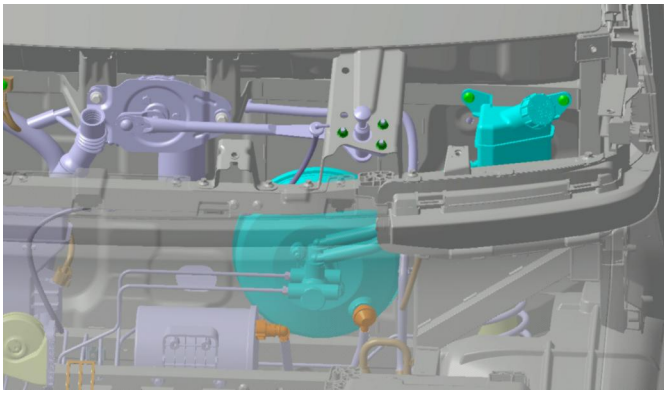
Disassembly and installation

Disassembly

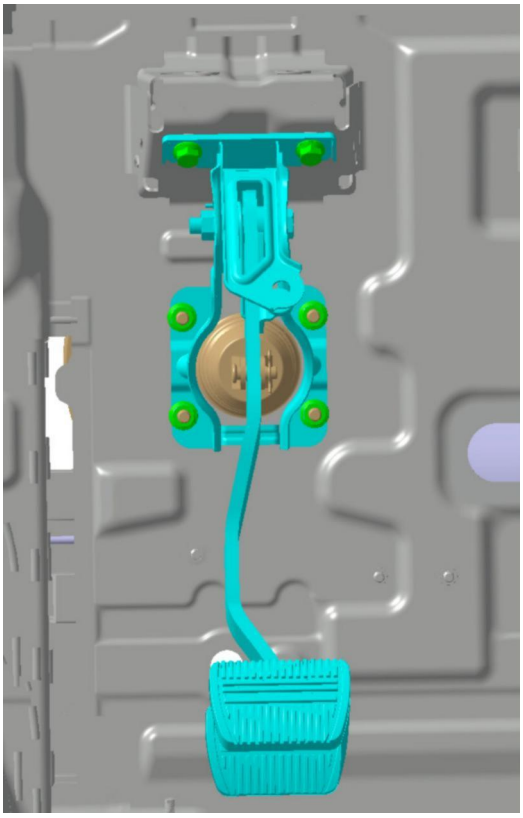
1. Drain the brake fluid. See: Brake System drain Fluid filling

2. Remove the front panel cover device. See: Disassembly and installation of the front panel device

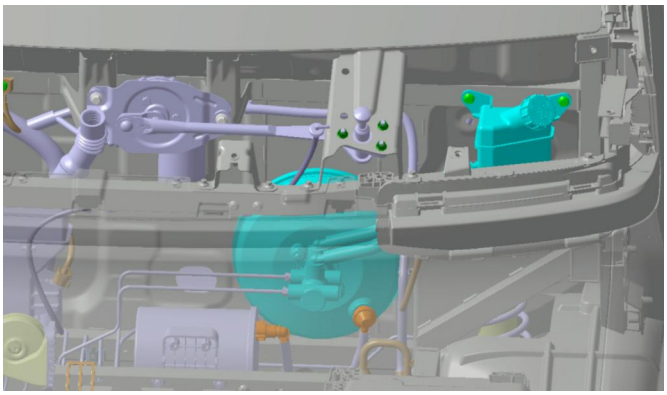
3. Remove the connecting pipe on the brake master cylinder.



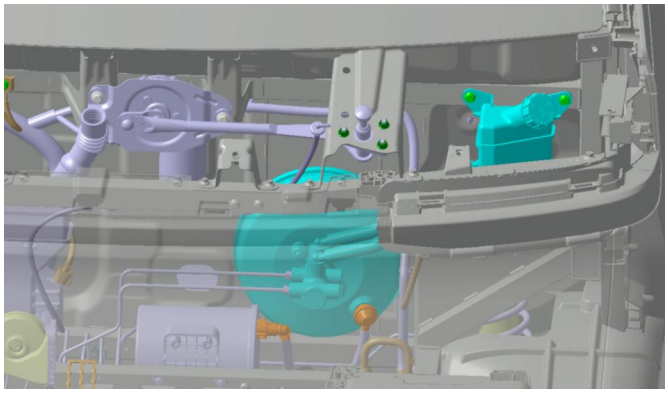
4.Remove the retaining ring connecting the brake master cylinder and the brake pedal pin, and take out the connecting pin



5. Remove the two fixing nuts of the brake master cylinder and the vacuum booster, and take out the brake master cylinder assembly



Installation
1. Install in the reverse order of disassembly
Torque: Brake master cylinder and vacuum booster (18±2Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

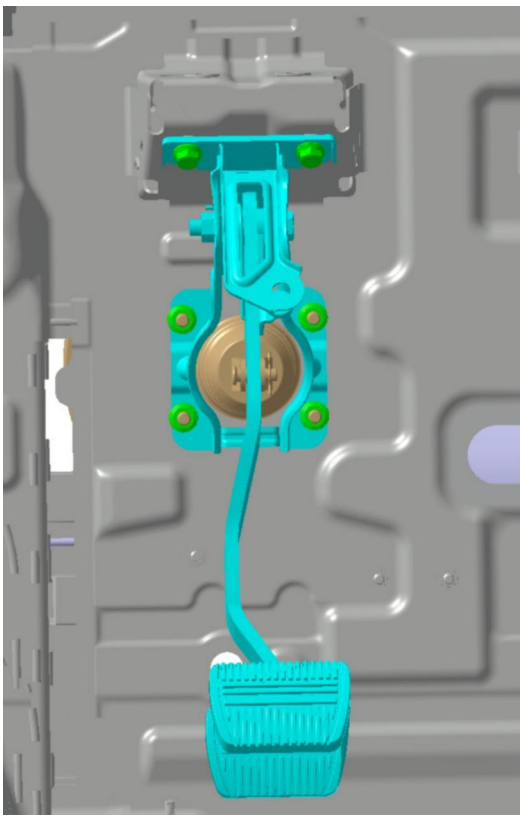


22. Vacuum booster

Disassembly and installation
Disassembly
1. Drain the brake fluid. See: Brake System drain Fluid filling

2. Remove the front panel cover device. See: Disassembly and installation of the front panel device

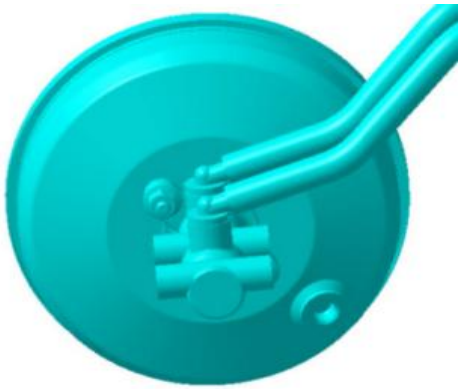
3. Remove the connecting pipe on the brake master cylinder.



4. Remove the retaining ring connecting the brake master cylinder and the brake pedal pin, and take out the connecting pin.

5. Remove the four fixing nuts of the vacuum booster and the front panel, and take out the vacuum booster with the main cylinder assembly

6. Remove the two fixing nuts of the brake master cylinder and the vacuum booster, and take out the vacuum booster



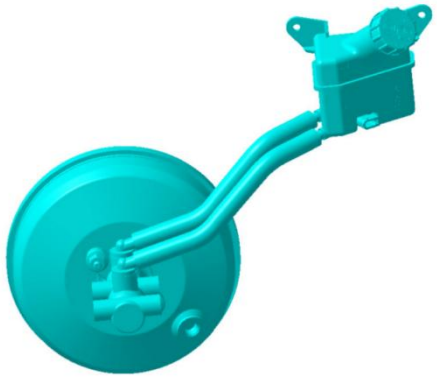
Installation
1. Install in the reverse order of disassembly
Torque: Vacuum booster and front fender fixing nut (18±2Nm)
Torque: Brake master cylinder and vacuum booster (18±2Nm)
2. Brake fluid refilling. See: Brake System venting and Filling

23.Brake fluid outlet hose

Disassembly and installation

Disassembly

1. Drain the brake fluid. See: Brake System drain Fluid filling
2. Remove the front panel cover device. See: Disassembly and installation of the front panel device
3. Remove the connecting pipe between the brake master cylinder and the brake fluid reservoir.



Installation

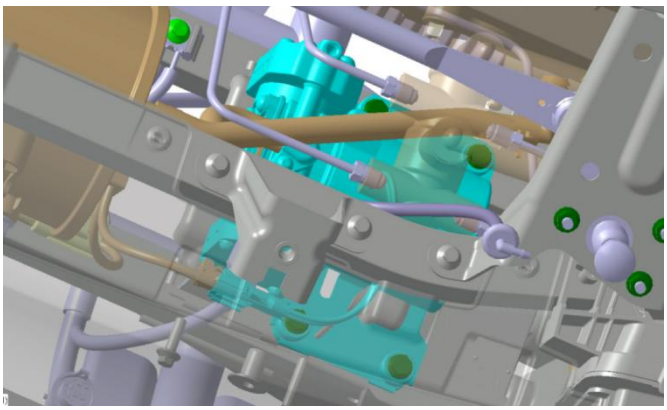
Install in the reverse order of disassembly

24. Vacuum Pumps

Disassembly and installation

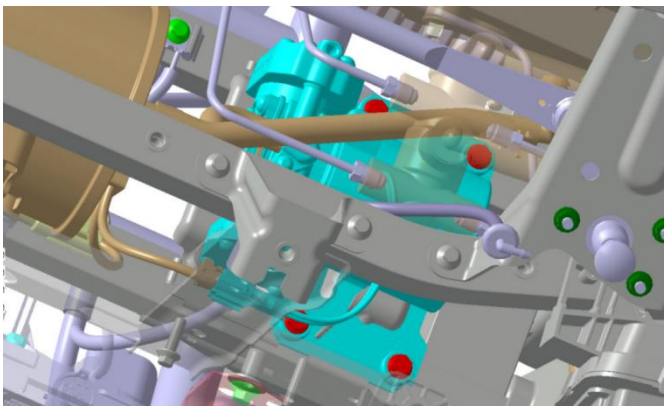
Disassembly

1. Remove the front panel cover device. See: Disassembly and installation of the front panel device
2. Disassemble the vacuum tube on the vacuum pump.



3. Disconnect the connection joint of the vacuum pump.

4. Remove the four fixing nuts of the vacuum pump.



Installation

Install the torque in the reverse order of disassembly:

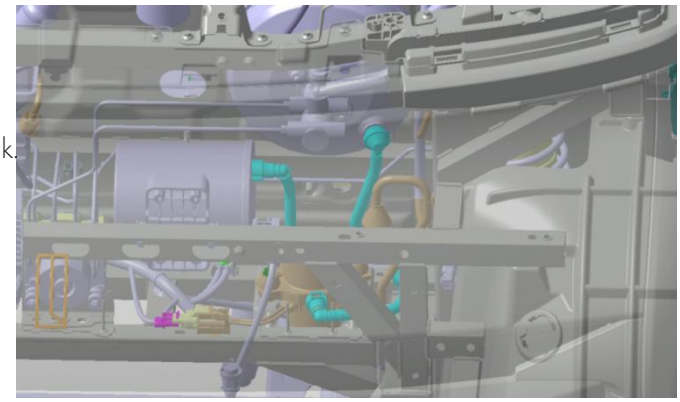
25. Vacuum Tanks

Disassembly and installation

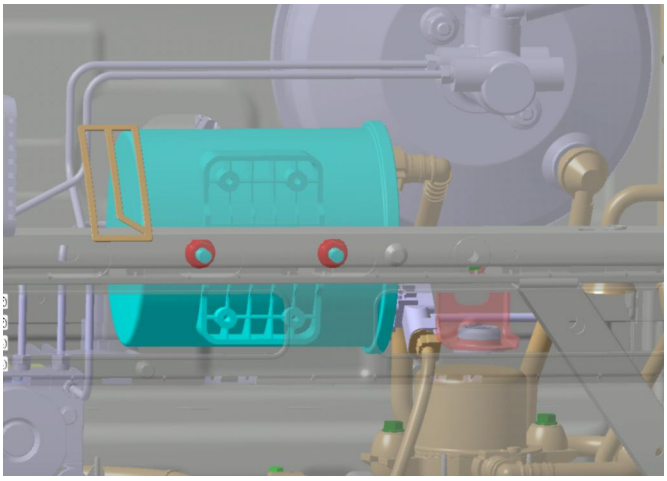
Disassembly

1. Remove the front panel cover device. See: Disassembly and installation of the front panel device

2. Disassemble the vacuum tube on the vacuum tank.



3.Disconnect the connection joint of the vacuum degree sensor.



4. Remove the two fixing nuts of the vacuum tank.

Installation

Install the torque in the reverse order of disassembly:

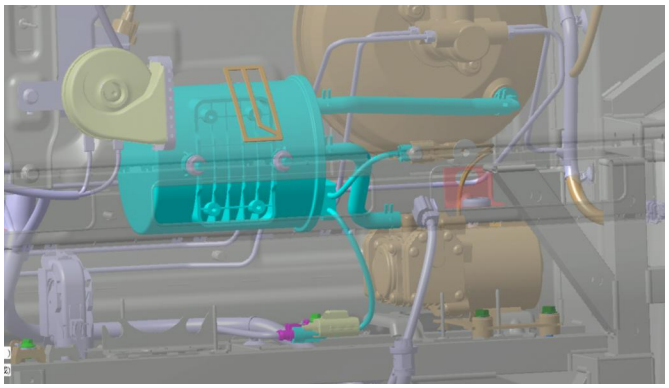
26.vVacuum Degree Sensors

Disassembly and installation

Disassembly

1. Remove the front panel cover device. See: Disassembly and installation of the front panel device

2. Disconnect the connection joint of the vacuum degree sensor



Installation

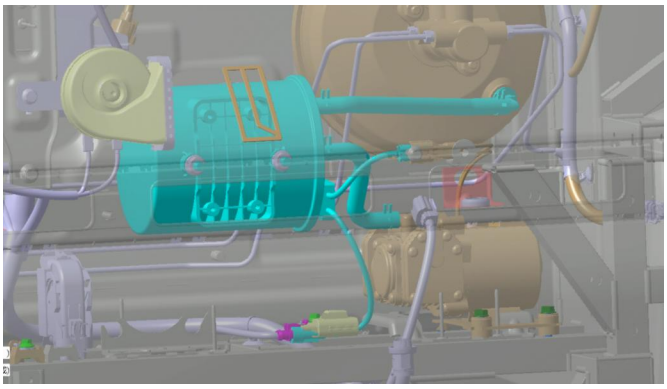
Install in the reverse order of disassembly

27. Vacuum tank with sensor

Disassembly and installation

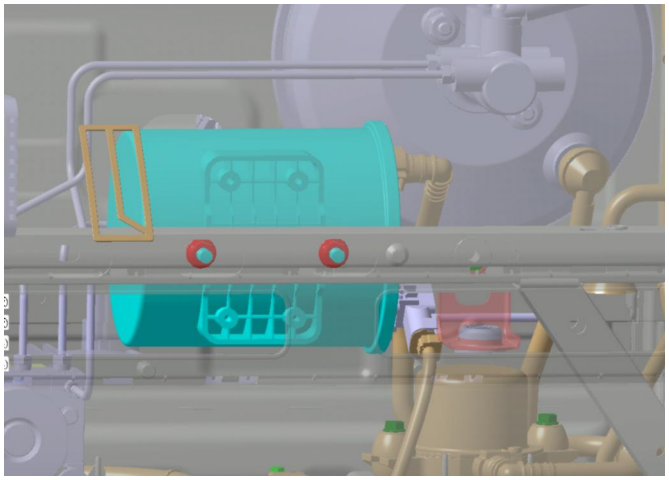
Disassembly

1. Remove the front panel cover device. See: Disassembly and installation of the front panel device



2. Disassemble the vacuum tube on the vacuum tank.

2. Disconnect the connection joint of the vacuum degree sensor.



4 Remove the two fixing nuts of the vacuum tank.

Installation

Install in the reverse order of disassembly

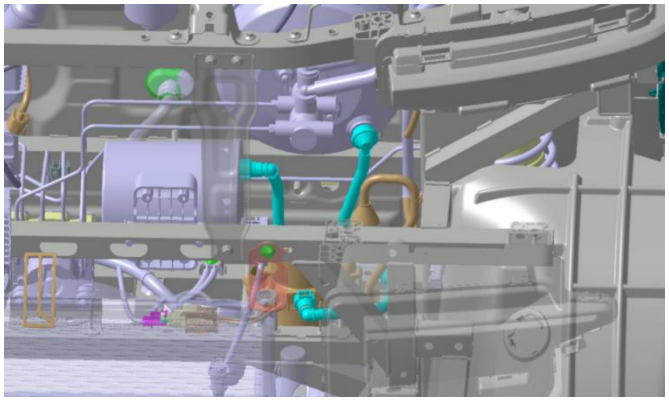
28. Intake Hose

Disassembly and installation

Disassembly

1.Remove the front panel cover device.See: Disassembly and installation of the front panel device

2.Disassemble the connection joint between the intake hose and the electronic vacuum pump, and take out the intake hose.



Installation

1. Install in the reverse order of disassembly

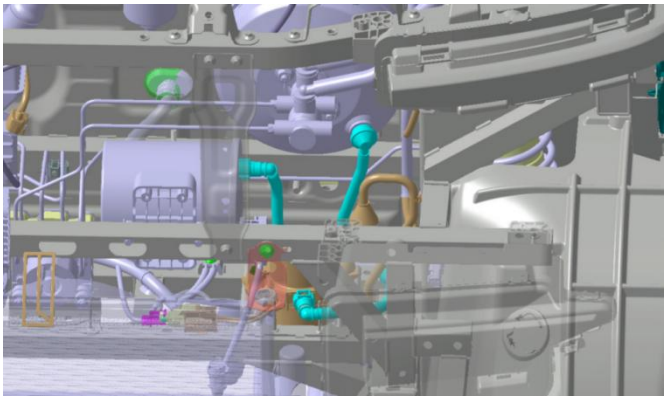
29. Exhaust Hoses

Disassembly and installation

Disassembly

1.Remove the front panel cover device.See: Disassembly and installation of the front panel device

2.Disassemble the connection head between the exhaust hose and the vacuum tank, and take out the exhaust hose.



Installation

Install in the reverse order of disassembly

30. Vacuum Tubes

Disassembly and installation

Disassembly

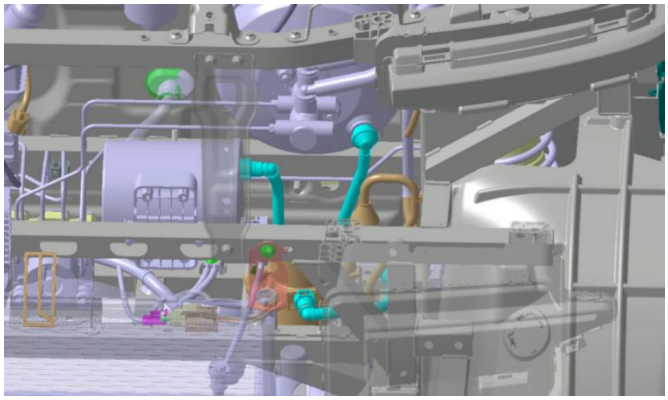
1.Remove the front panel cover device. See: Disassembly

and installation of the front panel device

2. Disassemble the connection joint of the vacuum tube vacuum booster and take out the vacuum tube.

Installation

Install in the reverse order of disassembly



31.ABS controller assembly

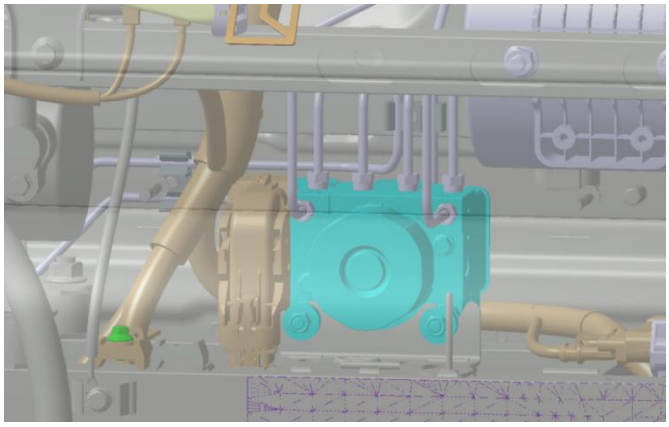
Disassembly and installation

Disassembly

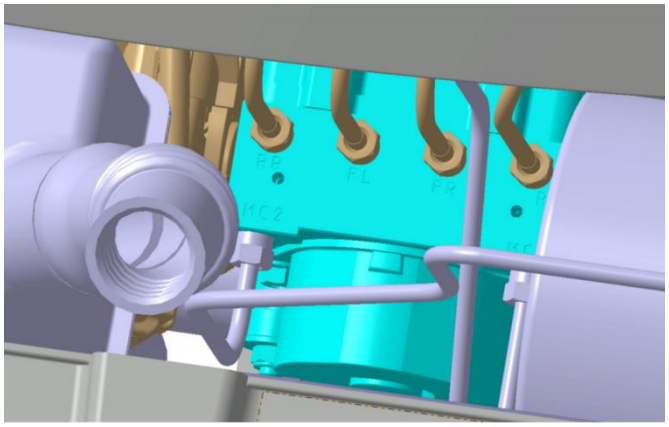
1. Drain the brake fluid. Refer to: Brake System Fluid Draining and Refilling.

2. Remove the front cowl panel assembly. Refer to: Disassembly and Installation of Front Cowl Panel Assembly.

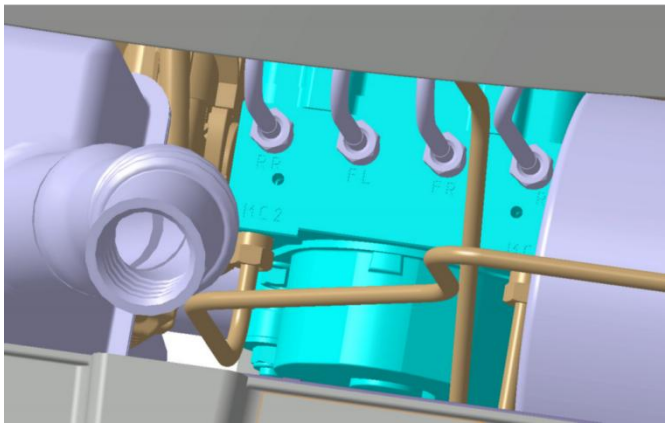
3. Disconnect the wire harness connector of the brake controller.



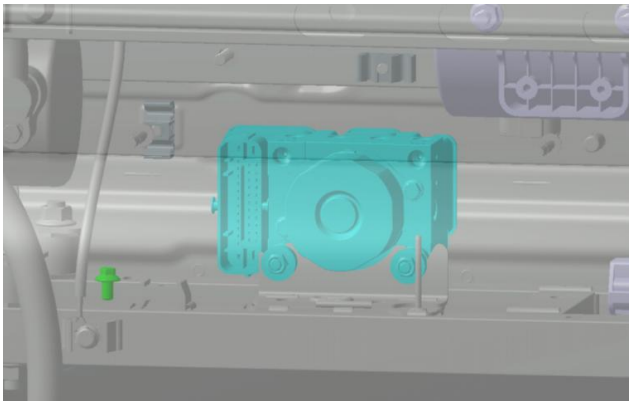
4. Remove the four fixing nuts of the brake hard line.



5.Remove the two fixing nuts of the brake hard pipe.



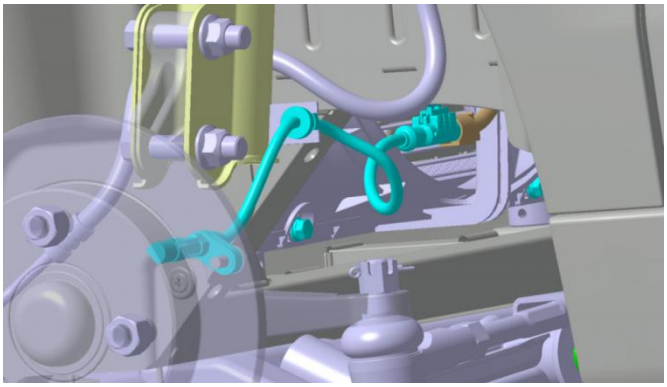
6.Remove the two mounting bolts of the brake controller and take out the brake controller.



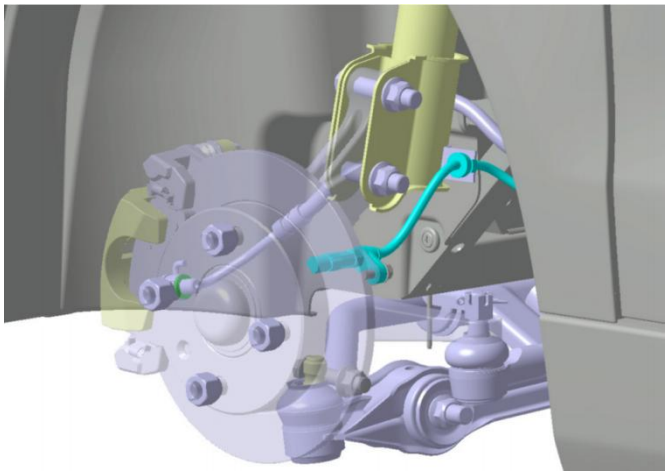
Installation
1. Install in the reverse order of removal
Torque: Brake hard line fitting (35±3Nm)
Torque: Brake hard line fitting to brake master cylinder (35±3Nm)
2. Fill with brake fluid. See: Brake system bleeding and filling

32. Left front wheel speed sensor

Disassembly and installation
Disassembly
1. Remove the left rear wheel assembly. See: Tire Assembly
2. Disconnect the rear wheel speed sensor assembly connector.



3. Remove the mounting bolts of the rear wheel speed sensor assembly.



4. Remove one retaining clip and take off the rear wheel speed sensor assembly.

Installation
Install in the reverse order of removal
Torque: Wheel speed sensor assembly mounting bolt (18±2Nm)

33. Rear wheel speed sensor

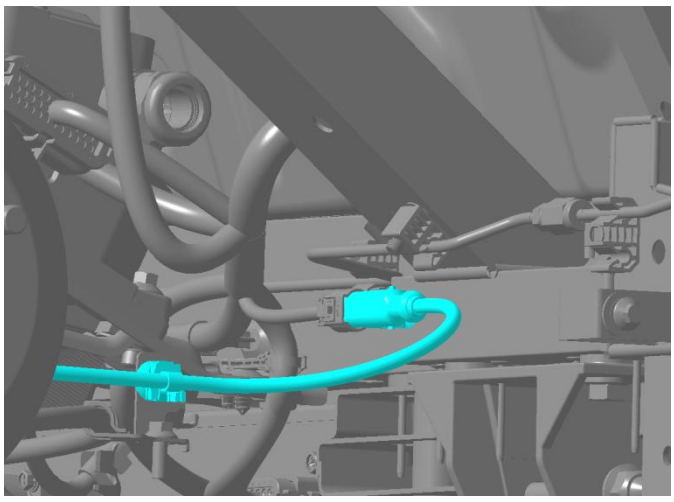
Disassembly and installation

Instructions:TThis disassembly and installation takes the left side as an example. For the disassembly and installation on the right side, please refer to the left side for execution.

Disassembly

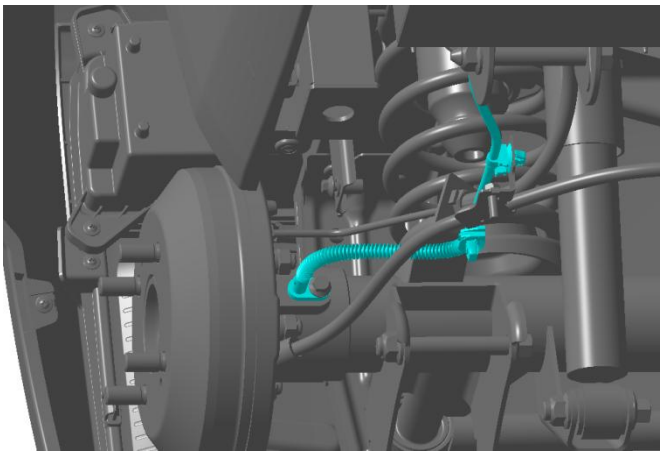
1. Remove the left rear wheel assembly. See: Wheel Assembly.

2.Disconnect the rear wheel speed sensor assembly connector.



3. Remove the mounting bolts of the rear wheel speed sensor assembly.

4. Remove the 3 retaining clips and take out the rear wheel speed sensor assembly.



Installation:

Install in the reverse order of removal.

Torque: Rear wheel speed sensor assembly mounting bolts (18±2 Nm).

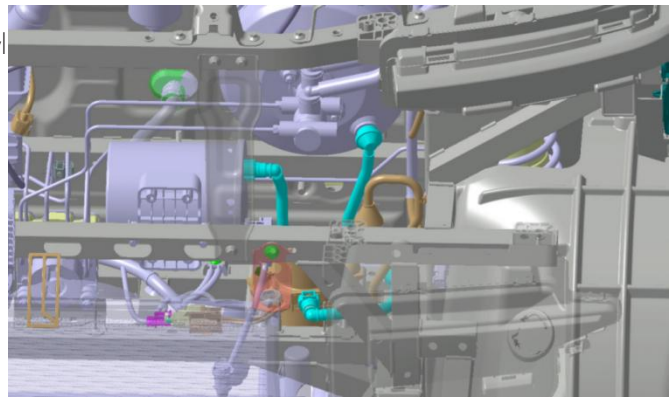
34 Electronic vacuum pump

Disassembly and Installation

Disassembly

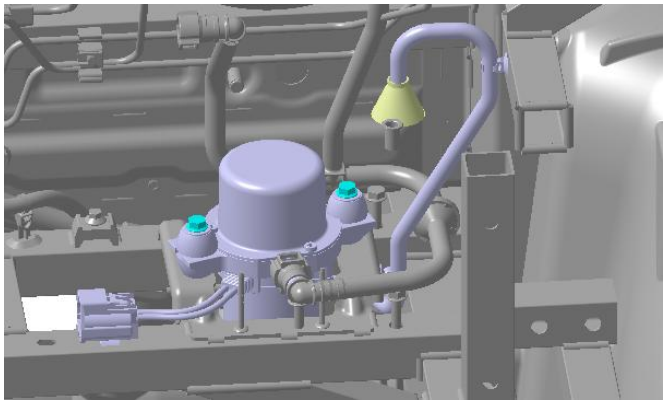
1. Remove the front cowl panel assembly. See: Front Cowl Panel Assembly Disassembly and Installation

2. Disconnect the brake controller harness connector..



3. Loosen the clamp and remove the connecting pipe.

4. Remove the two mounting bolts of the electronic vacuum pump and take out the electronic vacuum



Installation

Install in the reverse order of removal

Torque: Electronic vacuum pump connection bolts (35±3 Nm)

35..Left Rear Brake Hard Line IV

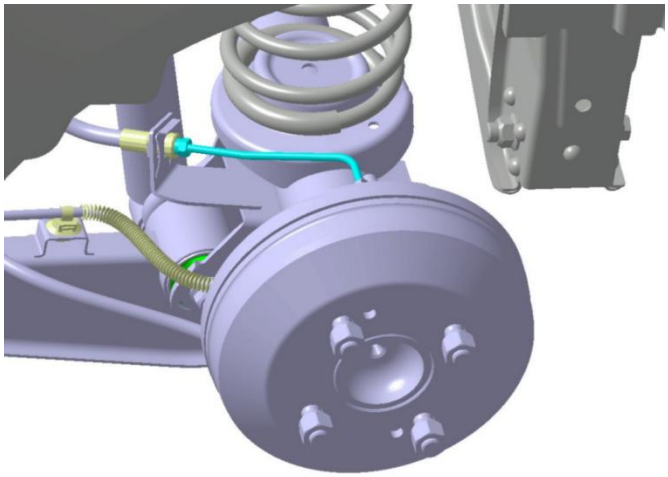
Disassembly and Installation

Disassembly

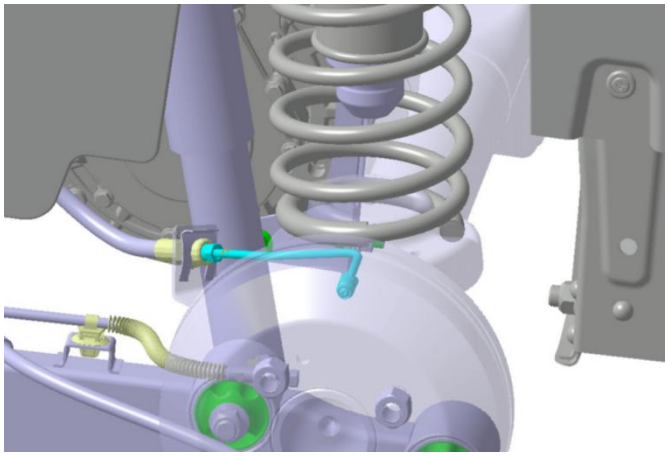
1. Remove the left front wheel assembly. See: Wheel Assembly

2. Drain the brake fluid. See: Brake System Fluid Drain and Refill

3. Remove the bolts connecting the front brake hose to the brake hard line.



4. Remove the fixing bolts on the left rear brake caliper and take off the left rear brake hard pipe IV.



Installation

1. Install in the reverse order of disassembly Torque:
Brake hard pipe joint (18±2Nm)
Brake hose and rear brake caliper (35±3Nm)
2. Brake fluid refilling. See: Brake System venting and Filling
3. Install the left front wheel assembly. See: Tire Assembly

36.Right rear brake hard tube IV

Disassembly and installation

Explanation:

For the disassembly and installation of the right rear brake hard pipe IV, please refer to the disassembly and installation of the left rear brake hard pipe IV.

37. Right front wheel speed sensor

Disassembly and installation

Explanation

For the disassembly and installation of the right front wheel speed sensor, please refer to the disassembly and installation of the left front wheel speed sensor.

4.14 Wheels and tires

4.14.1 System Description

When inflated to the recommended air pressure, the original tires can operate normally without exceeding (including) the maximum load capacity. The following factors have a significant impact on the lifespan of tires:

Incorrect tire pressure, incorrect wheel alignment, incorrect driving skills, and incorrect tire cross-rotation.

The following factors can increase tire wear:

Excessive steering, excessive acceleration, and emergency braking.

The structure of a tire

1. Tread

The part of the tire that comes into contact with the road surface, through friction, endows the car with driving, braking and other performances, and should have good wear resistance, puncture resistance, impact resistance and heat dissipation properties.

2. Fetal body

The cord layer in a tire, the main load-bearing component of the tire, should be impact-resistant and have good flex resistance during driving.

3. Belt layer

The steel cord fabric between the tread and the carcass protects the carcass, inhibits tread deformation, maintains the contact surface of the tread, and enhances wear resistance and driving stability.

4. Crown belt layer

The special cord layer above the belt layer inhibits the movement of the belt layer during tire operation, prevents the belt layer from detelling at high speeds, and maintains the dimensional stability of the tire at high speeds.

5. Tire ring

The rubber-coated steel wire is wound in a certain shape (four-corner or six-corner shape), which serves to attach the tire to the rim and fix the tire.

6. Triangular rubber strip

The filling material on the steel wire ring in the tire prevents the ring from dispersing, reduces the impact on the ring, protects the ring, and prevents air from entering during molding.

7 Airtight layer

The component of tubeless tires that maintains air tightness is made of special rubber and functions similarly to an inner tube.

The meaning of the sidewall marking on tires and the explanation of tire pressure. Example: 155/65-R14 75H

155 - Nominal cross-sectional width (unit: mm) 65 - Aspect ratio (height-to-width ratio: %) R - Radial structure

14 - Nominal diameter of the rim (unit: in) 75 - Load index H - Speed class

Common speed grade correspondence table:

Speed grade	S	T	H	V	W	Y	ZR
Maximum speed (km/h)	180	190	210	240	270	300	More than 240

Tire pressure description

Tire pressure has a decisive impact on tire wear, fuel consumption and fault damage. Therefore, for safe driving, it is necessary to maintain standard pressure and check the pressure regularly..

The load capacity of a tire corresponds to its inflation pressure. The reasonable pressure of the tire must be determined based on the load condition of the vehicle. The changes in climate and seasons should not be a reason for adjusting tire pressure.

During the initial stage of using a new tire, the outer dimension of the tire may change due to the heat generated by the flexing movement, causing the tire pressure to drop. Therefore, the pressure should be checked and adjusted after 24 hours of use or after driving 2,000 to 3,000 kilometers.

When driving at high speed for a long time, the tire pressure should be increased by 10% to 15%.

4.14.2 Specifications and Parameters

Fastener specification

Fastener name	Torque range
Tire fixing bolts	100±10 N.m

Technical Specification Sheet

Tire pressure (cold state)	230 KPa	
Tire specification	155/65-R14、155/70-R13	
Front tire pressure	Empty load	230KPa
	Full load	230KPa
Rear tire pressure	Empty load	230KPa
	Full load	230KPa

Precautions

1. During use, Pay attention to the regular rotation of the tires to reduce the uneven wear of the front tires, ensure the vehicle's driving performance and extend the service life of the tires.

2. During use, the mud and sand adhering to the tires should be washed off in time to prevent the wheels from shaking and the tires from being damaged at high speeds.

3. Do not use engine oil or lubricating oil on wheel bolts or nuts.

4. When lifting the vehicle, follow the instructions for using the jack.

5. Do not place any part of your body under a lifted vehicle, as this may cause injury to people.

6When a vehicle is lifted by a jack, the engine must not be started or operated.

7. Park the vehicle on a flat and solid ground and apply the parking brake. If necessary, a stop block should be placed in front of or behind the tire in the diagonal direction of the tire to be replaced.

8. When blocking the wheels, place the wheel stopper in front of the front wheel or behind the rear wheel.

9. Make sure the jack is placed on a flat and stable ground and is set at the correct starting point. If the position where the jack lifts the vehicle is incorrect, it will damage the vehicle or cause it to fall off the jack and result in injury to people.

10. If there are people in the vehicle, it is strictly forbidden to lift it.

Guidance on Fault Diagnosis

Fault phenomenon	Possible causes of malfunction	Solution measures
Tire wear	Driver (Bad driving habits)	Correct bad driving habits
	Tire pressure (non-standard)	Inflate to the standard value for maintenance
	Suspension system (malfunctioning)	Maintenance
	Tire specifications (inconsistent	Replace with the same tires
	Wheel alignment (inaccurate)	Perform four-wheel alignment
	Hub bearing (wear)	Replace
	Wheel (deformed, unbalanced)	Replace
Circular vibration of the steering wheel	Tires and rims (excessive wobbling)	Replace
	Wheel nut (loose)	Re-tighten
	Tire (unbalanced)	Adjustment
	Tires (uneven wear)	Adjust or replace
	Tire pressure (insufficient)	Adjustment
	Front wheel hub bearing (damaged or worn)	Replace
Premature wear of tires	Tire pressure (incorrect)	Adjustment
Tire noise	Tire pressure (incorrect)	Adjustment
	Tires (aging)	Replace

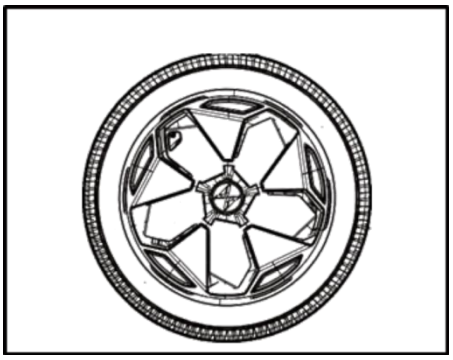
Road noise or vehicle vibration	Tire pressure (insufficient)	Adjustment
	Tire (unbalanced)	Adjustment
	Rims or tires (deformed)	Repair or replace
	Tires (uneven wear)	Adjust or replace
The steering wheel vibrates up and down.	Tires and rims (excessive wobbling)	Replace
	Wheel nut (loose)	drop lock
	Tire (unbalanced)	Adjustment
The steering wheel is on one side.	Tire pressure (incorrect)	Adjust the tire pressure
	Tires (excessively worn or unevenly worn	Adjust or replace
	Steering system (Fault)	Maintenance
	Braking system (Fault)	Maintenance
	Suspension system (Fault)	Maintenance
Braking is one-sided.	The tire pressure on both sides is uneven	Adjustment
	Braking system (faulty)	Adjust or replace
The steering wheel is heavy.	Tire pressure (insufficient)	Adjustment
	Steering system (Fault)	Maintenance
	Suspension system (Fault)	Maintenance
The steering wheel is not straightening properly	Tire pressure (insufficient)	Adjust the tire pressure
	Steering system (Fault)	Maintenance
	Suspension system (Fault)	Maintenance

4.14.3 Inspection of air pressure

1. Check the inflation pressure of the tires. If it is not within the standard value, please make adjustments.
Standard value：230KPa

※ Note：

◆Use a well-performing tire pressure gauge to check the tire pressure.
◆Check whether the wheels are worn, improperly inflated, cracked or otherwise damaged.
◆Tire pressure should be frequently checked when the ambient temperature changes drastically.
◆At normal temperature, it should not be lower than 10% of the standard tire pressure.

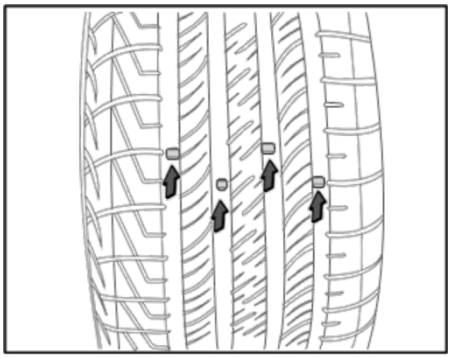


2. Check if the tire valve stems are leaking with soapy water.
3. Remove the tire valve stem guards, apply an appropriate amount of soapy water to each tire valve stem, and observe if there is any air leakage.

※ Note：

If the tire valve stem is leaking air, replace the leaking valve stem. Check if there are any cracks or damages on the tires. If so, replace them.
Check if there are any iron nails, gravel or other foreign objects stuck in the surface of the tires. If so, remove them

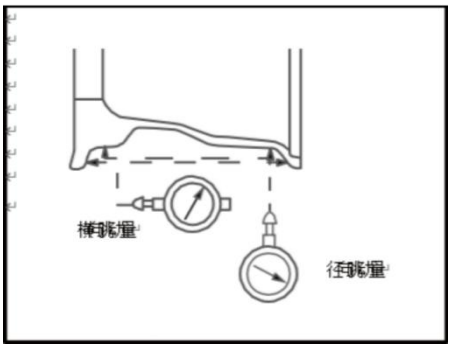
Inspection of tire tread



Check the depth of the tire treads.

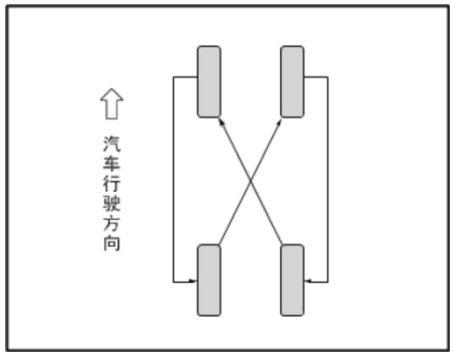
Tire specification：
155/70 R13（L6）
155/65 R14（L7）

Note：
1.When the tread depth of a tire is used to the limit value or less, wear marks will be displayed on the tire tread.
When wear marks appear, please replace the tires.
2.Check if there are any foreign objects in the tire treads. If there is any, please remove it.



Check the wheels for cracks and other damages

If it is deformed, please check the wheel runout.
1. Remove the tire from the wheel and install it on the tire balancing machine.
2. Set the dial indicator. For wheel run out, please refer to " Maintenance Data and Specifications". If the entire run out value exceeds the limit value, please replace it.

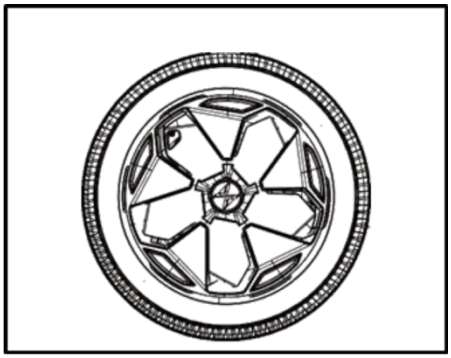


Transposition and replacement

Swap positions

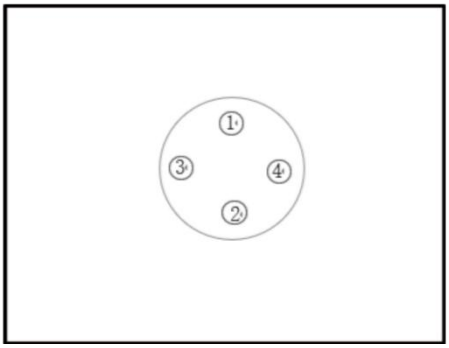
To ensure even wear on the tires and extend their service life, it is recommended that the tires be rotated every 10,000 kilometers. The most appropriate time to change a tire will be determined based on the driver's usual driving habits and road conditions. When replacing new tires, tire rotation should also be carried out.

Note：
The recommended tire rotation is as shown in the figure.
1)The wheels and tires should be replaced after they have traveled 50,000 kilometers normally.
2）If any of the following situations occur, replacement is also required: - At least one of them is present on the tire tread
3Wear marks appear at the location. - Cord fabric or cord thread appears on the tire rubber. - The tread or shoulder of the tire is cracked, resulting in a cord layer. -Tire bulges, bulges or delamination. - The tire is punctured, scratched or otherwise damaged to a degree that is difficult to repair.



Disassembly and assembly of the wheel assembly

Disassembly
1. Disassemble the wheel and tire assembly.
Torque：110±10N.m
Installation
Install the wheel tire assembly and tire nuts.



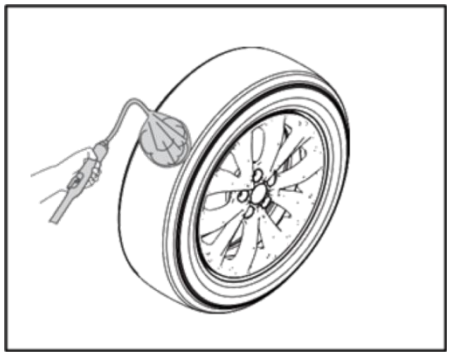
Note：
If installed manually, it should be pre-tightened in sequence and then evenly tightened diagonally.
If it tights automatically, adjust the tightening torque and tighten it once.
Strictly follow the sequence marked in the diagram
Tighten all the wheel nuts.

Wheel dynamic balance

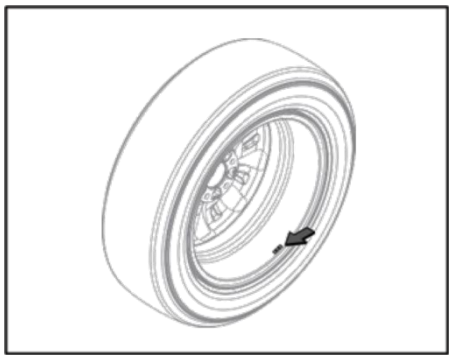
Disassembly

Preparations before testing
1. Disassemble the wheels and tires that need to be adjusted.
2. Clean the wheels under test to remove dirt, sand and stones.

Note:
If the debris in the tire crown is not removed, it will fly out of the outer tire under the action of centrifugal force, which may cause personal injury. Check whether there are any defects in the tire crown and sidewall. These defects will affect the wheel balance.

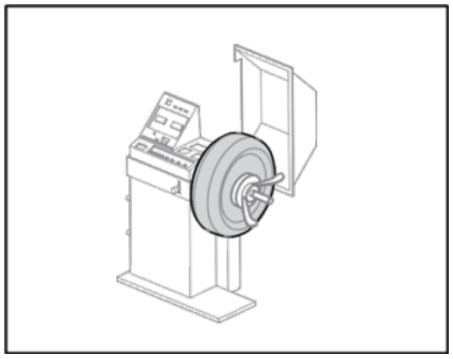


3. Remove the old balance weights and inflate the tires to the standard air pressure value.

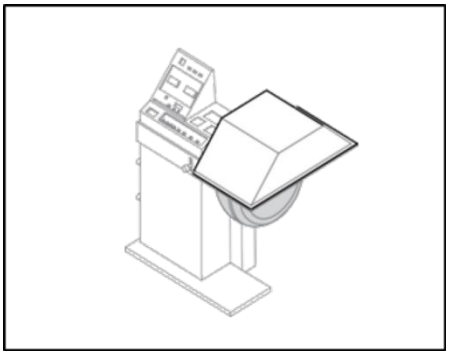


Check the wheel balance

1.Install the wheels correctly on the balancing machine.



2. Secure the tire and input three parameters: the width, diameter of the wheel rim and the distance from the outer edge of the rim to the balancing machine.



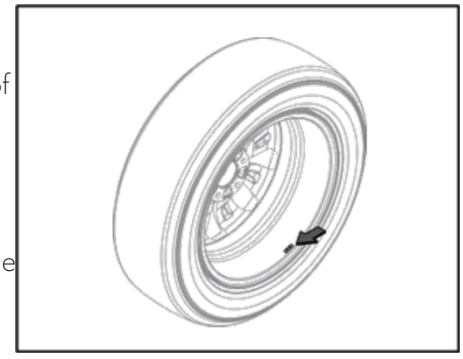
3. Lower the protective cover, start the balancing machine and begin the measurement.

4. Stop turning the tire, then open the guard, rotate the tire by hand, and read the unbalance amount through the left and right display screens to determine the unbalance position.

Adjust the wheel balance

1. According to the unbalance quantity displayed by the balancing machine, add the corresponding balancing weights at the unbalanced position.
2. When installing the balance weights on the wheels, align the center of the balance weights with the position (or Angle) indicated by the wheel balancing machine.
3. If the calculated weight of the balance weights exceeds 5g, install the two balance weights in a straight line.

Note:
The balance weights cannot be reused and should be replaced each time. Always use the original balance weights. Do not place the balance weights on top of another balance weight. .



4. Start the wheel balancing machine again and confirm that the remaining unbalance value does not exceed 5g. If the remaining unbalance value on either side exceeds 5g, repeat the steps to adjust the wheel balance.

5. Electrical system

5.1 Overview

5.1.1 Overview of Low-voltage Electrical Systems

The low-voltage electrical system of the Alumi model consists of a 12V battery, a one-button start switch, a vehicle control unit (VCU), a front cabin electrical box, an instrument fuse box, a DC-DC machine (integrated with the OBC/DC-DC all-in-one machine), a combination instrument, related control relays and circuits, etc. The supply and distribution functions of the vehicle's normal power supply (B+), ignition power supply (IGN), and accessory power supply (ACC) are realized through the above-mentioned components, providing power to all low-voltage electrical appliances and modules of the vehicle under the appropriate power control state.

5.1.2 Functions and Operations

The power system of the Alumi model adopts two forms: the traditional ignition switch and the one-button start switch to achieve the relevant power distribution function. The vehicle power system can be in the following states by operating the switch:

OFF Status

— Only the normal power supply B+ of the entire vehicle is connected, while the ignition power supplies IGN and ACC are disconnected.

ACC status

— The normal power supply B+ and ACC of the entire vehicle are connected, while the ignition power supply IGN is disconnected.

ON "Status"

— The vehicle's constant power supply B+, ACC power supply and ignition power supply IGN are all connected.

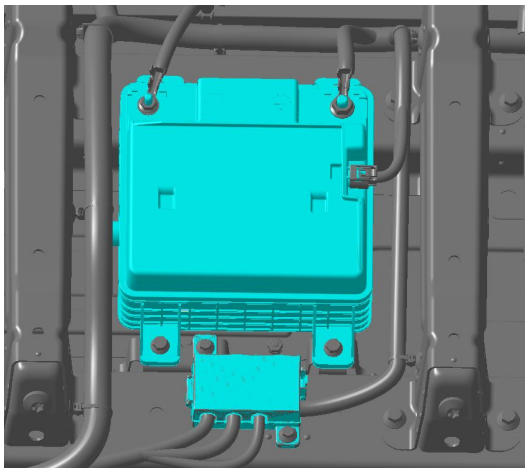
READY Status

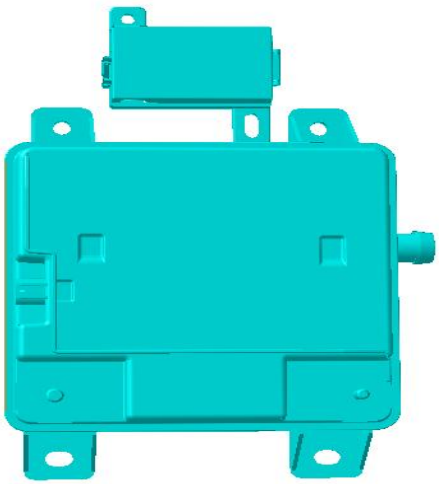
— The vehicle's constant power supply B+, ACC power supply and ignition power supply IGN are all connected, and the vehicle is in the starting and running state.

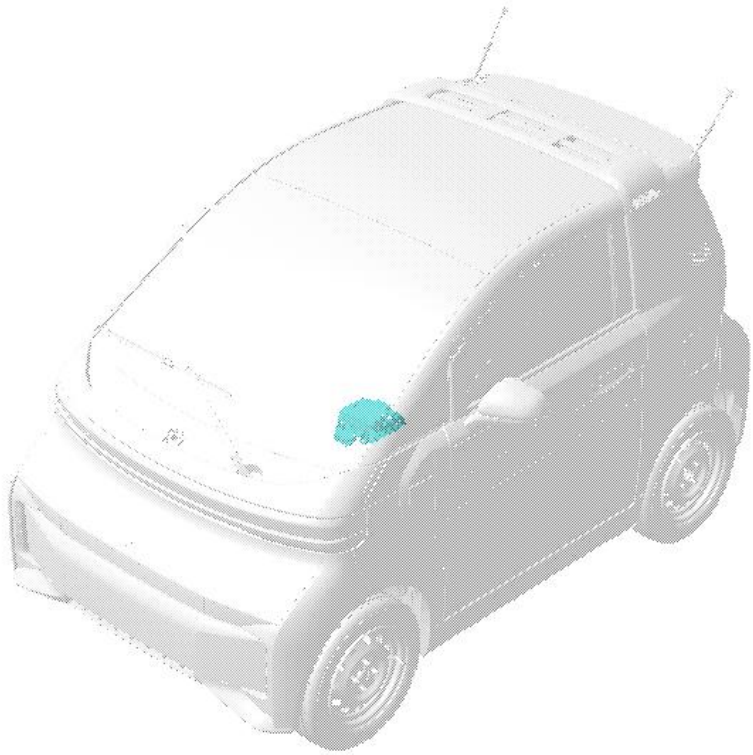
— At this point, the green "READY" indicator light on the combined instrument panel will light up, indicating that the vehicle is already in the start-up and running state. ,

— At this point, the green "READY" indicator light on the combined instrument panel will light up, indicating that the vehicle is already in the start-up and running state. ,

5.2 The composition of electrical system components







5.2.1 Maintenance Precautions

- To prevent over-discharge, severe undercharging of the battery can seriously damage it and is extremely detrimental to its electrical performance and cycle life.
- If a battery is not used for a long time, it will gradually discharge by itself until it becomes unusable. Therefore, batteries that have not been used for a long time should be charged regularly.
- To prevent loose or insecure connections, if the contact is not secure, poor conductivity will occur, resulting in high line loss, low output voltage, and in severe cases, a Circuit break may occur during driving, leading to accidents.
- Hydrogen is produced during the use or charging of batteries, so keep them away from fire sources, ensure good ventilation and prevent explosions.
- Avoid bumping the battery. Once it cracks, stop using it and properly recycle and dispose of it.
- Before disconnecting the battery, all electrical appliances should be turned OFF and the power status should be set to "OFF".
- When unplugging the positive and negative cables from the battery electrode posts, the negative cable must be unplugged first, and then the positive cable. When connecting, the sequence is reversed.
- When repairing the airbag system or high-voltage electrical system, the negative terminal of the battery must be disconnected for at least 3 minutes before other operations can be carried out.
- For scrapped batteries, they should be treated centrally and recycled for reuse to prevent lead ions inside from leaking and causing harm to the environment.

5.3 The working principle of the system

The 12V battery is installed under the passenger side seat, equipped with a 12V40Ah maintenance-free lead-acid battery, which is mounted on the battery bracket and fixed by the battery support

1.The battery has the following functions:

- Provide starting energy for large batteries.
- Supply power to the electrical system :
- Buffer storage voltage

2.Maintenance-free lead-acid batteries have the following advantages:

- No electrolyte is needed throughout its entire service life
- Overcharge protection measures have been adopted
- The battery is not prone to self-discharge after long-term storage
- Under the condition that the vehicle has not been started, if the electrical appliances on the vehicle are kept on for too long and used continuously, or if the vehicle leaks electricity and is left stationary for a long time, there will be a charging failure, causing the battery to fail to charge normally and resulting in battery depletion, and even the vehicle cannot be started. This battery needs to be recharged.

3.Appearance inspection of the battery before charging:

- If the battery casing is cracked or acid leakage occurs, the battery cannot be recharged. After identifying the cause, replace the battery.
- The terminal post is cracked and cannot be recharged. After identifying the cause, replace the battery.
- Batteries that are swollen due to overdischarge or overcharging cannot be recharged and should be replaced.
- Before recharging, clean the terminal posts and remove the oxide scale on the surface. Apply grease to the terminal posts to prevent the occurrence of electrical erosion.

4.Precautions during charging:

- Wear safety glasses.
- ·The charging environment should be dry, cool and well-ventilated, and the temperature should not exceed 35℃.
- No smoking, fire or sparks are allowed in the charging area to prevent battery explosion.
- Please avoid overcharging and fast charging to prevent battery explosion.
- When wiring after charging, connect the positive terminal first. When unplugging the wires before charging, disconnect the negative terminal first.

5.Battery charging operation:

- Connect the positive terminal of the charger to the positive terminal of the battery, and connect the negative terminal of the charger to the negative terminal of the battery. If charging is carried out in the vehicle, the negative terminal of the charger should be connected between the IBS(Intelligent Battery Sensor) and the ground of the vehicle body, and the positive terminal of the charger should be connected to the HVIC terminal of the battery fuse box.
- The charging circuit is well connected.
- Start the charger, select the appropriate gear, and the charging voltage should not exceed 16V.
- During the charging process, if the battery temperature exceeds 45℃, stop charging until the battery temperature drops to room temperature, and then resume charging.

6.Battery testing:

- The inspection of storage batteries can be carried out using a multimeter, a discharge fork, or a CCA detector. Different detection devices may lead to variations in the test results.

7. 12-volt battery charge and discharge control:

- The 12-volt battery charge and discharge management mainly relies on the IBS(Intelligent Battery Sensor) to detect the SOC(State of Charge) status. When the SOC(State of Charge) is too low, the high-voltage system charges the low-voltage battery. In the event that it cannot support all loads, the loads related to the comfort function will be automatically cut off to ensure the normal operation of the safety function.

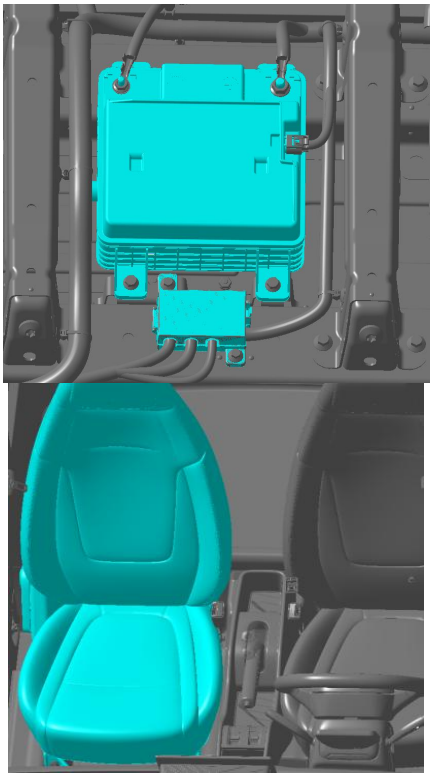
5.4 Technical parameters of main components

Connection information description	Number	Torque	Low L6	Mid L6	High L6	Low L7	High L7
The TBOX is installed on the front panel	3	7±1	N	N	N	Y	Y
The electric horn connects to the vehicle body	1	7±1	Y	Y	Y	Y	Y
The brake switch is installed on the brake pedal	2	9±1	Y	Y	Y	Y	Y
The steering wheel lock/mechanical lock is installed to the steering column	2	/	Y	Y	Y	Y	Y
Combine the switch to the steering column	2	3±1	Y	Y	Y	Y	Y
The combination instrument is installed onto the steering column	2	7±1	Y	Y	Y	Y	Y
Low-voltage wiring harness grounding bolts	13	7±1	Y	Y	Y	Y	Y
The jumper bolts are connected to the three-in-one	2	7±1	Y	Y	Y	Y	Y
The two fuse boxes of the body wiring harness are connected to the body	4	7±1	Y	Y	Y	Y	Y
The vehicle body wiring harness is connected to the negative terminal of the battery	1	7±1	Y	Y	Y	Y	Y

The body wiring harness is connected to the positive terminal of the battery	1	15±2	Y	Y	Y	Y	Y
The wiper motor is connected to the vehicle body	3	7±1	Y	Y	Y	Y	Y
Wiper shaft to the body frame	4	9±1	Y	Y	Y	Y	Y
Scrape the arm to the shaft	1	8±1	Y	Y	Y	Y	Y
Screen host to pipe beam	4	7±1	N	Y	Y	N	Y
Speaker to IP	6	2±0.5	N	Y	Y	N	Y
The antenna is amplified to the vehicle body	1	7±1	N	Y	Y	N	Y
HVAC to the vehicle body	5	7±1	N	N	Y	N	Y
The warm air conditioning box to the vehicle body	5	7±1	N	N	N	Y	N
The heater goes to the vehicle body	3	7±1	Y	Y	N	N	N
The expansion valve of the air conditioning main unit from the compressor exhaust pipe to the front panel	1	12±1	N	Y	N	N	Y
From the compressor exhaust pipe to the compressor	1	12±1	N	Y	N	N	Y
The intake and exhaust pipes of the evaporator are assembled to the front	1	7±1	N	Y	N	N	Y
The intake and exhaust pipes of the evaporator are assembled to the condenser	1	10±1	N	Y	N	N	Y
The compressor is assembled with a bracket to the crossbeam of the vehicle body	4	25±3	N	Y	N	N	Y
The grounding wire of the compressor housing is connected to the vehicle body	1	7±1	N	Y	N	N	Y
The exhaust pipe of the compressor leads to the compressor and the condenser	2	12±1	N	Y	N	N	Y
Condenser fan to condenser	4	9±1	N	Y	N	N	Y
The condenser bracket is attached to the vehicle body	2	25±3	N	Y	N	N	Y
BCM to the instrument pipe beam	2	7±1	Y	Y	Y	Y	Y
Start the antenna to CNSL	2	2±0.5	N	N	N	Y	Y

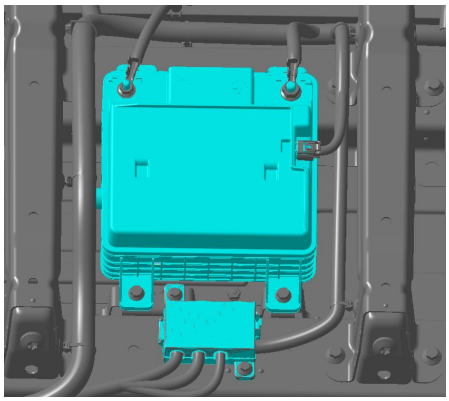
Disassembly and installation

1. Turn off the ignition switch for more than 5 minutes and then remove the negative terminal of the battery.Torque：9±1N · m



2.Remove co-driver side seat assembly, refer to: Co-driver Seat Assembly Disassembly and Installation.

3. Torque for removing the positive terminals of the battery：9±1N · m

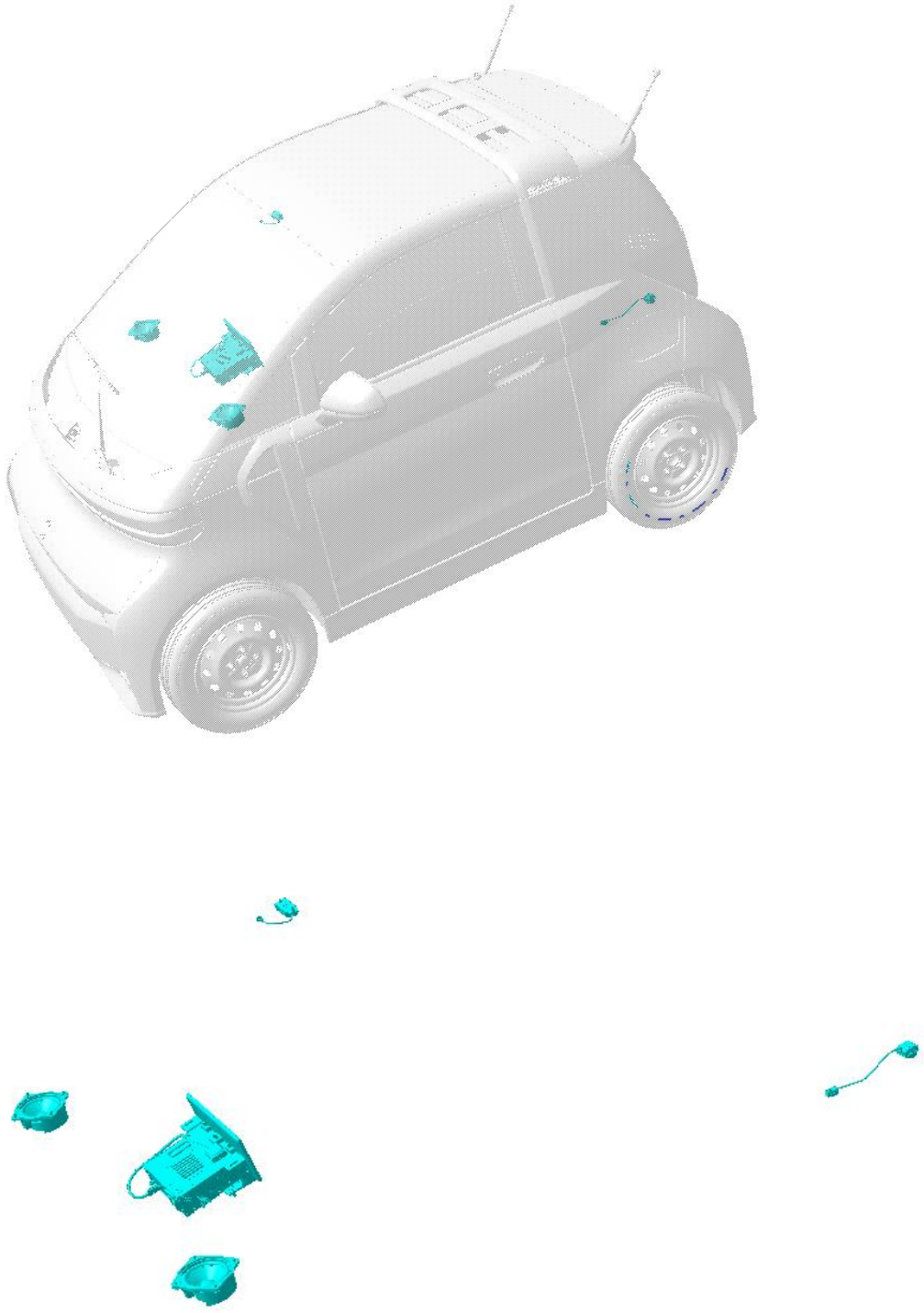


4. Remove the four nuts that fix the battery pressure plate and take out the battery.Torque：3±1.5 N · m

Installation
Install in the reverse order of disassembly

5.5 Vehicle-mounted multimedia device

5.5.1 Component drawing



5.5.2 Maintenance Precautions

1 Important precautions regarding each electronic component

- When disassembling various electronic components, operate with caution to avoid damage to the components due to drops.
- Avoid touching the conical paper cone of the speaker.
- When replacing the speaker, the same specification should be used.

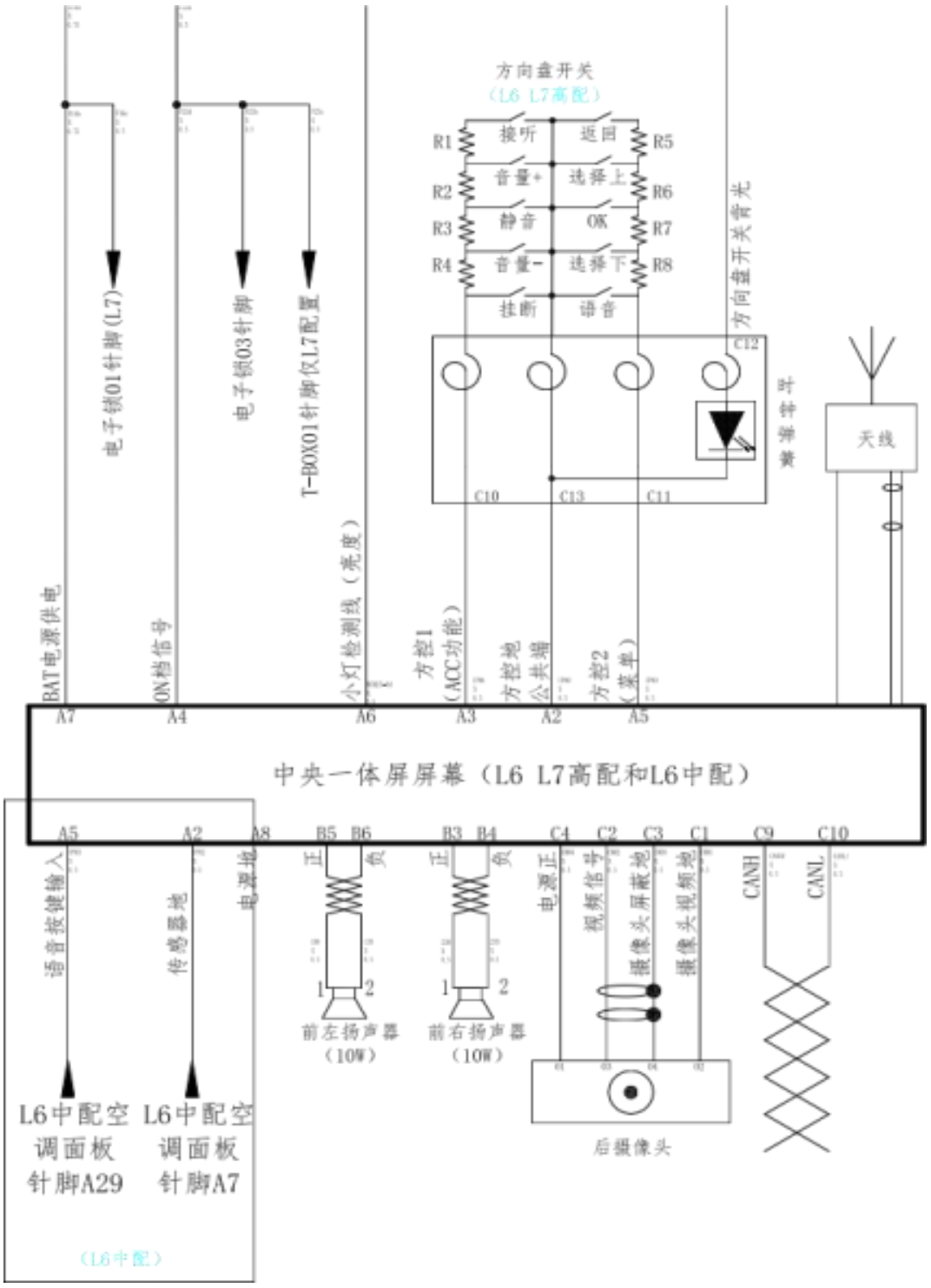
2 Important Note regarding satellite signals

- When vehicles are traveling in the following environments, it will affect the normal reception of satellite signals:
- Driving in rainy or cloudy weather or among high-rise buildings.
- Drive under tunnels, underground parking lots, overpasses, viaducts or tree-lined avenues. There is a metal object above the vehicle.

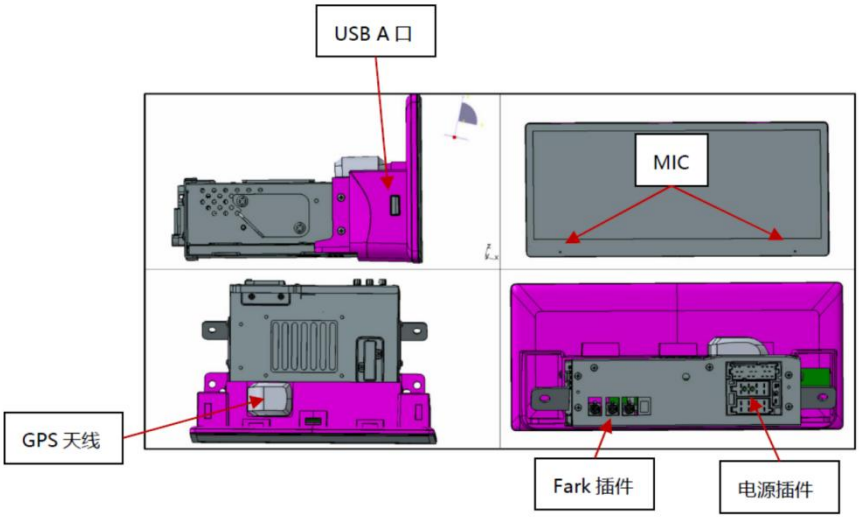
3 Important tips about FM radio

- If the grounding connection of the antenna is not firm, it will cause noise when receiving broadcast information. Even if a new antenna is replaced, the problem cannot be effectively solved.

5.5.3 The working principle of the system



5.5.4 Information on electrical connectors



5.5.5 Fault code

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults	System performance	Conditions for fault resolution
1	B111716	Power supply voltage below threshold	Voltage < 9V, t > 500ms	Record DTC;	9.5V < Voltage < 18V, t > 500ms
2	B111717	Power supply voltage above threshold	The power supply voltage is greater than 18V and lasts for 500ms	"Record DTC;Record DTC"	9.5V < Voltage < 18V, t > 500ms
3	U007300	CAN Bus-off	" In communication mode, five consecutive disconnection states were detected (the CAN controller's transmission and reception error counter ≥ 255)."	"Record DTC;Record DTC"	The ECU successfully sent the message
4	B138004	EEPROM data Error	CRC verification error of EEPROM data.	"Record DTC;Record DTC"	The CRC check of the EEPROM configuration data is normal
5	B138193	EEPROM IIC communication error	IIC communication anomaly	"Record DTC;Record DTC"	The IIC communication is normal
6	B138293	RTC IIC communication error	IIC communication anomaly	"Record DTC;Record DTC"	The IIC communication is normal
7	B138393	Radio IIC communication error	IIC communication anomaly	"Record DTC;Record DTC"	The IIC communication is normal
8	B138404	SOC heart beat lost	The SOC heartbeat packet data was not detected to be greater than 30 seconds (the vehicle system restarts after 30 seconds).	"Record DTC;Record DTC"	The heartbeat was successfully detected
9	B138888	Reverse abnormal image	The reversing camera has no signal	"Record DTC;Record DTC"	The signal is normal
10	U240081	VCU_CHECKSUM_ ERROR	CAN message checksum error	"Record DTC;Record DTC"	The checksum of CAN messages is normal
11	U250082	VCU _ ROLLING _ COUNTER_ERROR	The rolling counter is discontinuous	"Record DTC;Record DTC"	The rolling counter is continuous
12	U240281	BMS_CHECKSUM_ ERROR	CAN message checksum error	"Record DTC;Record DTC"	The checksum of CAN messages is normal

13	U250282	BMS _ ROLLING _ COUNTER_ERROR	The rolling counter is discontinuous	"Record DTC;Record DTC"	The rolling counter is continuous
14	U240681	ABS_CHECKSUM_ ERROR	CAN message checksum error	"Record DTC;Record DTC"	The checksum of CAN messages is normal
15	U250682	ABS _ ROLLING _ COUNTER_ERROR	The rolling counter is discontinuous	"Record DTC;Record DTC"	The rolling counter is continuous
16	U240781	EPS_CHECKSUM_ ERROR	CAN message checksum error	"Record DTC;Record DTC"	The checksum of CAN messages is normal
17	U250782	EPS _ ROLLING _ COUNTER_ERROR	The rolling counter is discontinuous	"Record DTC; Record DTC "	The rolling counter is continuous
18	U240881	TBOX_CHECKSUM_ ERROR	CAN message checksum error	"Record DTC; Record DTC "	The checksum of CAN messages is normal
19	U250882	T BOX_ ROLLING_ COUNTER_ERROR	The rolling counter is discontinuous	"Record DTC; Record DTC"	The rolling counter is continuous
20	U240981	BCM_CHECKSUM_ ERROR	CAN message checksum error	"Record DTC; Record DTC"	The checksum of CAN messages is normal
21	U250982	BC M_ ROLLING _ COUNTER_ERROR	The rolling counter is discontinuous	"Record DTC; Record DTC"	The rolling counter is continuous
22	U014000	BCM_MSG_LOST	No report from the BCM node has been received	"Record DTC; Record DTC"	Detects the message of the network node and lasts 1 second.
23	U013100	EPS_MSG_LOST	No message from the EPS node was received	"Record DTC; Record DTC"	Detects the message of the network node and lasts 2 second.
24	U012200	VCU_MSG_LOST	No report from the VCU node has been received	"Record DTC; Record DTC"	Detects the message of the network node and lasts 3 second.
25	U015600	TBOX_MSG_LOST	No message was received from the TBOX node	"Record DTC; Record DTC"	Detects the message of the network node and lasts 4 second.
26	U012100	ABS_MSG_LOST	No message from the ABS node was received	"Record DTC; Record DTC"	Detects the message of the network node and lasts 5 second.

5.5.6 Guidance on Fault Diagnosis

Serial number	DTC display code	DTC Meaning	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
1	B111716	Power supply voltage below threshold	Battery voltage too low	Check power supply	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
2	B111717	Power supply voltage above threshold	" Battery voltage too low The voltage of the battery is too high. "	Check power supply	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
3	U007300	CAN Bus-off	"1. Network interference; 2. CAN line failure； "	"1. Check the bus wiring harness. 2. Check the controller "	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
4	B138004	EEPROM data Error	"1. The inner part of the module stores anomalies 2. Abnormal IIC communication. "	If the ECU cannot be restored after reset, replace it with a new EEPROM	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
5	B138193	EEPROM IIC communication error	"1. Abnormal IIC communication. 2. Module damage."	If the ECU cannot be restored after reset, replace it with a new EEPROM	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
6	B138293	RTCIIC communi cation error	"1. Abnormal IIC communication. 2. Module damage."	If the ECU cannot be restored after reset, replace it with a new RTC	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
7	B138393	Radio IIC communi cation error	"1. Abnormal IIC communication. 2. Module damage."	If the ECU cannot be restored after reset, replace it with a new radio chip	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
8	B138404	SOC heart beat lost	"1. The SOC is working abnormally; 2. Abnormal communication with SOC;"	If the ECU cannot be restored after reset, replace it with a new SOC	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."

9	B138888	Reverse abnormal image	1. The camera is not connected or the camera module is damaged	Check the camera device	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
10	U240081	VCU_CHECKSUM_ ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
11	U250082	VCU_ROLLING_COUNTER_ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
12	U240281	BMS_CHECKSUM_ ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
13	U250282	BMS_ROLLING_COUNTER_ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
14	U240681	ABS_CHECKSUM_ ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
15	U250682	ABS_ROLLING_COUNTER_ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
16	U240781	EPS_CHECKSUM_ ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
17	U250782	EPS_ROLLING_COUNTER_ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."

18	U240881	TBOX _ CHECKSUM _ ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
19	U250882	TBOX_ ROLLING_ COUNTER_ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or 2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
20	U240981	BCM_CHECKSUM_ ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
21	U250982	BC M_ ROLLING_ COUNTER_ERROR	This node is not working properly	Check whether the node is working properly. If not, please replace it	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
22	U014000	BCM_MSG_LOST	No message from the BCM node was received	Check the network connection	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
23	U013100	EPS_MSG_LOST	No message from the EPS node was received	Check the network connection	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
24	U012200	VCU_MSG_LOST	No message was received from the VCU node	Check the network connection	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
25	U015600	TBOX_MSG_LOST	No message from the TBOX node was received	Check the network connection	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC."
26	U012100	ABS_MSG_LOST	No message from the ABS node was received	Check the network connection	"1、After using the historical fault diagnosis service to clear historical DTC, clear historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC.;"

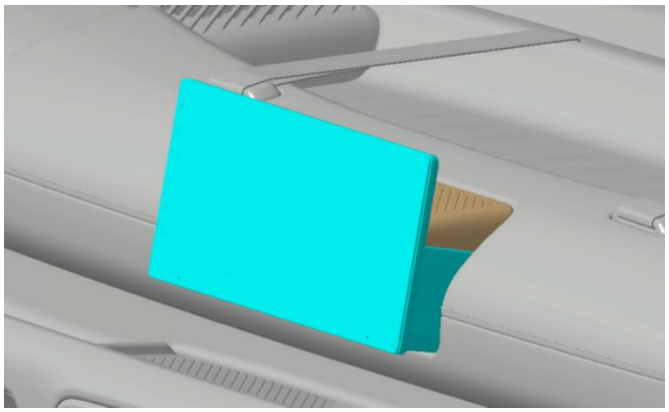
5.5.7 Disassembly and installation

1. Central screen all-in-one machine assembly

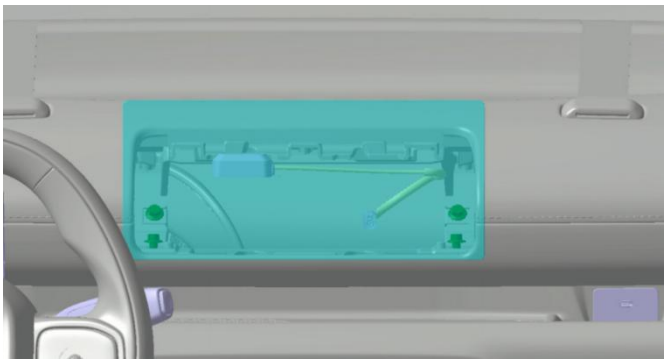
Disassembly and installation

Disassembly

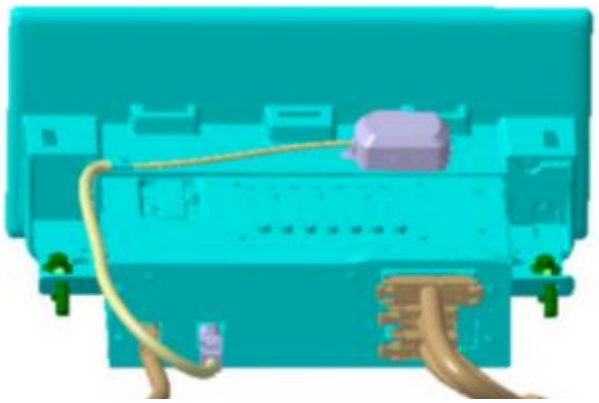
1. Use a prying board to remove the screw cover plate at the back of the central screen.



2. Remove the four fixing bolts of the central screen all-in-one machine.



3. Disconnect the wiring harness connector of the central screen all-in-one machine assembly and remove the central screen all-in-one machine assembly



Installation

Install in the reverse order of disassembly

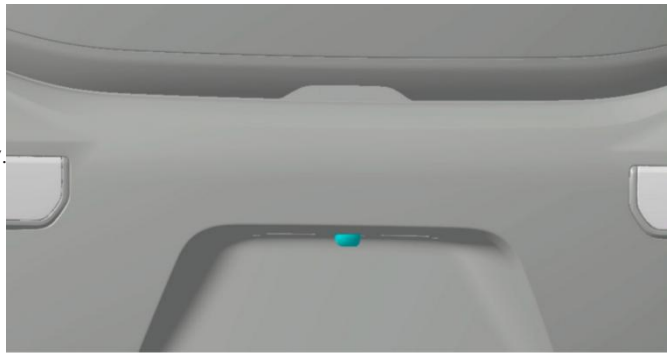
Torque：Fixing bolts for the central screen all-in-one machine assembly(18±2Nm)

2. Reversing camera

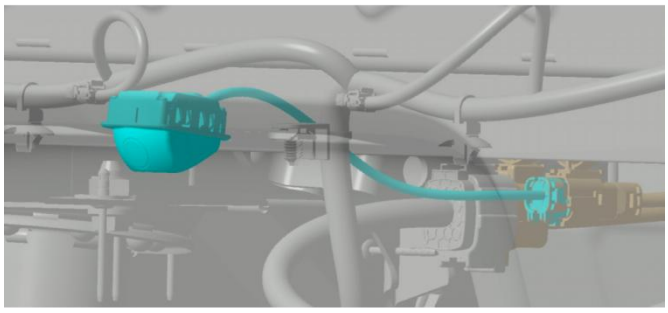
Disassembly and installation

Disassembly

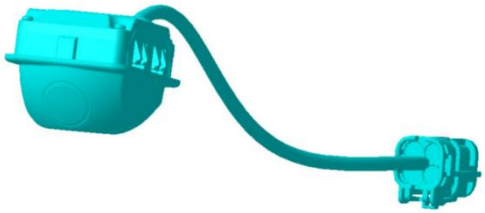
1. Disassemble the rear bumper assembly. For reference: Disassembly and installation of the rear bumper assembly.



2.Disconnect the wiring harness connector of the reversing camera



3.Loosen the clip of the reversing camera with a prying board and remove the reversing camera.



Installation

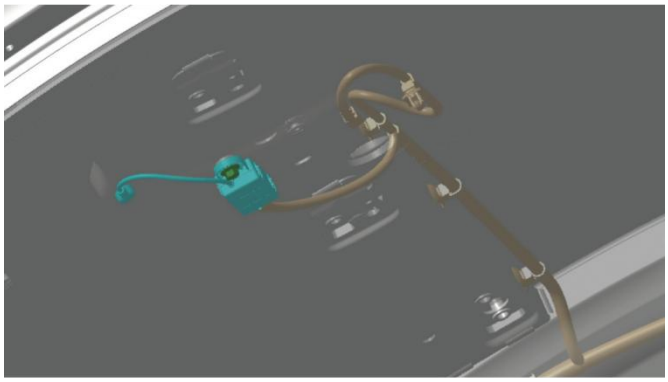
Install in the reverse order of disassembly

3 Antenna amplifier

Disassembly and installation

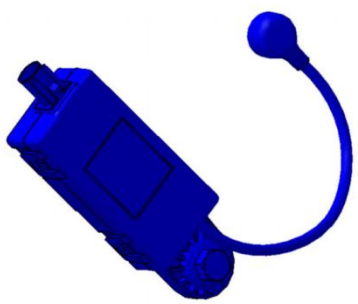
Disassembly

1. Remove the interior ceiling assembly .See：Disassembly and installation of the interior ceiling assembly



2. Remove one fixing screw of the antenna amplifier

3. Disconnect the antenna amplifier wiring harness connector and remove the antenna amplifier.

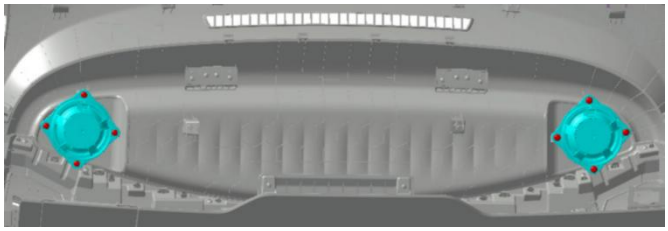


Installation

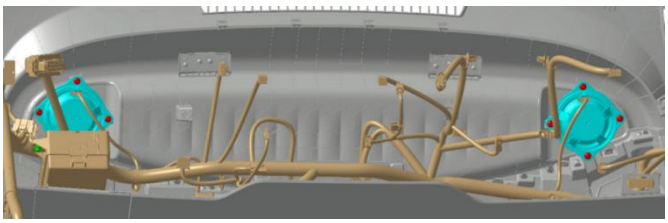
Install in the reverse order of disassembly

Torque：Antenna amplifier fixing bolts (18±2Nm)

4. Speaker
disassembly and installation
Disassembly
1. Remove the sub-assembly of the dashboard body.See：Disassembly and installation of the instrument panel body sub-assemblies



2. Remove the four fixing screws of the speaker

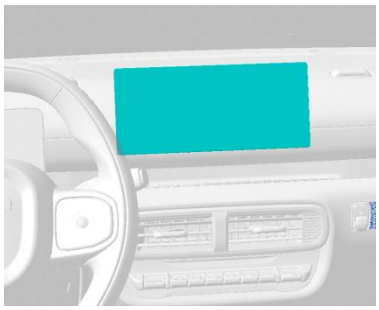


3.Disconnect the speaker wiring harness connector and remove the speaker.

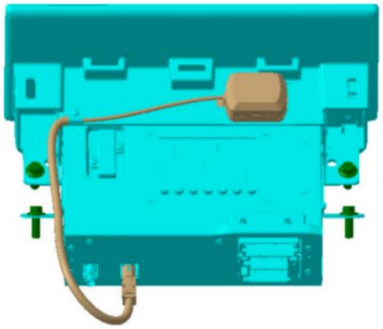
Installation
Install in the reverse order of disassembly
Torque：Speaker fixing bolts (18±2Nm)

4.Satellite positioning antenna
Disassembly and installation
Disassembly

1. Remove the central screen all-in-one machine. See: Disassembly and Installation of Central Screen All-in-one Machine



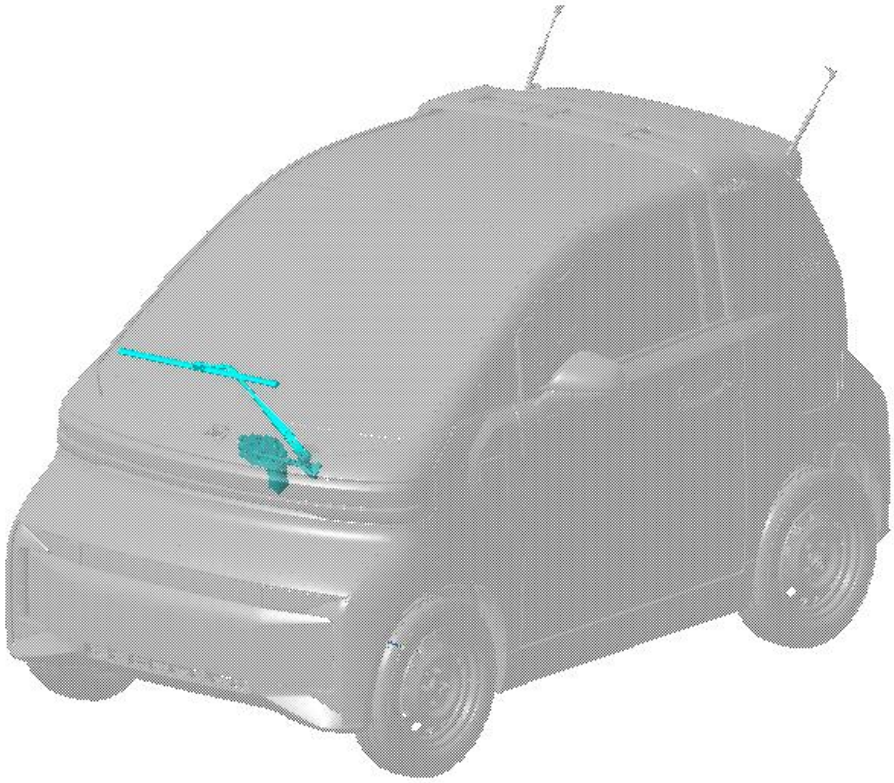
2. Remove the fixing screws of the satellite positioning antenna

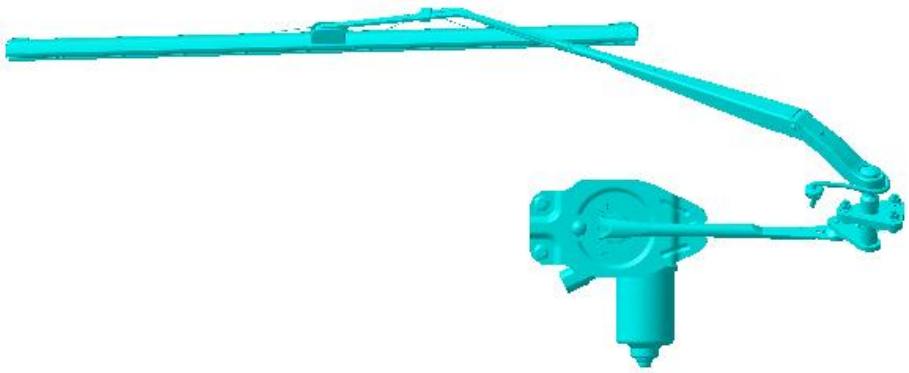


3.Disconnect the wiring harness connector of the satellite positioning antenna and remove the satellite positioning antenna.

Installation
Install in the reverse order of disassembly
Torque：Satellite positioning antenna fixing bolts(18±2Nm)

5.5.8 Component diagram of the wiper device





Maintenance Precautions

1. Warning about the front hood assembly

Warning:

- • When performing operations on the components related to the wiper device, it may also be necessary to remove the front hood.

2. Important precautions regarding the disassembly and assembly of wiper arms

Note:

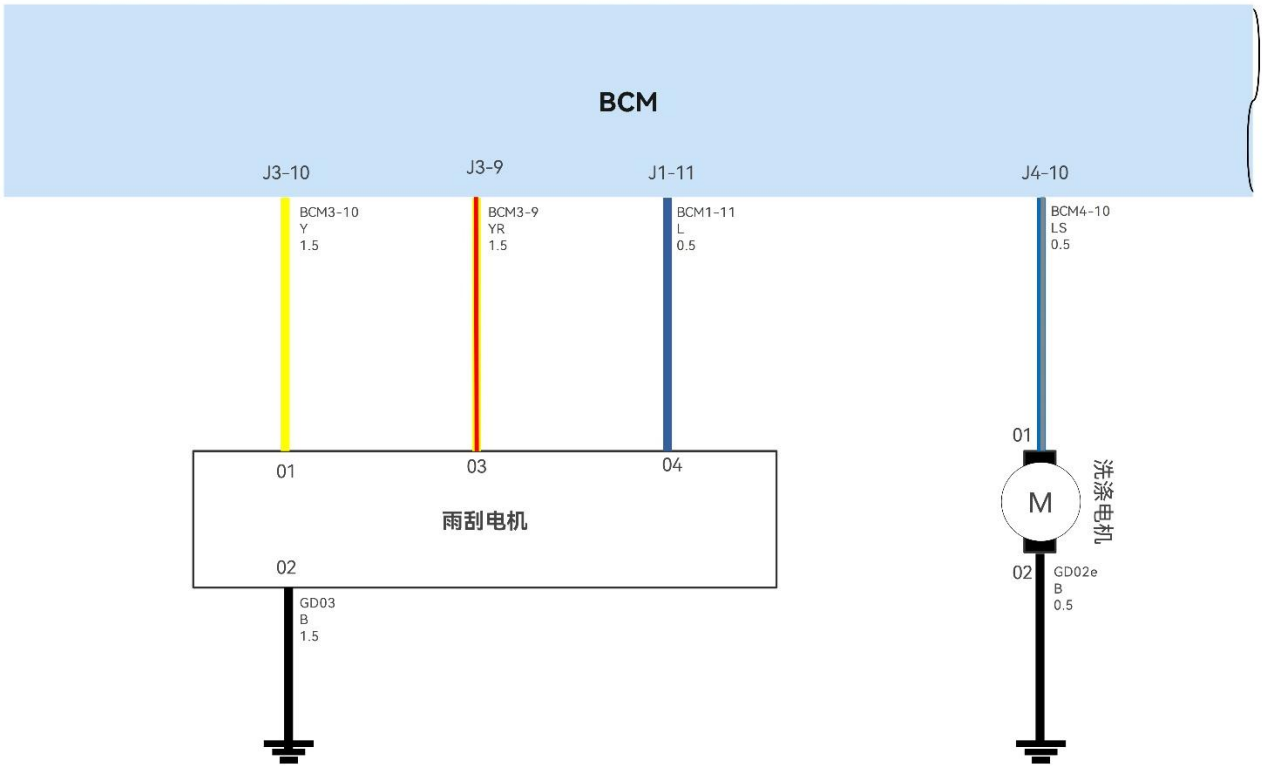
- • When disassembling and assembling the wiper arm, handle it with care to avoid damaging the front windshield glass due to its own elastic return.

3. Important precautions for the use of the wiper system

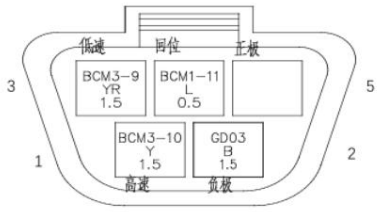
Note:

- • In case of unexpected blockage during the use of the wiper, the power supply should be cut off in time to prevent the wiper motor from burning out.
- • During use, the wiper blades should be kept closely attached to the car window glass without any gap; otherwise, they will fail to perform their cleaning function.
- • Dry scraping is strictly prohibited during use to prevent damage to the wiper blades. If the wiper switch is accidentally touched, it should be turned off immediately. Pay attention to cleaning and maintaining the windshield glass and wiper blades to prevent dust accumulation.
- • Pay attention to cleaning and maintaining the windscreen glass and wiper blades to prevent dust accumulation.
- • The washing motor should not operate for a long time. Each operation time should not exceed 5 seconds, and the interval time between each use should not be less than 10 seconds. Please do not use the washing function when there is no washing liquid.
- • The spray pipe must be fastened tightly. It is strictly forbidden to unplug the spray pipe at will. When washing the car, be careful not to spray the interface of the spray pipe for a long time to avoid corrosion and aging.
- • For low-temperature areas, it is essential to add washing liquid that meets the local temperature requirements.
- • Do not use antifreeze or other substitutes to avoid damaging the car window glass and body paint.
- • The washing solution is a consumable liquid. Please check it regularly (every two weeks or once a month). If it is insufficient, please add more washing solution.

The working principle of the system

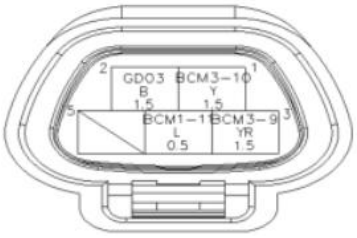


Information on electrical connectors
Wiper motor L7



Pin number	Pin definition	Line color	Wire diameter（mm）
1	High-speed	B	1.5
2	to	Y	1.5
3	Low speed	YR	1.5
4	Return to position	L	0.5

Wiper motor L6



Pin number	Pin definition	Line color	Wire diameter（mm）
1	High-speed	B	1.5
2	to	Y	1.5
3	Low speed	YR	1.5
4	Return to position	L	0.5

Guidance on Fault Diagnosis
Inspection and adjustment

Wiper arm end pressure check

1. Move the wiper arm and wiper blade to the middle position.

2. Remove the wiper blades from the wiper arm.

3. Connect the spring scale to one end of the wiper arm, perpendicular to the windshield. Pull the wiper arm up to the normal working height (the height when the wiper blade is connected) and measure the pressure.

4. If the measured value does not meet the regulations, the wiper arm should be replaced.

5.Install the wiper blades on the wiper arm.

Scraper adjustment inspection

1. Remove the wiper blades from the wiper arm.

2. Check the length of the rubber strip of the wiper blade.

3. If the rubber part in contact with the glass is not within ±15 degrees of the wiper blade centerline, replace the wiper blade rubber strip.

4. Install the wiper blades on the wiper arm.

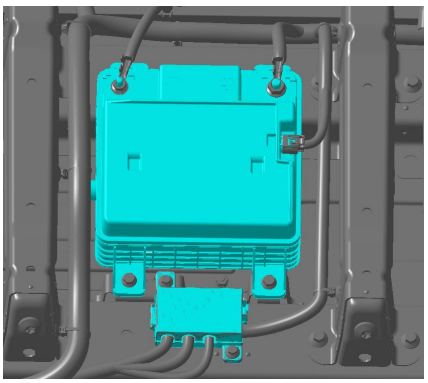
Common Faults

Common Faults	Possible causes of malfunction	Processing method
Stop working	The movement part is stuck	Eliminate the stuck fault
	The power supply is not working and the connector wire ends have come off	Connect the power supply
	The motor is burned out.	Replace the new motor
	Combined switch fault	Replace the combination switch
Abnormal noise, abnormal operation	There is an abnormal noise inside the motor	Replace the motor
	There is a rubbing phenomenon during the movement of the linkage mechanism.	Eliminate the rubbing fault
	There is an abnormal noise between the scraper and the glass	Clean the glass thoroughly
During the scraping process, there is a shaking phenomenon of the scraper blade	The surface of the windshield is not clean	Clean the windshield and add detergent to the washing kettle to reduce friction when spraying water and scrubbing
	The wiper arm is deformed and the Angle at which the wiper blade adheres to the glass is abnormal	Adjust the wiper arm to keep the wiper blade in vertical contact with the glass
After returning to the original position, the scraper is not level	The wiper arm was not installed properly	After the motor is returned to its original position, remove the scraper arm and reinstall it to keep the scraper blades level
It can't be scraped clean.	The glass is not clean.	Clean the glass thoroughly
	The scraper is severely worn	Replace the scraper (It is recommended to replace the scraper every three months

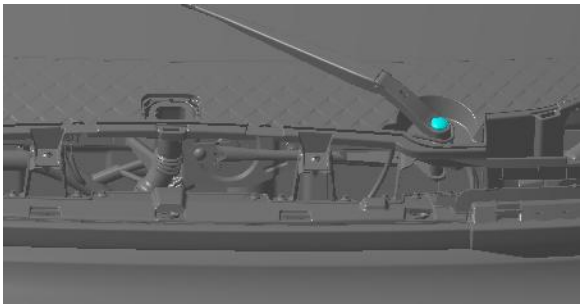
Disassembly and installation

1. Disassembly and installation of the wiper arm

1.1. Turn off the ignition switch, disconnect the negative terminal of the battery, and wait for 5 minutes

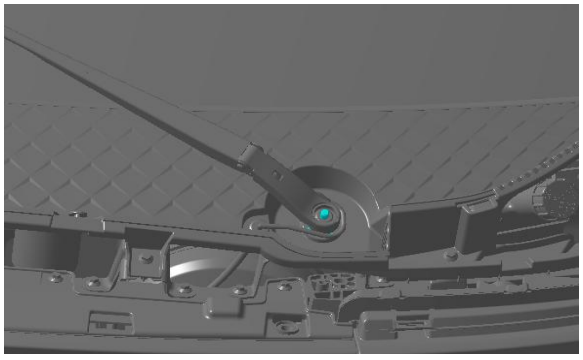


1.2. Use a flat-head screwdriver to pry open the cap of the wiper arm fixing bolt.



1.3. Remove the fixing bolts of the rain wiper arm.

Torque of the wiper arm fixing nut：16.5±2N ·m



1.4. While shaking, pull out the wiper arm and remove the wiper arm and wiper blades from the wiper drive shaft.

1.5. Separate the wiper arm from the wiper blade.

"Refer to the disassembly and assembly of wiper blades"

Installation

Install in the reverse order of disassembly.

Note:
When installing, the wiper arm needs to be assembled at the correct position and Angle

The method for determining the correct position and Angle of the wiper arm:

1. Set the power status to the ON position.

2. Set the wiper switch to the low-speed position. After the wiper motor starts running, turn off the low-speed position of the wiper switch.

3. When the wiper drive system is stopped, set the power supply to the OFF position.

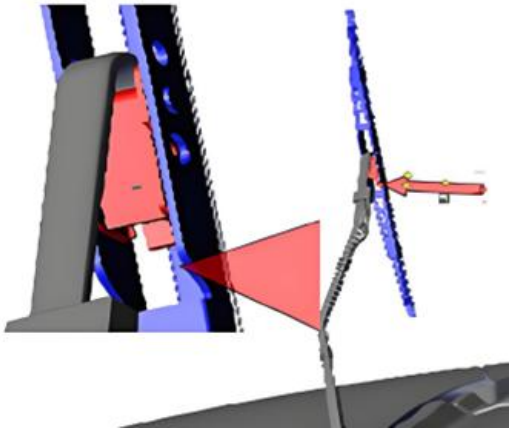
4.Install the wiper arm on the wiper arm drive shaft.

5. Install the wiper arm fixing nut onto the wiper arm drive shaft and tighten it.
Torque of the wiper arm fixing nut: 16.5±2N ·m

6. Operate the windshield wipers and check if they are working properly.

2. Disassembly and installation of wiper blades

2.1. Lift the wiper support arm, press the lock between the wiper blade and the support arm, and the wiper blade will move downward to separate from the support arm.



2.2. Remove the wiper blades.

Note:

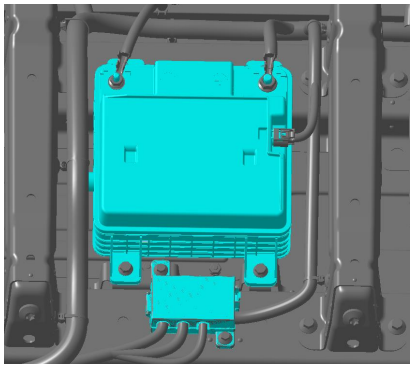
When removing the wiper blades, Pay attention to protection to prevent the wiper arm from damaging the front windshield

Installation

Install in the reverse order of disassembly.

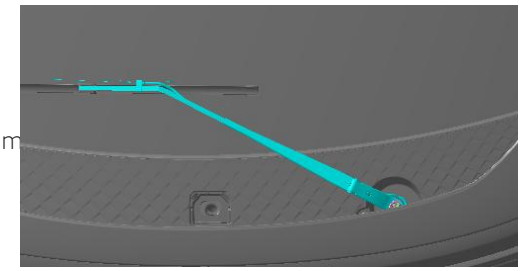
3. The base is equipped with connecting rods for disassembly and installation

3.1. Set the power supply to the OFF position and disconnect the negative terminal of the battery.



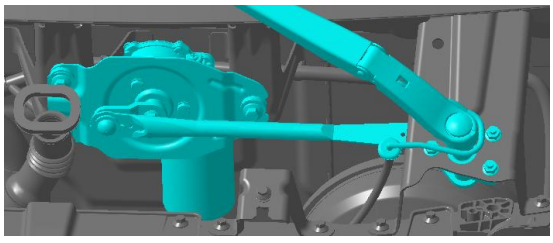
3.2. Remove the front wiper arm.

"Refer to the disassembly and assembly of the front wiper arm

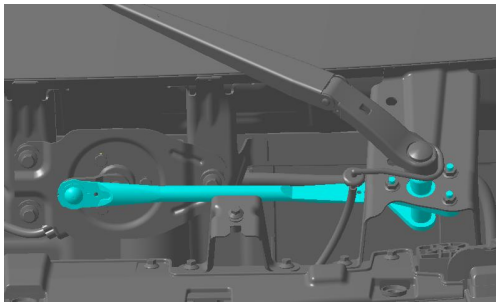


3.3. Remove the front hood. Refer to the disassembly and assembly of the front hood assembly"

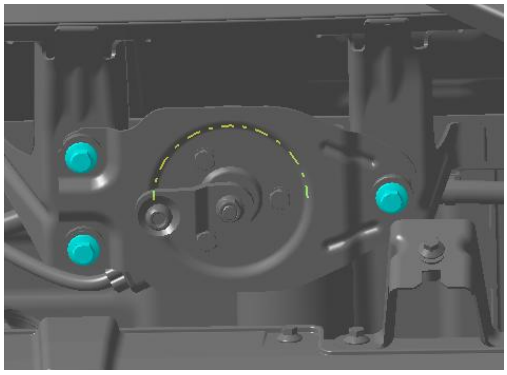
3.4. Disconnect the wiper motor connector.



3.5. Remove the fixing bolts of the front wiper connecting rod transmission mechanism. Torque：7±1N·M

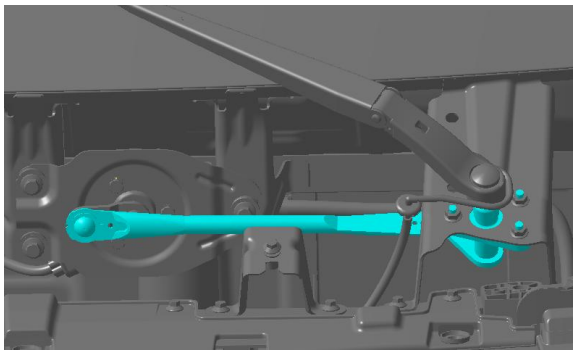


3.6. Remove the fixing bolts of the wiper motor. Torque：7±1N·M

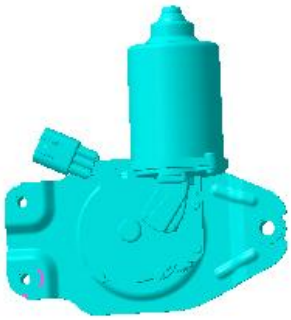


3.7. Remove the front wiper connecting rod transmission mechanism/wiper motor assembly.

3.8. Remove the connecting and fixing nut between the drive shaft of the wiper motor and the connecting rod mechanism.



3.9.Remove the wiper motor from the wiper transmission mechanism.

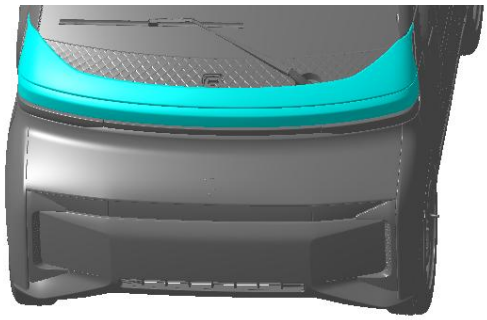


Installation

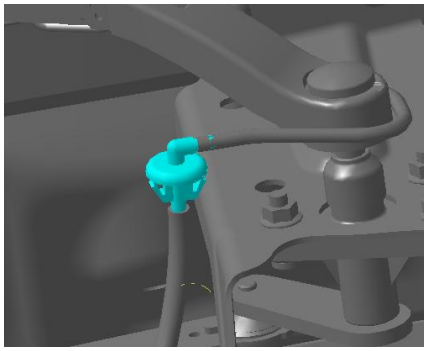
Install in the reverse order of disassembly.

4. Disassembly and installation of two-way pipelines

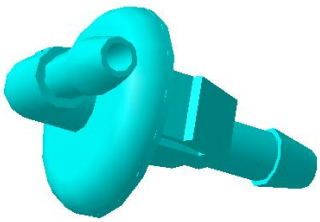
4.1. Remove the front hood，Reference: Disassembly and installation of the front hood.



4.2.Disassemble the wiper water spray hose joint.



4.3. Disassemble the two pipelines

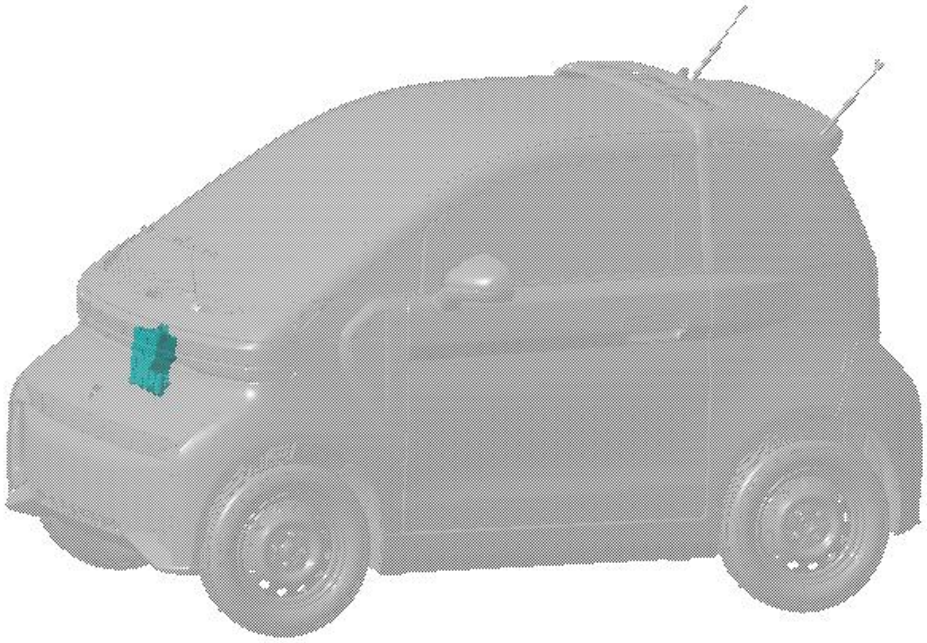


Installation

Install in the reverse order of disassembly.

5.6 Air window washing device

5.6.1 Component drawing



5.6.2 Maintenance precautions for air window washing devices

1. Warning about the front hood assembly

Warning：

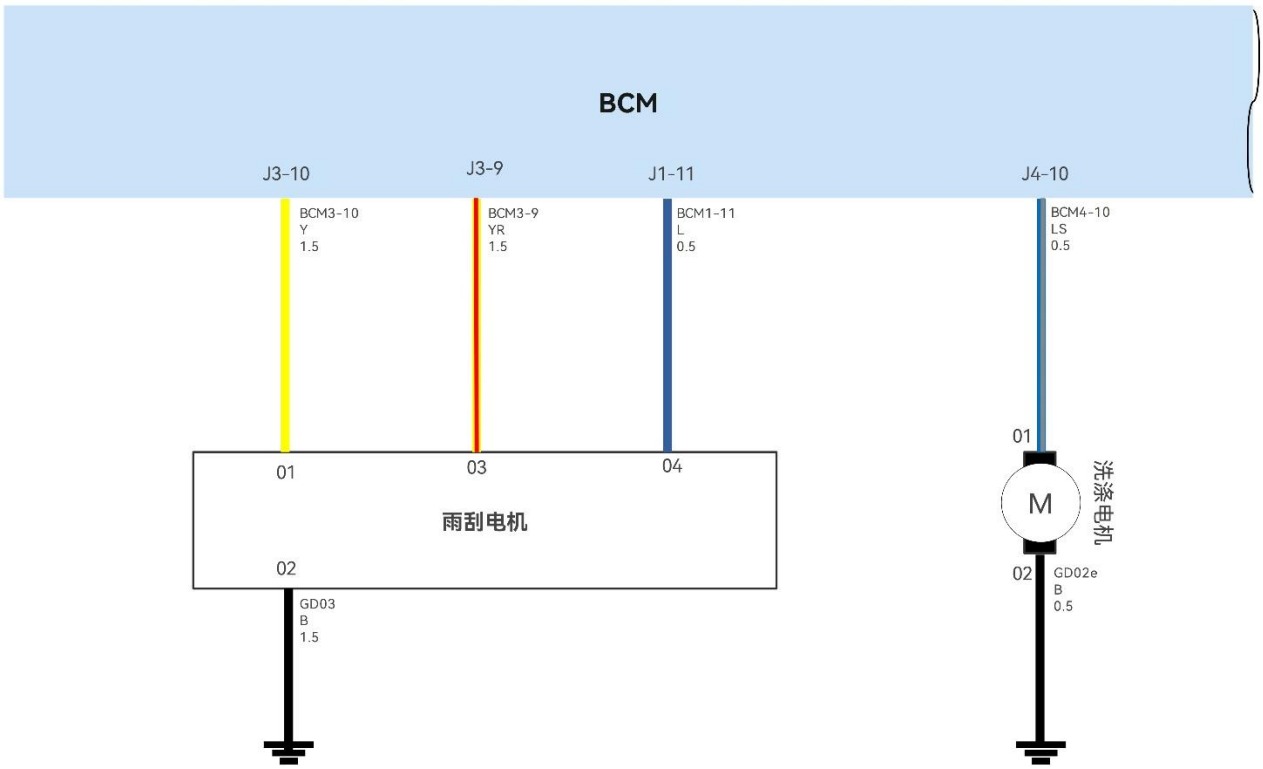
The front hood assembly should be firmly supported to prevent component damage or even personal injury caused by detachment during operation.

2. Important precautions regarding the air window washing device

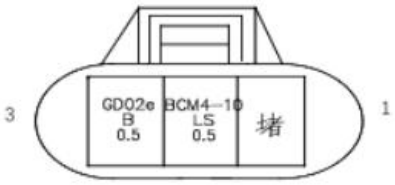
Note：

- • Pay attention to cleaning and maintaining the windscreen glass and wiper blades to prevent dust accumulation.
- • The washing motor should not operate for a long time. Each operation time should not exceed 5 seconds, and the interval time between each use should not be less than 10 seconds. Please do not use the washing function when there is no washing liquid.
- • The spray pipe must be fastened tightly. It is strictly forbidden to unplug the spray pipe at will. When washing the car, be careful not to spray the interface of the spray pipe for a long time to avoid corrosion and aging.
- • For low-temperature areas, it is essential to add washing liquid that meets the local temperature requirements.
- • Do not use antifreeze or other substitutes to avoid damaging the car window glass and body paint.
- • The washing solution is a consumable liquid. Please check it regularly (every two weeks or once a month). If it is insufficient, please add more washing solution.

5.6.3 The working principle of the system

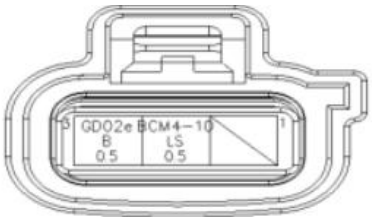


5.6.4 Information on electrical connectors
Water spray motorL7



Pin number	Pin definition	Line color	Wire diameter（mm）
1	-	-	-
2	Power supply	LS	0.5
3	to	B	0.5

Water spray motor L6

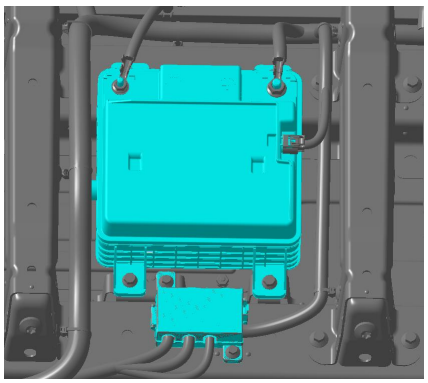


Pin number	Pin definition	Line color	Wire diameter（mm）
1	-	-	-
2	Power supply	LS	0.5
3	to	B	0.5

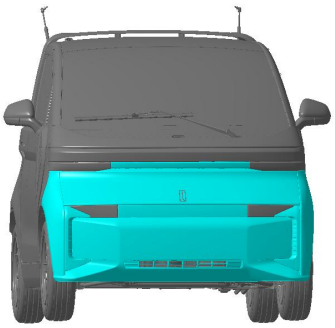
5.6.5 Disassembly and installation

1. Disassembly and installation of the washing kettle

1.1. Set the power supply to the OFF position and disconnect the negative terminal of the battery.

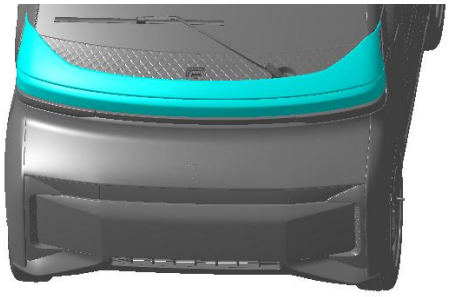


1.2. Remove the front bumper assembly. Reference: Disassembly and installation of the front bumper



1.3 Remove the wiper deflector.

Reference: Disassembly and installation of wiper deflector plates



1.4. Disconnect the connector of the washing motor, remove the fixing screws of the washing kettle, and take off the washing kettle assembly.

1.5 Remove the washing motor from the washing pot.

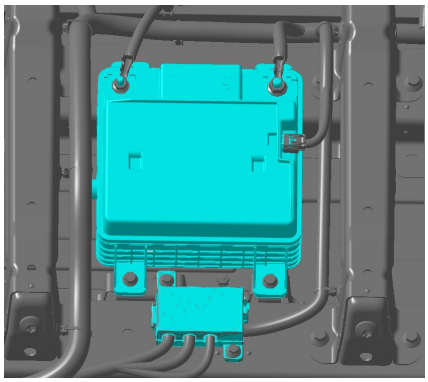
Torque of the hexagonal bolts for fixing the scrubber assembly：7±1N · m

Installation

Install in the reverse order of disassembly.

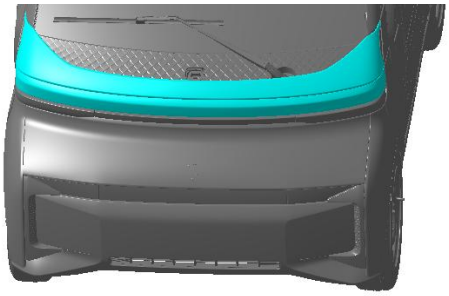
2. Disassembly and installation of the washing tube assembly

2.1 Set the power supply to the OFF position and disconnect the negative terminal of the battery.

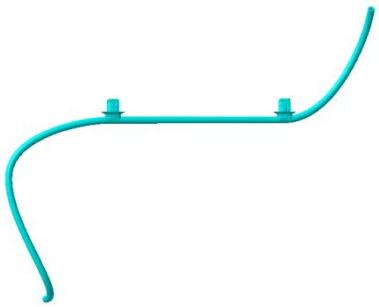


2.2. Remove the front bumper assembly.Reference: Disassembly and installation of the front bumper

2.3 Remove the wiper deflector.Reference: Disassembly and installation of wiper deflector plates



2.4. Pull out and remove the entire front washing pipe assembly

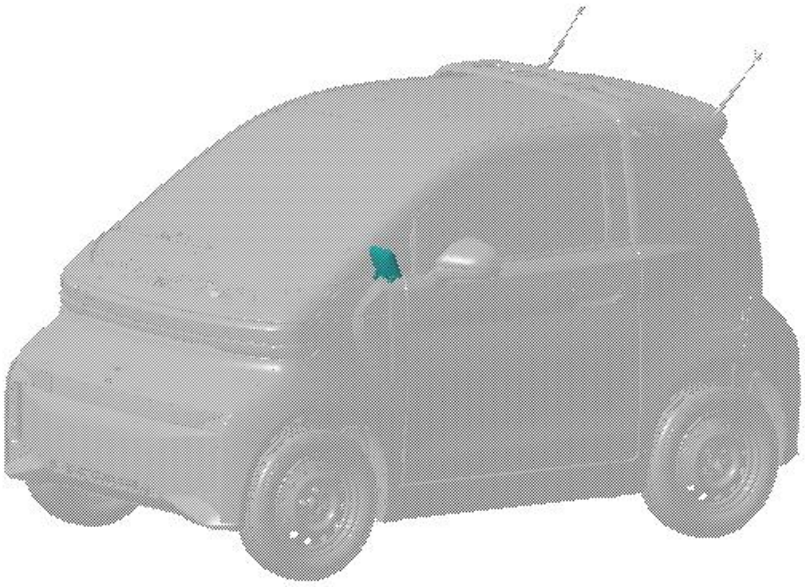


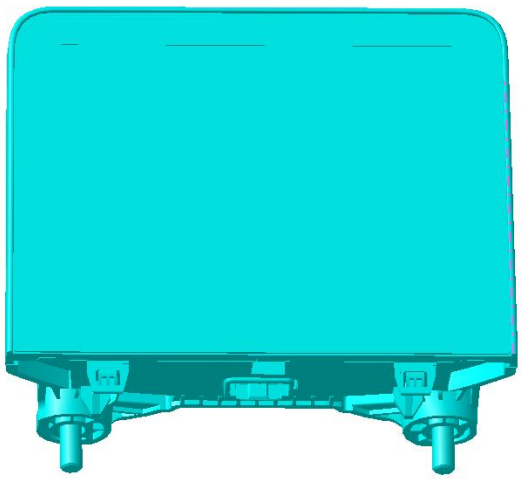
Installation

Install in the reverse order of disassembly

5.7 Combined instrument

5.7.1 Component diagram of the combined instrument





The combination instrument is located in the upper left corner of the instrument panel assembly，It is used to monitor and display the working status of various systems and components of the vehicle at any time. The instrument receives signals from various sensors and switches，The working status of each system is displayed through meters, multi-information display screens, indicator lights and warning lights, and the driver is reminded and warned through flashing lights and sound alarms. This is conducive to drivers promptly eliminating possible faults and effectively avoiding the occurrence of faults or accidents.

5.7.2 Precautions for the maintenance of combined instruments

Warnings and precautions

1. When it is necessary to enter the vehicle for work, the seats and other components should be covered to prevent them from getting stained with oil.

2. When removing interior parts, an interior prying board should be used. If an interior prying board is not available, a screwdriver or an equivalent can be used as a substitute, but it should be wrapped.

3. Do not use sharp tools to remove interior parts.

4. Since most interior parts are fixed by clips, when removing the interior and exterior parts, it is necessary to ensure that all clips have been pried out first, and then remove the interior parts.

5. Do not forcibly disassemble the interior parts to avoid causing damage to them.

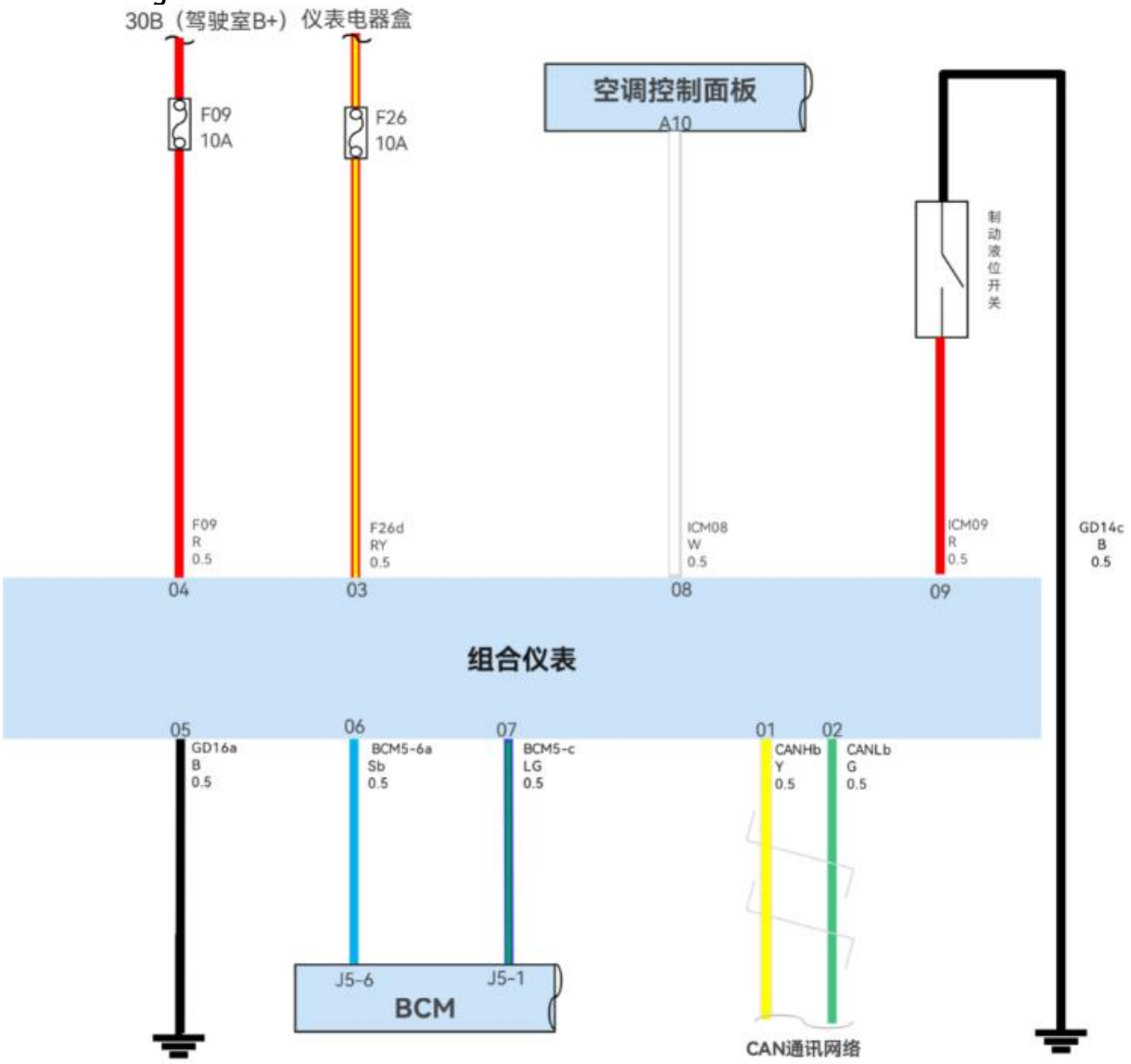
6.When installing components, check whether the fixing clips of the components are missing. If they are missing, add fixing clips.

7. Inspect and replace all damaged clips.

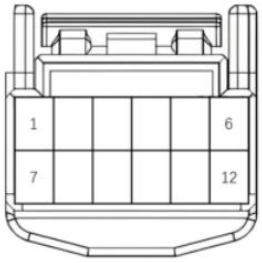
8. The placement position of the decorative parts should be clean and flat to avoid friction on the surface of the decorative parts.

5.7.3 System working principle

5.7.3.1 Circuit diagram

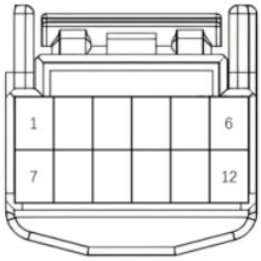


5.7.4 Information on electrical connectors
High-end IP meters (L6L7)



Pin number	Pin definition	Line color	Wire diameter (mm)
1	CAN-H	Y	0.5
2	CAN-L	G	0.5
3	IG key wake-up	RY	0.5
4	BAT power supply	R	0.5
5	Power supply ground	B	0.5
6	Turn left	SB	0.5
7	Turn right	LG	0.5
8	-	-	-
9	Brake level switch (low level)	R	0.5
10-12	-	-	-

The IP instrument (L6L7) is of low configuration



Pin number	Pin definition	Line color	Wire diameter (mm)
1	CAN-H	Y	0.5
2	CAN-L	G	0.5
3	IG key wake-up	RY	0.5
4	BAT power supply	R	0.5
5	Power supply ground	B	0.5
6	Turn left	SB	0.5
7	Turn right	LG	0.5
8	Minor mileage reset (low level)	W	0.5
9	Brake level switch (low level)	R	0.5
10-12	-	-	-

5.7.5 DTC fault code

Serial number	DTC display code	The meaning of DTC	Mature conditions for faults	System performance	Conditions for fault resolution
1	U007300	Bus Off	When the ICM CAN controller enters the Bus Off state continuously for more than three times (that is, the CAN error counter of the CAN controller reaches 255 for three consecutive times), the ICM sets the current DTC	Record DTC;	When the ICM CAN controller exits the Bus Off state and resumes normal communication for 3000ms, the ICM automatically clears the current DTC
2	U011000	Lost communication with the MCU	ID:0x138. When the message loses communication for more than 500ms, set the current DTC	Record DTC;	"ID:0x138 When reporting a message to restore communication, the corresponding DTC fault is immediately resolved and the corresponding DTC is stored.
3	U014000	Lost communication with BCM	ID:0x565. When the message loses communication for more than 2000ms, set the current DTC	Record DTC;	"When ID:0x565 reports a message to restore communication, the corresponding DTC fault is immediately resolved and the corresponding DTC is stored"
4	U012100	Lost communication with ABS	ID:0x200. When the message loses communication for more than 500ms, set the current DTC	Record DTC;	"When the ID:0x200 message is sent to restore communication, the corresponding DTC fault is immediately resolved and the corresponding DTC is stored"
5	U013100	Lost communication with EPS	When the ID:0x3DC message loses communication for more than 1000ms, set the current DTC	Record DTC;	"When the ID: 0x.3DC message restores communication, the corresponding DTC fault is immediately resolved and the corresponding DTC is stored"
6	U012200	Lost communication with the VCU	ID:0x391/0x392/0x393 When the message loses communication for more than 1000ms, set the current DTC	Record DTC;	
7	U019600	Lost communication with IHU	When the ID:0x3D2 message loses communication for more than 1000ms, set the current DTC	Record DTC;	"When ID:0x.3D2 reports a message to restore communication, the corresponding DTC fault is immediately resolved and the corresponding DTC is stored"
8	B111717	The battery voltage is too high	Voltage >18V, t > 500ms	Record DTC;	8V < Voltage < 17.5V, t > 500ms
9	B111716	The battery voltage is too low	Voltage <8V, t > 500ms	Record DTC;	9.5V < Voltage < 18V, t > 500ms

10	B120000	The key is stuck.	"PIN8 held for 60 seconds before receiving the low-level signal of the key"	Record DTC;	" Under the premise of the existing fault code, if a high-level signal or high-level trigger above 100ms is detected, the current fault code is transferred to the historical fault code"

5.7.6 Guidance on Fault Diagnosis of Combined Instruments

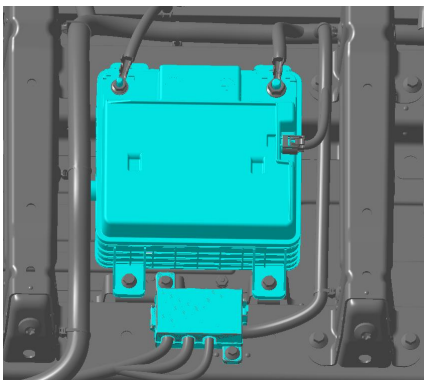
Serial number	DTC display code	The meaning of DTC	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
1	U007300	Bus Off	CAN hardware failure, including CAN-H and CAN-L	"1) Is CANH short-Circuited with CANL; 2) Is CANH short-Circuited to ground; 3) Is CANL short-Circuited to the power supply; "	"1、After the historical fault diagnosis service is used to clear the historical DTC, ICM clears the historical DTC; or2、After 40 cycles of power-on and power-off of ICM KL15, ICM automatically clears the historical DTC."
2	U011000	Lost communication with the MCU	Network Faults	Check CAN network	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When the MCU KL15 has been powered on and off for 40 cycles without any faults, the MCU automatically clears the historical DTC."
3	U014000	Lost communication with BCM	Network Faults	Check CAN network	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When BCM KL15 has no faults after 40 cycles of power-on and power-off, BCM automatically clears the historical DTC;"
4	U012100	Lost communication with ABS	Network Faults	Check CAN network	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When the ESP/ABS KL15 has been powered on and off for 40 cycles without any faults, the ESP/ABS automatically clears the historical DTC;"
5	U013100	Lost communication with EPS	Network Faults	Check CAN network	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When EPS KL15 has been powered on and off for 40 cycles without any faults, EPS will automatically clear the historical DTC;"
6	U012200	Lost communication with the VCU	Network Faults	Check CAN network	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When the VCU KL15 has been powered on and off for 40 cycles without any faults, the VCU automatically clears the historical DTC."

7	U019600	Lost communication with IHU	Network Faults	Check CAN network	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When IHU KL15 has been powered on and off for 40 cycles without any faults, IHU automatically clears the historical DTC;"
8	B111717	The battery voltage is too high	Battery voltage too high	Check power supply	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When GW KL15 has been powered on and off for 40 cycles without any faults, GW automatically clears the historical DTC;"
9	B111716	The battery voltage is too low	Battery voltage too low	Check power supply	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC; or2、When GW KL15 has no faults after 40 cycles of power-on and power-on, GW automatically clears the historical DTC.
10	B120000	The key is stuck.	The button on/off switch is stuck	Check and repair the key Circuit	"1、After using the historical fault diagnosis service to clear the historical DTC, clear the historical DTC. or2、When GW KL15 has been powered on and off for 40 cycles without any faults, the historical DTC will be automatically cleared;"

5.7.7 Combined instrument Disassembly and installation

Instrument disassembly and assembly

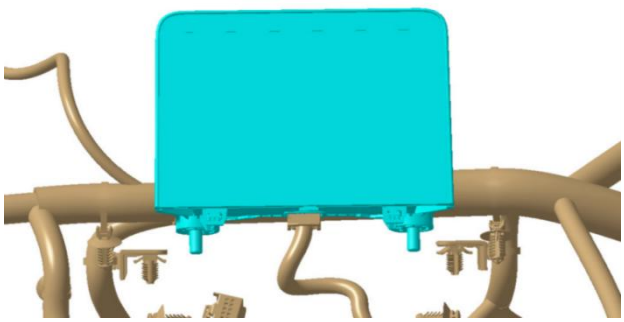
1. Set the power supply to the OFF position and disconnect the negative terminal of the battery.



2. Remove the cover plate of the combined instrument.

3. Remove the two bolts of the combined instrument.

4. Unplug the connection wiring harness of the combined instrument
5. Remove the combined instrument assembly



Installation

Install in the reverse order of disassembly

Torque: 3±1N.m

5.8 Vehicle body control system

5.8.1 Component diagram of the body control system

Serial number	Name	Serial number	Name
1	Body controller	2	PE antenna for door handle

5.8.2 Introduction to the functions of the body control system

Serial number	Function	Explanation
1	The vehicle locks automatically	" Note: When the vehicle speed exceeds 15 kilometers per hour, all car doors and the rear door will automatically lock. Before driving: make sure all the doors and the rear door are completely closed."
2	Central control lock	" Note: When all the doors are closed and the vehicle is not in the anti-theft state, pressing the central control button can lock or unlock all the doors. Note: When the button indicator light is on, it indicates that the car door is locked. Note: When the button indicator light goes out, it indicates that the car door has been unlocked."
3	The headlights were delayed in turning off to accompany me home	" When the headlight switch is on, the vehicle enters the anti-theft state, which will trigger the "Accompany Me Home" function. The headlights will remain on for a certain period of time before going out. The duration can be set on the large screen Note: ①If the car door is not fully closed or the power is not turned off, the vehicle will not be able to enter the anti-theft state and the "Accompany Me Home" function will not be triggered."
4	Door control light energy-saving mode	"1、When powered on, the interior lights light up when the car door is opened and go out when it is turned off. When the power is off, the interior lights light up when the car door is opened and turn off after a delay of 10 seconds when the door is closed. This function can be turned off through the large screen; 2、When the entire vehicle is in operation, touch the indoor light to turn it on and touch it again to turn it off. 3. After the entire vehicle goes into sleep mode, the power supply of the indoor lights is turned off and it enters energy-saving mode. At this time, it is impossible to touch and light up the indoor lights."
5	Remote control key	"Lock button: Pressing the lock button will cause the hazard warning light to flash once and the horn to sound once, thereby locking the vehicle. Note: When locking the vehicle, if the hazard warning lights do not flash (or the horn does not sound), please check whether all the doors, rear doors and hood are completely closed."
		Vehicle-finding button: Press the lock button twice within 1 second to trigger the vehicle-finding function. The hazard warning light will flash three times, and then the hazard warning light and the horn will flash and sound simultaneously three times. During the vehicle-finding period, pressing the key unlock button or the lock button can stop the vehicle-finding
		Unlock button: Press the unlock button, and the hazard warning light will flash twice to unlock the vehicle.
		Unlock the tailgate button: Press the rear door control button on the key to unlock the rear door. Press the rear door microswitch within 30 seconds after unlocking to open the rear door.
		Button battery usage specification: CR2032
		" Note: ①It is strictly prohibited to change the transmission frequency, increase the transmission power (including installing additional RF power amplifiers), connect external antenna cables or switch to other transmission antennas without authorization. ② When in use, it must not cause harmful interference to any legal radio communication services. Once interference is detected, use should be stopped immediately and measures taken to eliminate the interference before it can be used again. ③ During use, it may be interfered with by various radio devices, resulting in temporary failure of its function."
		" Note: The smart key contains electronic components. Please follow the instructions below to prevent damage to the smart key: ①Do not place the key in a high-temperature area, such as on the dashboard. ② Do not disassemble it at will. ③ Do not use the key to strike other objects or cause them to fall. ④ Do not immerse the key in water or clean it in an ultrasonic scrubber. ⑤ Do not place the key together with devices that emit electromagnetic waves, such as mobile phones."
6	Key power failure reminder	Vehicles equipped with large screens will pop up a reminder when the key battery is low. At this time, please replace the key battery in time

7	Keyless entry	" Carry the smart key and press the microswitch on the left door handle to unlock or lock the vehicle; Locking operation: The power position of the entire vehicle is in the "OFF" position. The doors are closed but not locked. Enter the activation area with a valid smart key, press the microswitch on the left door handle, and all doors will lock simultaneously. At this moment, the left and right turn signals flashed once and the horn blared once.Note: If the turn signals do not flash or the horn does not sound when the door is locked, please make sure that all the doors are fully closed.Unlock operation The power position of the entire vehicle is in the "OFF" position. The left door is locked. Enter the activation area with a valid smart key, press the microswitch on the left door handle, and all the doors will unlock simultaneously. At this moment, the left and right turn signals flashed twice.Note: When unlocking the vehicle in the anti-theft state, if no operation is performed on the vehicle within 30 seconds, the vehicle will lock again and enter the anti-theft state.In the following situations, pressing the microswitch will prevent it from unlocking or locking normally: ①When the power supply position of the entire vehicle is not in the "OFF" position. ②When the key is left in the car; ③The smart key is too close to the car door handle or the window; "
8	One-click start	" Carry the smart key, press the start switch, and the power mode will change in sequence: ① OFF: The electrical components are not working ② ACC: USB, 12V power supply for operation ③ON: All electrical components are working When the smart key is in the car, step on the brake pedal and press the power switch to start the vehicle. The situation where the vehicle cannot be started: ①The key battery is insufficiently lit; ②The key is placed in unidentifiable areas such as the suitcase or the floor; ③The key was not left in the car; ④The steering wheel lock failed to unlock normally. Please turn the steering wheel and start the test again. Hint Do not touch the start switch while driving."

5.8.3 The control principle of the body control system

Serial number	Function	Control principle
1	Daytime running light	The vehicle is Ready and the daytime running lights are on. The low beam headlights are on and the daytime running lights are off. The turn signal is flashing, and the corresponding daytime running light is off
2	Position light	After the entire vehicle is powered on, the low beam switch turns on, the position light lights up, and the vehicle's backlight lights up simultaneously. After power-off, the level light will go out after a delay of 15 seconds
3	Backlight lamp	The position light is on and the backlight is on
4	Low beam lamp	When the entire vehicle is powered on, the low beam switch turns on and the low beam lights up
5	Accompany me home	Power on, turn off the power when the low beam is on, lock the car to set up security, trigger "Accompany Me Home", and keep the low beam on continuously
6	High beam	When the low beam is on, turn on the high beam switch and the high beam will light up
7	Overtaking lights	The entire vehicle is powered on, the overtaking light switch is turned on, and the overtaking light is illuminated
8	Left turn signal	Power on the entire vehicle, turn on the left turn signal switch, and the left turn signal will flash at a frequency of 75±2 times per minute. When the turn signal malfunctions, the flashing frequency doubles, reaching 150±4 times per minute
9	Right turn signal	Power on the entire vehicle, turn on the right turn signal switch, and the right turn signal will flash at a frequency of 75±2 times per minute. When the turn signal malfunctions, the flashing frequency doubles, reaching 150±4 times per minute
10	Brake light	Press the brake pedal and the brake light will come on
11	Reversing light	Power on the entire vehicle, shift into R gear, and the reverse lights will illuminate
12	Indoor lighting	"1、When powered on, the interior lights light up when the car door is opened and go out when it is turned off. When the power is off, the interior lights turn on when the car door is

		opened, and they turn off 10 seconds later when the door is closed. This function can be turned off through the large screen 2、When the vehicle is in operation, the indoor light turns on when touched again, and turns off when touched again or when the vehicle goes into sleep mode; "
13	Hazard warning light	Press the hazard warning light switch, and the left and right turn signals will flash synchronously at a frequency of 75±2 times per minute. The indicator light on the switch flashes at the same frequency
14	Central control switch	When the left door is closed and unlocked, press the central control switch, the door will lock, and the indicator light on the switch will light up. When the left door is locked, press the central control switch to unlock the door and the indicator light will go out;
15	PE locking	When the left door is closed and unlocked, press the PE switch on the door handle to lock the door;
16	"PE unlock"	When the left door is locked, press the PE switch on the door handle to unlock the door;
17	The defense is locked	When all the left and right doors and the tailgate are closed, the vehicle can be locked by using the PE switch on the door handle, the key lock button or the remote APP. At the same time as the vehicle is locked, the defense will be triggered, with the left and right turn signals flashing once and the horn sounding once to give a prompt. No prompt will be given when the conditions are not met.
18	Unlock the defense	When the vehicle is powered off, you can unlock it by using the PE switch on the door handle, the key unlock button, or the remote APP. At the same time as the vehicle is unlocked, the unlock function will be triggered, and the left and right turn signals will flash twice as a prompt. No prompt will be given when the conditions are not met.
19	Anti-theft alarm	In the armed state, open the car door, trigger the anti-theft alarm, and the left and right turn signals and the horn will start to sound. Execute for 27±2 seconds and then wait for 10±1 second. Repeat three cycles
20	Tailgate unlocked	"1、When the left door is unlocked, press the tailgate unlock switch and the tailgate unlock will open; 2、With the left door locked, press and hold the tailgate unlock button for 2 seconds. Within 30 seconds, press the tailgate unlock switch and the tailgate will unlock and open; "
21	Seat belt	Power on the entire vehicle, insert the seat belt buckle, and the "Seat Belt Not fastened" indicator light on the instrument panel goes out;
22	The wiper moves a little	Power on the entire vehicle and gently press the wiper point switch once;
23	Wiper washing	Power on the entire vehicle, press the wiper wash switch, and the wash motor will spray water. After 400 milliseconds, the wiper motor will start working;
24	The wiper stops at first gear	Power on the entire vehicle, turn on the intermittent first gear switch, and the wiper motor will start scraping at a low speed at intervals of 6 seconds;
25	The wiper is in intermittent second gear	Power on the entire vehicle, turn on the intermittent first gear switch, and the wiper motor will move at a low speed at intervals of 4 seconds;
26	Wiper speed	Power on the entire vehicle, turn on the low-speed switch of the wiper, and the wiper motor will start scraping at a low speed;
27	Wiper high-speed	Power on the entire vehicle, turn on the high-speed switch of the wiper, and the wiper motor will start to scrape at high speed;
28	"Horn"	Press the horn switch and the horn will sound.
29	Window switch control	When the entire vehicle is powered on, the BCM collects the window switch signals and sends them to the window motors via the LIN bus

5.8.4 Precautions for the maintenance of vehicle body control systems

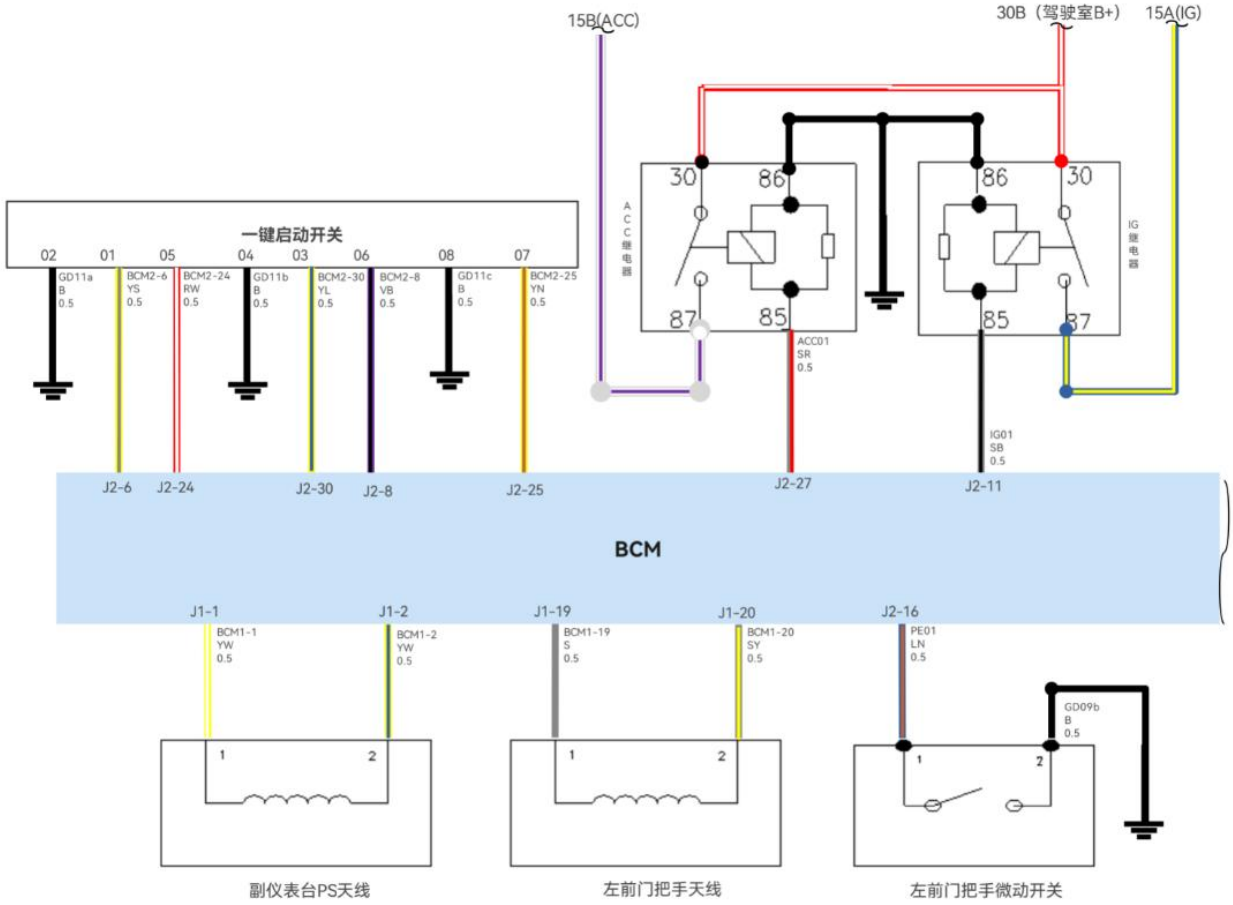
Note:

- Maintenance should be carried out in accordance with the standard diagnostic procedures.
- It is strictly prohibited to disassemble the BCM assembly.
- Only the parts specified by the manufacturer can be replaced; otherwise, the normal operation of the system cannot be guaranteed.
- Do not remove any components of the system or its connectors from their installation positions at will to avoid damage or the entry of foreign substances such as moisture and oil into the connectors, which may affect the normal operation of the system.
- When disconnecting or connecting the connector, the power state must be set to the "OFF" position; otherwise, electrical components may be damaged.
- If it is necessary to remove the negative cable of the battery or ground it, the power supply status must be set to the "OFF" state, and all electrical loads must be turned off. Only after removing the negative ground wire for 60 seconds can other electrical appliances be repaired.

- The faults of the vehicle body control system mainly involve wiring harness and connector failures. Generally, the wiring harness is broken, the connector contacts are poor, the connector terminals are pulled out or not fully inserted, and the components are grounded.
- It is very rare for a wire harness to break in the middle. Most of the time, it breaks at the connector. Therefore, it is especially important to carefully inspect the wire harness at the sensor and connector.
- Poor contact may be caused by rust on the connector terminals, external dirt entering the terminals, or a decrease in contact pressure between the connector plug and the socket. Separate the connector and then reinsert it to change its connection status and restore normal contact.
- When diagnosing faults, if no abnormal conditions occur during the inspection of the wiring harness and connectors and the fault disappears after reconnection, it can be considered that there is a fault with the wiring or connectors.
- The method of puncturing the wire harness with a fine needle cannot be used to check the system electrical signal.
- The fixing bolts or nuts should be tightened to the specified torque.
- When a system failure occurs, after the diagnostic instrument clears the fault code, if the system failure is not eliminated, the fault code will persist until the fault is eliminated when the fault code reading step is executed again. At the same time, after the maintenance is completed, the historical fault codes should also be cleared

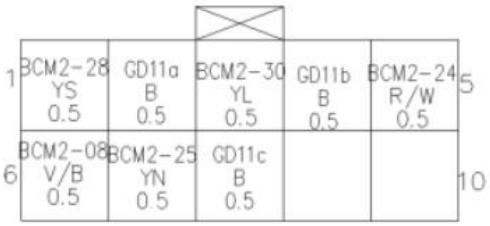
5.8.5 System working principle

5.8.5.1 Circuit diagram



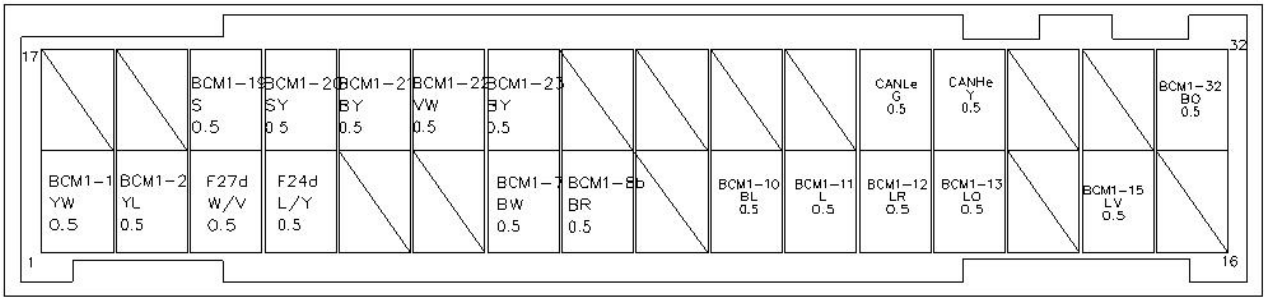
5.8.6 Information on electrical connectors

One-button start switch (L7)



Pin number	Pin definition	Line color	Wire diameter (mm)
1	PEPS switch signal 1	YS	0.5
2	Ground	B	0.5
3	PEPS switch signal 2	YL	0.5
4	Ground	B	0.5
5	ACC indicator light	RW	0.5
6	ON Indicator light	VB	0.5
7	SSB backlight	YN	0.5
8	Ground	B	0.5
9-10	-	-	-

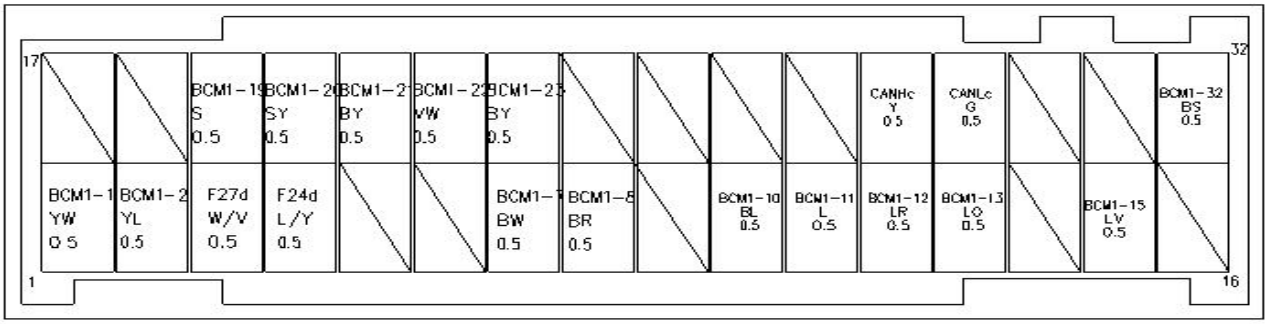
BCMJ1(L7 High-end configuration)



Pin number	Pin definition	Line color	Wire diameter (mm)
1	PS antenna upright	YW	0.5
2	PS antenna negative	YL	0.5
3	ACC feedback signal/highly effective	WV	0.5
4	IG Feedback	LY	0.5
5-6	-	-	-
7	Driver's seat belt status check	BW	0.5
8	LIN line	BR	0.5
9	-	-	-
10	The status of the left front lock	BL	0.5
11	Front wiper return switch	L	0.5
12	Left front window lift switch	LR	0.5
13	Right front window lift switch	LO	0.5
14	-	-	-
15	Rear turn signal feedback/low effective	LV	0.5
19	The antenna of the left front door handle is upright	S	0.5
20	The antenna of the left front door handle is negative	SY	0.5
21	Horn switch	BY	0.5

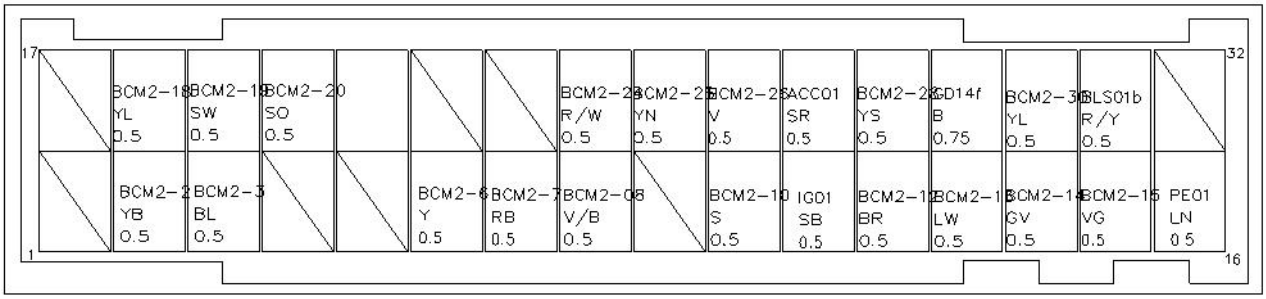
22	Warning light switch signal	YW	0.5
23	Left front door status	BY	0.5
28	CAN-L	G	0.5
29	CAN-H	Y	0.5
32	The status of the right front door	BO	0.5

BCMJ1(L7 Low-end configuration)



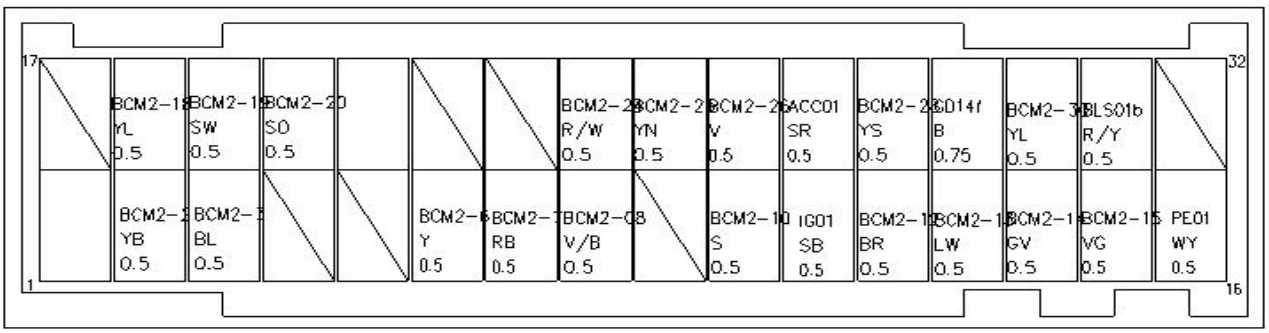
Pin number	Pin definition	Line color	Wire diameter (mm)
1	PS antenna upright	YW	0.5
2	PS antenna negative	YL	0.5
3	ACC feedback signal/highly effective	WV	0.5
4	IG Feedback	LY	0.5
5-6	-	-	-
7	Driver's seat belt status check	BW	0.5
8	LIN line	BR	0.5
9	-	-	-
10	The status of the left front lock	BL	0.5
11	Front wiper return switch	L	0.5
12	Left front window lift switch	LR	0.5
13	Right front window lift switch	LO	0.5
14	-	-	-
15	Right front window lift switch	LV	0.5
19	The antenna of the left front door handle is upright	S	0.5
20	The antenna of the left front door handle is negative	SY	0.5
21	Horn switch	BY	0.5
22	Warning light switch signal	YW	0.5
23	Left front door status	BY	0.5
28	CAN-H	Y	0.5
29	CAN-L	G	0.5
32	The status of the right front door	BS	0.5

BCMJ2(L7 High-end configuration)



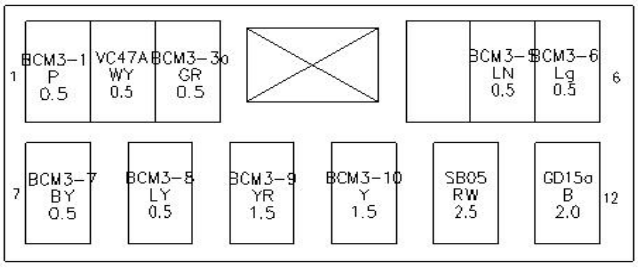
Pin number	Pin definition	Line color	Wire diameter (mm)
2	Overtaking light switch	YB	0.5
3	Low beam lamp	BL	0.5
6	PEPS switch signal 1	Y	0.5
7	Central locking switch	RB	0.5
8	ON mode signal	VB	0.5
10	Front wiper adjustment	S	0.5
11	IG relay driver	SB	0.5
12	Turn right	BR	0.5
13	Turn left	LW	0.5
14	Front turn signal feedback/low effective	GV	0.5
15	Input the status of the rear door	VG	0.5
16	The handle switch outside the left door	LN	0.5
18	High beam	YL	0.5
19	Wiper point switch	SW	0.5
20	Front wash switch	SO	0.5
24	ACC indicator light	RW	0.5
25	SSB backlight	YN	0.5
26	Hazard warning indicator light/highly effective	V	0.5
27	ACC relay drive	SR	0.5
28	Rear door unlock switch	YS	0.5
29	Ground	B	0.75
30	PEPS switch signal 2	YL	0.5
31	Foot brake switch	RY	0.5

BCMJ2(L7Low-end configuration)



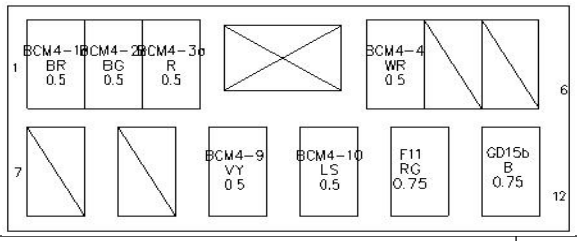
Pin number	Pin definition	Line color	Wire diameter (mm)
2	Overtaking light switch	YB	0.5
3	Low beam lamp	BL	0.5
6	PEPS switch signal 1	Y	0.5
7	Central locking switch	RB	0.5
8	ON mode signal	VB	0.5
10	Front wiper adjustment	S	0.5
11	IG relay driver	SB	0.5
12	Turn right	BR	0.5
13	Turn left	LW	0.5
14	Front turn signal feedback/low effective	GV	0.5
15	Input the status of the rear door	VG	0.5
16	The handle switch outside the left door	WY	0.5
18	High beam	YL	0.5
19	Wiper point switch	SW	0.5
20	Front wash switch	SO	0.5
24	ACC indicator light	RW	0.5
25	SSB backlight	YN	0.5
26	Hazard warning indicator light/highly effective	V	0.5
27	ACC relay drive	SR	0.5
28	Rear door unlock switch	YS	0.5
29	Ground	B	0.75
30	PEPS switch signal 2	YL	0.5
31	Foot brake switch	RY	0.5

BCMJ3(L7 High-end configuration/ Low-end configuration)



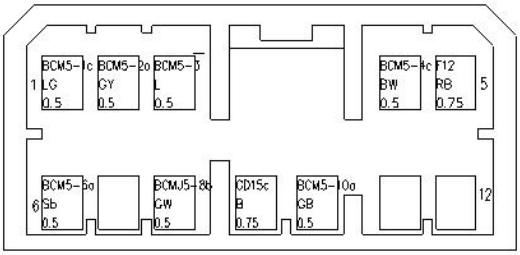
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Gate control signal	P	0.5
2	VCU wake-up /BMS wake-up	WY	0.5
3	Reversing light	GR	0.5
4	-	-	-
5	Right daytime running light	LN	0.5
6	Left daytime running light	LG	0.5
7	Electronic lock lock power supply	BY	0.5
8	Horn	LY	0.5
9	The front wiper operates at a low speed	YR	1.5
10	Front wiper at high speed	Y	1.5
11	Power supply	RW	2.5
12	Ground	B	2.0

BCMJ4(L7High-end configuration/low-end configuration)



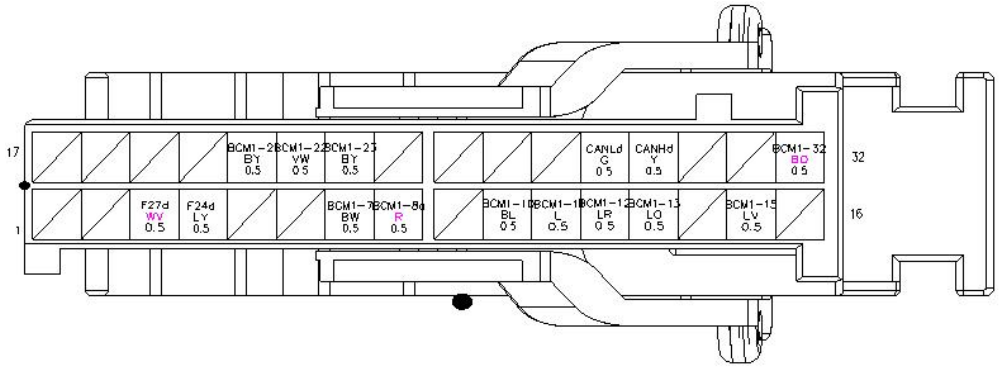
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Door unlocking	BR	0.5
2	Door locking	BG	0.5
3	Near light	R	0.5
4	High beam	WR	0.5
5-8	-	-	-
9	The rear door is unlocked	VY	0.5
10	Washing motor	LS	0.5
11	Power supply	RG	0.75
12	Ground	B	0.5

BCMJ5（L7 High-end configuration/ Low-end configuration）



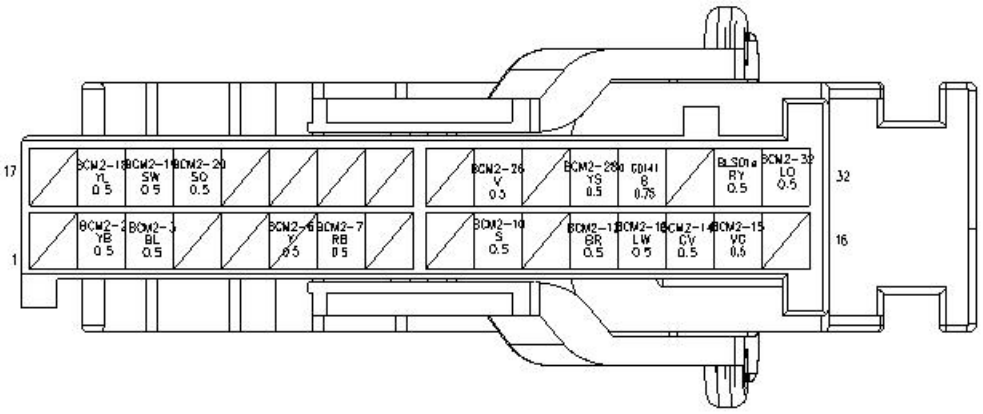
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Turn right light	LG	0.5
2	Rear position light	GY	0.5
3	Power supply of reading lamp	L	0.5
4	Position light	BW	0.5
5	BCM power supply	RB	0.75
6	Turn left lamp	Sb	0.5
7	-	-	-
8	Backlight output	GW	0.5
9	BCM Ground	B	0.75
10	Brake light	GB	0.5
11-12	-	-	-

BCMJ1(L6 High-end configuration)



Pin number	Pin definition	Line color	Wire diameter (mm)
1-2	-	-	-
3	ACC feedback signal/highly effective	WV	0.5
4	IG Feedback	LY	0.5
5-6	-	-	-
7	Driver's seat belt status check	BW	0.5
8	LIN line	R	0.5
10	The status of the left front lock	BL	0.5
11	Front wiper return switch	L	0.5
12	Left front window lift switch	LR	0.5
13	Right front window lift switch	LO	0.5
14	-	-	-
15	Right front window lift switch	LV	0.5
16-20	-	-	-
21	Horn switch	BY	0.5
22	Warning light switch signal	VW	0.5
23	Left front door status	BY	0.5
28	CAN-L	G	0.5
29	CAN-H	Y	0.5
32	The status of the right front door	BO	0.5

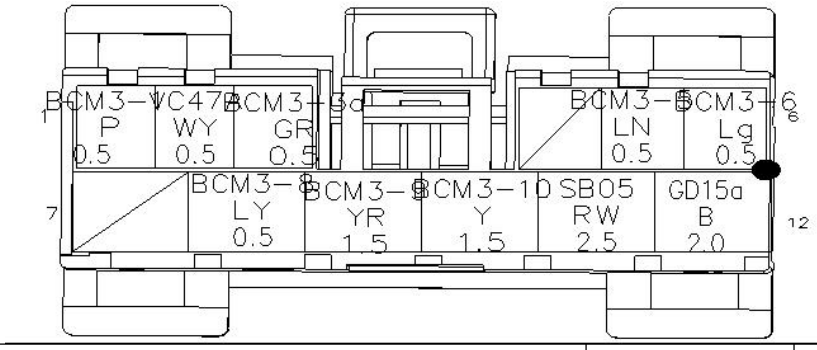
BCMJ2(L6High-end configuration)



Pin number	Pin definition	Line color	Wire diameter (mm)
2	Overtaking light switch	YB	0.5

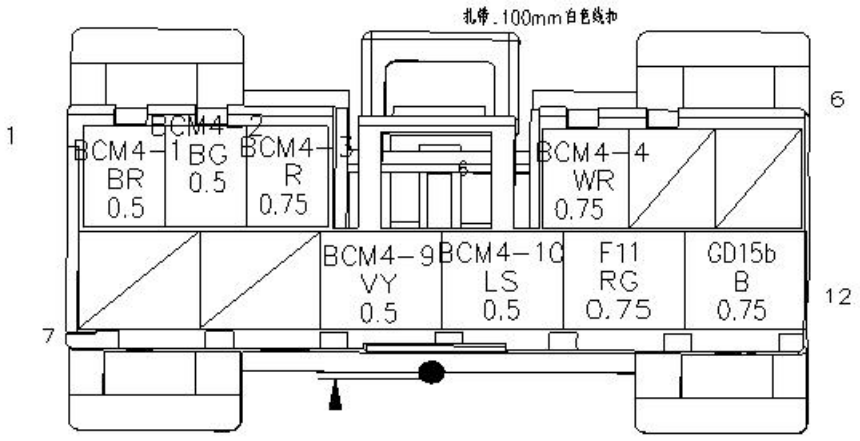
3	Low beam lamp	BL	0.5
6	PEPS switch signal 1	Y	0.5
7	Central locking switch	RB	0.5
8-9	-	-	-
10	Front wiper adjustment	S	0.5
11	-	-	-
12	Turn right	BR	0.5
13	Turn left	LW	0.5
14	Front turn signal feedback/low effective	GV	0.5
15	Input the status of the rear door	VG	0.5
16-17	-	-	-
18	High beam	YL	0.5
19	Wiper point switch	SW	0.5
20	Front wash switch	SO	0.5
21-25	-	-	-
26	Hazard warning indicator light/highly effective	V	0.5
28	Rear door unlock switch	YS	0.5
29	Ground	B	0.75
31	Foot brake switch	RY	0.5
32	STAT feedback	LO	0.5

BCMJ3(L6High-end configuration)



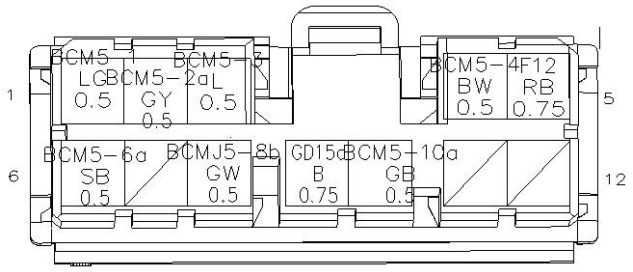
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Gate control signal	P	0.5
2	VCU wake-up /BMS wake-up	WY	0.5
3	Reversing light	GR	0.5
4	-	-	-
5	Right daytime running light	LN	0.5
6	Left daytime running light	LG	0.5
7	-	-	-
8	Horn	LY	0.5
9	The front wiper operates at a low speed	YR	1.5
10	Front wiper at high speed	Y	1.5
11	Power supply	RW	2.5
12	Ground	B	2.0

BCMJ4(L6High-end configuration)



Pin number	Pin definition	Line color	Wire diameter (mm)
1	Door unlocking	BR	0.5
2	Door locking	BG	0.5
3	Near light	R	0.5
4	High beam	WR	0.5
5-8	-	-	-
9	The rear door is unlocked	VY	0.5
10	Washing motor	LS	0.5
11	Power supply	RG	0.75
12	Ground	B	0.5

BCMJ5(L6High-end configuration)



Pin number	Pin definition	Line color	Wire diameter (mm)
1	Turn right light	LG	0.5
2	Rear position light	GY	0.5
3	Power supply of reading lamp	L	0.5
4	Position light	BW	0.5
5	BCM power supply	RB	0.75
6	Turn left灯	Sb	0.5
7	-	-	-
8	Backlight output	GW	0.5
9	BCM Ground	B	0.75
10	Brake light	GB	0.5
11-12	-	-	-

5.8.7 DTC Fault code

Serial number	DTC Display code	DTC Meaning	Mature conditions for faults"	"System Performance"	Conditions for fault resolution"
1	B111716	Low power supply voltage	The sampling voltage is lower than 8.5V and lasts for 500ms	Low voltage	" 1. Stored in DTC 2. When reading DTC, the fault is eliminated and the voltage is ≥ 9V."
2	B111717	High supply voltage	The sampling voltage is higher than 16.5V and lasts for 500ms	High voltage	" 1. Stored in DTC 2. When reading DTC, the fault is eliminated and the voltage is ≤ 16V"
3	B110000	The urn left lamp control Circuit is short-Circuited to ground	" The corresponding reversing lamp was detected to feed back, causing the fault Circuit current to exceed the threshold ."	The turn signal is working abnormally	The feedback level of the corresponding turn signal fault was detected to be normal
4	B110100	The control Circuit of the Turn left lamp is open	A fault feedback of the left front turn signal has been detected.	The turn signal is working abnormally	The feedback level of the corresponding turn signal fault was detected to be normal
5	B110200	The Turn right lamp control Circuit is short-Circuited to ground	" The corresponding reversing lamp was detected to feed back, causing the fault Circuit current to exceed the threshold."	The turn signal is working abnormally	The feedback level of the corresponding turn signal fault was detected to be normal
6	B110300	Turn right: The control Circuit of the lamp is open	A fault feedback of the right front turn signal has been detected.	The turn signal is working abnormally	The fault feedback level of the right front turn signal was detected to be normal
7	B110400	The left daytime running light is short-Circuited to the ground	The loop current exceeds the threshold	The daytime running lights are working abnormally	Restore the normal output Circuit
8	B110500	The left daytime running light leads the way	The loop current is lower than the threshold	The daytime running lights are working abnormally	Restore the normal output Circuit
9	B110600	The right daytime running light is short-Circuited to the ground	The loop current exceeds the threshold	The daytime running lights are working abnormally	Restore the normal output Circuit
10	B110700	The right daytime running light leads the way	The loop current is lower than the threshold	The daytime running lights are working abnormally	Restore the normal output Circuit
11	B110800	High beam open road	The loop current is lower than the threshold;	High beam is working abnormally	Restore the normal output Circuit
12	B110900	High beam is open-Circuited to ground	" The loop current exceeds the threshold ; "	High beam is working abnormally	Restore the normal output Circuit
13	B110A00	The front headlight is short-Circuited to the ground	The loop current exceeds the threshold ;	The headlights are working abnormally	Restore the normal output Circuit
14	B110B00	The headlights lead the way	The loop current is lower than the	The headlights are	Restore the normal output Circuit

			threshold;	working abnormally	
15	B110C00	The backlight output is open Circuit	The loop current is lower than the threshold;	The backlight is working abnormally	Restore the normal output Circuit
16	B110D00	The backlight output is short-Circuited to ground	The loop current exceeds the threshold ;	The backlight is working abnormally	Restore the normal output Circuit
17	B110E00	The output of the front position light is short-Circuited to ground	The PIN of the BCM front position light/license plate light is short-Circuited to the ground	The front position light is working abnormally	Restore the normal output Circuit
18	B110F00	The front position output is open Circuit	The loop current is lower than the threshold	The front position light is working abnormally	Restore the normal output Circuit
19	B111000	The output of the rear position light is short-Circuited to ground	The PIN of the BDCM rear position light/license plate light is short-Circuited to ground	The rear position light is working abnormally	Restore the normal output Circuit
20	B111100	The output of the rear position light is open	The loop current is lower than the threshold	The rear position light is working abnormally	Restore the normal output Circuit
21	B111200	The brake light output is open Circuit	The loop current is lower than the threshold	The brake light is working abnormally	Restore the normal output Circuit
22	B111300	The brake light output is short-Circuited to ground	The loop current exceeds the threshold	The brake light is working abnormally	Restore the normal output Circuit
23	B111400	License plate light open road	The loop current is lower than the threshold	The license plate light is working abnormally	Restore the normal output Circuit
24	B111500	The license plate light is short-Circuited to the ground	The output terminal is short-Circuited to ground	The license plate light is working abnormally	Restore the normal output Circuit
25	B111600	Youdaoplaceholder0 light output open Circuit	The loop current is lower than the threshold	Youdaoplaceholder0 light is working abnormally	Restore the normal output Circuit
26	B111800	Youdaoplaceholder0 light output is short-Circuited to ground	The loop current exceeds the threshold	Youdaoplaceholder0 light is working abnormally	Restore the normal output Circuit
27	U019600	IHU Lost node	"1) The power source is in the ON mode. 2) The network is in the awakened state. 3) The battery voltage is between 9 and 16 volts 4) The ICU node CAN response message (0x3D2) was not detected for 2000 consecutive ms.	Functions related to the large screen are ineffective	"1) The network is in an awakened state; 2) Received one frame of the correct Detection VCU node CAN message (0x3D2); "

28	U012200	VCU Lost node	"1) The power source is in the ON mode. 2) The network is in the awakened state. 3) Not in the BUSOFF state 4) The battery voltage is between 9 and 16 volts 5) The CAN extinction of the VCU node was not detected for 2000 consecutive ms (0x393/0x392)"	Functions related to power are ineffective	"1) The network is in an awakened state. 2) One frame was received to accurately detect the extinction of VCU node C A N (0x393|0x392)"
29	U011100	BMS Lost node	"1) The power source is in the ON mode. 2) The network is in the awakened state. 3) Not in the BUSOFF state 4) The battery voltage is between 9 and 16 volts 5) The CAN extinction of the BMS node was not detected for 2000 consecutive ms(0x393|0x392); "	Function failure related to power batteries	"1) The network is in an awakened state; 2) One frame is received to accurately detect the extinction of BMS node C A N (0x393|0x392)"
30	U015600	TBOX Lost node	1) The power source is in the ON mode. 2) The network is in the awakened state. 3) Not in the BUSOFF state 4) The battery voltage is between 9 and 16 volts 5) Continuously 2000ms of undetected TBOX node CAN messages (0x3E5);	The functions related to remote control have failed	"1) The network is in an awakened state; 2) Received one correct TBOX node CAN Detection message (0x3E5); "
31	U011000	MCU Lost node	"1) 1) The power supply is in the ON position 2) The network is in an awakened state; 3) Not in the BUSOFF state 4) The battery voltage is between 9 and 16 volts 5) The CAN extinction of the TBOX node was not detected for 300 consecutive ms (0x139); "	Failure of functions related to power control	"1) The network is in an awakened state; 2) Received one correct TBOX node CAN Detection message (0x139); "
32	U010F00	AC Lost node	"1) The power source is in the ON mode. 2) The network is in the awakened state. 3) Not in the BUSOFF state 4) The battery voltage is between 9 and 16 volts 5) The CAN message of the TBOX node (0x50B) was not detected for 4000ms continuously;"	The functions related to the central control lock have failed	"1) The network is in an awakened state; 2) Received one correct TBOX node CAN Detection message (0x50B); "
33	U191600	The domain controller lost communication from the MCU	" 1) From M C U to the awakened state; 2) When the node receives a timeout, the timeout period is sent to the master node for 10 cycle periods."	The bus transmission and reception have failed	"1) From the MCU to the awakened state; 2) Receive one correct Detection domain controller response from the MCU"

34	U007300	CAN bus BUS-OFF error	The controller CAN error counter ≥ 255(Dec) has reached 5 times	The bus transmission and reception have failed	The bus-off error on the main line was not detected within 5 consecutive seconds
35	B111900	Software configuration error	Detect that the value of the storage software configuration area is all 0x00 or all 0xff	The bus transmission and reception have failed	Detect that the value of the storage software configuration area is all 0x00 or all 0xff
36	B111A00	The battery of the smart key is low	Three consecutive frames of low battery CAN signals for the smart key were received	The key sensing effect is poor	"1) The network is in an awakened state; 2) Receiving 1 frame of the smart key with low battery is a normal signal number."
37	B111B00	No legal key indication was found	Three consecutive frames of the CAN signal indicating no matching key were received	Abnormal power-on and startup	"1) The network is in an awakened state; 2) Received 1 frame of the signal indicating the activation of a valid key without occurrence."
38	B111C00	ESCL "Fault	Fault	ESCL unlock failed	ESCL has been unlocked successfully
39	B111D00	The LIN error status of the left car window	Three consecutive frames of the left window LIN error status CAN signal were received	The car window motor is not responding	"1) The network is in an awakened state; 2) Receive one frame of the correct Detection of the WLM node LIN extinction and simultaneously transmit the can "
40	B111E00	The left window ECU is in an incorrect status	Three consecutive frames of the left window ECU error status CAN signal were received	The car window motor is not responding	"1The network is in an awakened state. 2) Receive one frame of the correct Detection of the WLM node LIN extinction and simultaneously transmit the can"
41	B111F00	The LIN error status of the right car window	Three consecutive frames of the right window LIN error status CAN signal were received	The car window motor is not responding	"1) The network is in an awakened state; 2) Receive one frame of the correct Detection of the WLM node LIN extinction and simultaneously transmit the can "
42	B112000	The ECU of the right car window is in an incorrect status	Three consecutive frames of the right window ECU error status CAN signal were received	The car window motor is not responding	"1) The network is in an awakened state; 2) Receive one frame of the correct Detection of the WLM node LIN extinction and simultaneously transmit the can "

43	B112100	The key has not been learned.	The number of keys stored inside the host is 0	Abnormal power-on and startup	Learning the key
44	B112200	Low-frequency antenna failure	The output of the low-frequency antenna is open Circuit or short Circuit	Abnormal key search	The output load of the low-frequency antenna is within the normal range
45	B112300	The door handle antenna is faulty	The output of the low-frequency antenna is open Circuit or short Circuit	Abnormal key search	The output load of the PE antenna is within the normal range
46	B112400	The start button is faulty.	The start button is open-Circuited or short-Circuited	Abnormal startup	The input voltage of the start button is within the normal range
47	B112500	ACC Output fault	The ACC output relay is open Circuit, short Circuit, overloaded, and the ACC feedback is incorrect	Abnormal ACC power supply	The output load is within the normal range and the feedback is normal
48	B112600	IGN Output fault	IG1 output relay open Circuit, short Circuit, overload, IG1 feedback error	IGN Power supply anomaly	The output load is within the normal range and the feedback is normal
49	B112700	The power output of the steering lock is faulty	The power output of the steering lock is short-Circuited	The steering lock is working abnormally	The output load is within the normal range

5.8.8 Guidance on Fault Diagnosis of Vehicle body control system

Serial number	DTC Display code	The meaning of DTC	Possible causes of malfunction	Maintenance suggestions	Self-recovery conditions for fault codes
1	B111716	Low power supply voltage	The overall vehicle voltage is too low	Check the vehicle's battery	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
2	B111717	High supply voltage	The overall vehicle voltage is too high.	Check the vehicle's battery or wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
3	B110000	The Turn left lamp control Circuit is short-Circuited to ground	Short Circuit, internal fault, excessive load power	Check the load and the controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
4	B110100	The control Circuit of the Turn left lamp is open	Open Circuit, internal fault, and insufficient load power	Check the load and inspect the wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
5	B110200	The Turn right lamp control Circuit is short-Circuited to ground	Short Circuit, internal fault, excessive load power	Check the load and the controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
6	B110300	Turn right: The control Circuit of the lamp is open	The Detection port is open and the load power is too small	Check the load and inspect the wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

7	B110400	The left daytime running light is short-Circuited to the ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear its history DTC;"
8	B110500	The left daytime running light leads the way	Output Circuit open Circuit, load open Circuit	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
9	B110600	The right daytime running light is short-Circuited to the ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
10	B110700	The right daytime running light leads the way	Output Circuit open Circuit, load open Circuit	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
11	B110800	High beam open road	Output Circuit open Circuit, load open Circuit	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
12	B110900	High beam opens a short path to the ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
13	B110A00	The headlights lead the way to the ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

14	B110B00	The headlights lead the way	Output Circuit open Circuit, load open Circuit	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
15	B110C00	The backlight output is open	Open Circuit, internal fault, and insufficient load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
16	B110D00	The backlight output short Circuit reaches the ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
17	B110E00	The output of the front position light is short-Circuited to ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
18	B110F00	The front position output is open	The load is open Circuit or the wiring harness is open Circuit	Check whether the front position light wiring harness or individual lamps are damaged	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
19	B111000	The output of the rear position light is short-Circuited to ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
20	B111100	The output of the rear position light is open	The load is open Circuit or the wiring harness is open Circuit	Check whether the position light wiring harness or individual lamp pieces are damaged after inspection	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

21	B111200	The brake light output is open	The load is open Circuit or the wiring harness is open Circuit	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
22	B111300	The brake light output short Circuit reaches ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
23	B111400	License plate light open road	The load is open Circuit or the wiring harness is open Circuit	Check whether the license plate light wiring harness or individual lamps are damaged	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
24	B111500	The license plate light is short-Circuited to the ground	Short Circuit, internal fault, excessive load power	Check whether the license plate light wiring harness or individual lamps are damaged	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
25	B111600	Youdaoplaceholder0 light output open path	The load is open Circuit or the wiring harness is open Circuit	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
26	B111800	Youdaoplaceholder0 light output short path to ground	Short Circuit, internal fault, excessive load power	Check the load and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
27	U019600	IHU Lost node	The CAN exhalation at the IHU node was not issued normally	Check the IHU controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

28	U012200	VCU Lost node	The CAN exhalation at the VCU node was not emitted normally	Check the VCU controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
29	U011100	BMS Lost node	The CAN decrement at the BMS node was not sent out normally	Check the BMS controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
30	U015600	The TBOX node is lost	The CAN decrement of the TBOX node was not sent out normally	Check the TBOX controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
31	U011000	MCU Lost node	The CAN extinction of the MCU node was not emitted normally	Check the MCU controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
32	U010F00	AC Lost node	The CAN dimming at the AC node was not emitted normally	Check the AC controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
33	U191600	The domain controller lost communication from the MCU	The domain controller failed to correctly detect the communication data of the main MCU from the MCU	Check the vehicle body controller	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
34	U007300	CAN bus BUS-OFF error	The CAN bus is disturbed or there is an internal fault in the CAN chip	Check the CAN network on the vehicle	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

35	B111900	Software configuration error	Software configuration storage error	Check the BCM software configuration characters	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
36	B111A00	The battery of the smart key is low	The battery of the smart key is low	Replace the battery	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
37	B111B00	No legal key prompt was found	No legal key was found in the vehicle	Update the key position	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
38	B111C00	ESCL failure	ESCL malfunctioned, unlocking failed	Check the ESCL controller and wiring harness	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
39	B111D00	The left window is in an incorrect state	The LIN dissipation of the WLM node was not emitted normally	Check the window controller and the wiring harness ends	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
40	B111E00	The left window ECU is in an incorrect status	The LIN dissipation of the WLM node was not emitted normally	Check the window controller and the wiring harness ends	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
41	B111F00	The LIN error status of the right car window	The LIN dissipation of the WLM node was not emitted normally	Check the window controller and the wiring harness ends	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

42	B112000	The ECU of the right car window is in an incorrect status	The LIN dissipation of the WLM node was not emitted normally	Check the window controller and the wiring harness ends	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
43	B112100	The key has not been learned.	The key has not been learned	Learning the key	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
44	B112200	Low-frequency antenna failure	Faults in the Circuit and low-frequency antenna 4	Check the wiring and low-frequency antenna lines	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
45	B112300	The door handle antenna is malfunctioning	Faults in the Circuit and PE antenna	Check the Circuit and PE antenna	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
46	B112400	The start button is faulty.	The Circuit and the start button are malfunctioning	Check the Circuit and press the start button	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
47	B112500	ACC output fault	Faults in the Circuit and ACC output relay	Check the Circuit and the ACC output relay	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.
48	B112600	IGN output failure	The Circuit and IGN output relay are faulty	Check the wiring and IGN output relays	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

49	B112700	The power output of the steering lock is faulty	Faults in the Circuit and steering lock	Check the wiring and the steering lock	1. It should be used to clear the historical records and diagnose and stop the administration After clearing the historical DTC, clear the historical DTC. or 2. When BCM KL15 has been powered on and off for 40 cycles without any faults, BCM will automatically clear the historical DTC.

5.8.9 Disassembly and installation

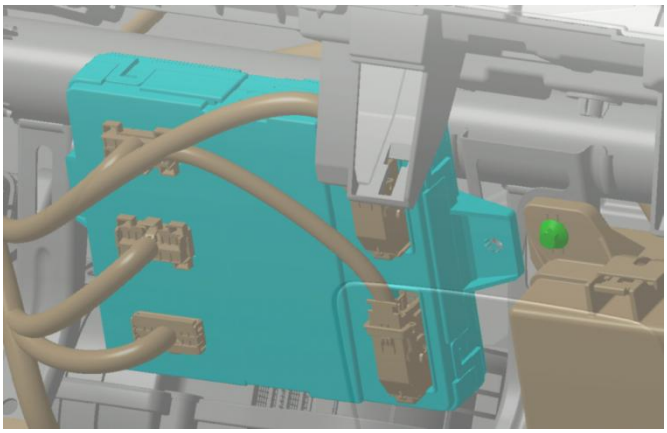
1. Body controller

Disassembly and installation

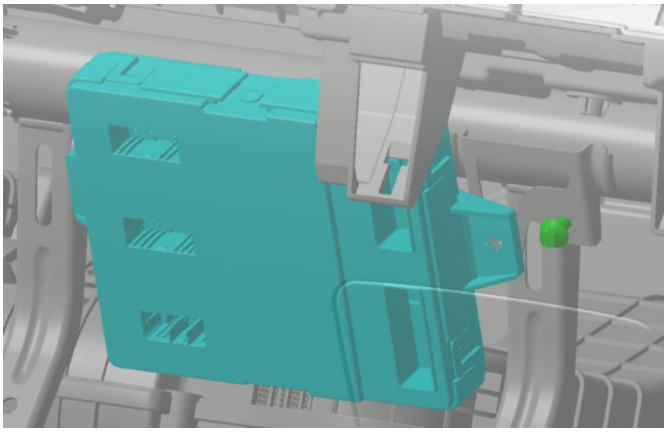
Disassembly

1.1. Remove the lower guard plate assembly of the dashboard. See: Disassembly and installation of the instrument panel Lower guard Assembly

1.2. Disconnect the body controller wiring harness connector.



1.3. Remove the two fixing screws of the body controller and take out the body controller.



Installation

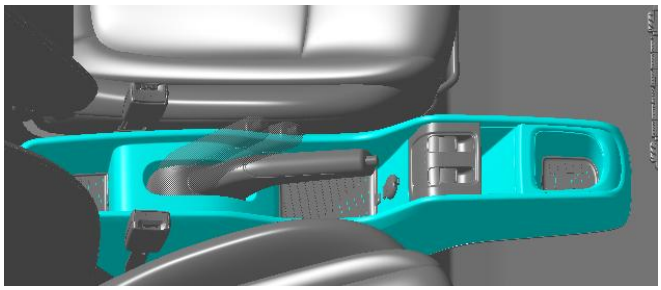
Install in the reverse order of disassembly

Torque: Body controller fixing bolts (18±2Nm)

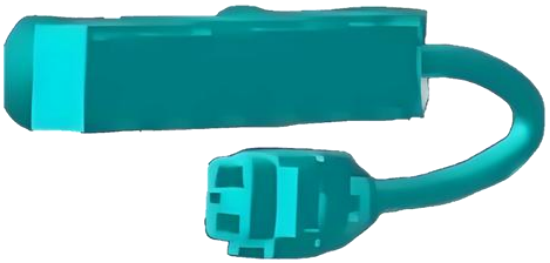
2.Start the antenna disassembly and installation

2.1.Disassemble the sub-instrument panel assembly. Reference: Disassembly and installation of the sub-instrument panel assembly.

2.2. After removing the sub-instrument panel assembly, take off the rear trim panel of the sub-instrument panel.

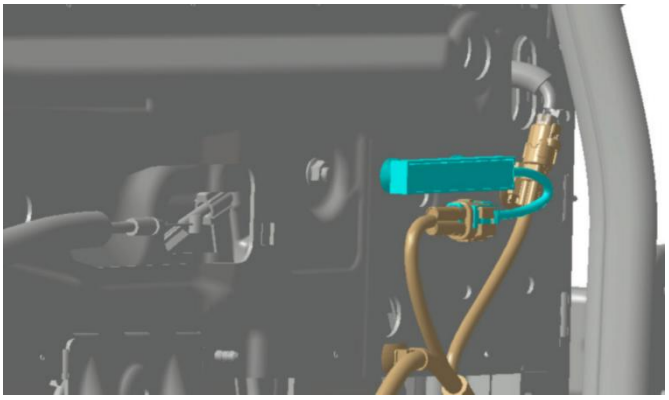


2.3.Remove the fixing screws of the starting antenna and take off the starting antenna.



Installation
Install in the reverse order of disassembly

3.PE antenna for door handle
Disassembly and installation
Disassembly
3.1 Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly
3.2.Disconnect the wiring harness connector of the left door inner guard panel assembly.

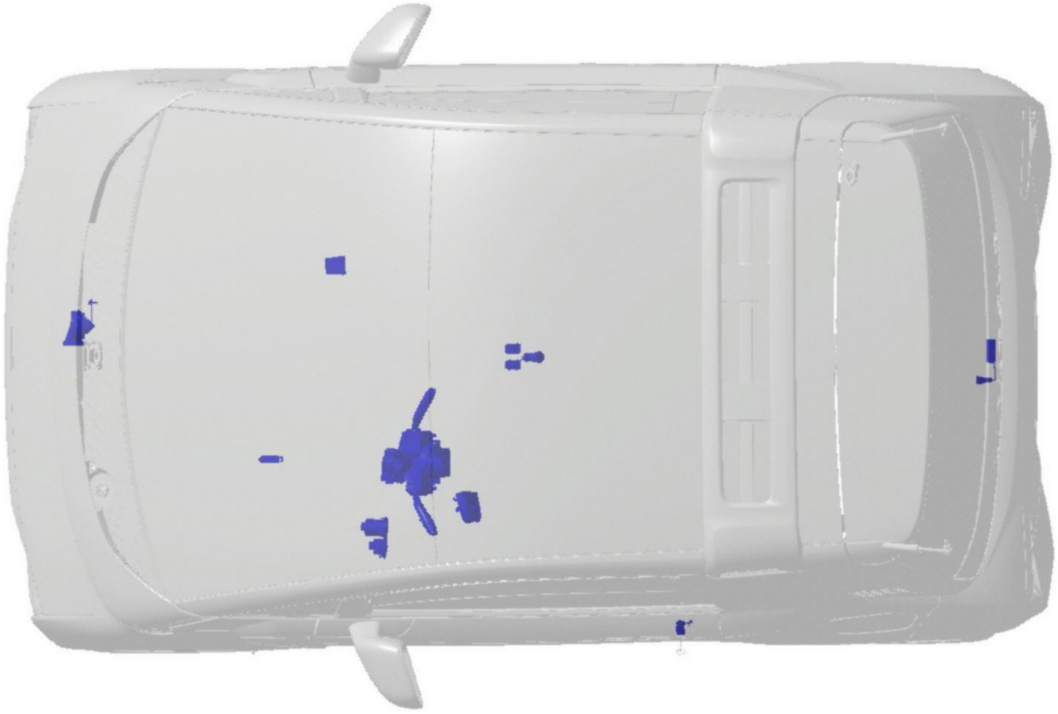


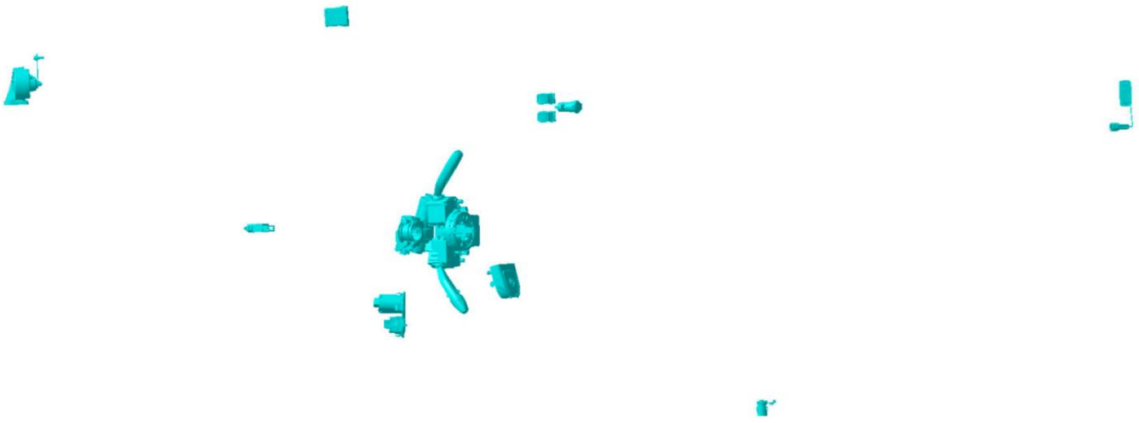
3.3.Remove the PE antenna of the door handle.

Installation
Install in the reverse order of disassembly

5.9 Electrical device

5.9.1 Composition of electrical device components





Serial number	Name	Serial number	Name
1	"Horn"	2	12V power supply
3	Door and window lift switch	4	Combination switch
5	Clock spring	6	Steering wheel lock
7	Brake switch	8	Dashboard switch

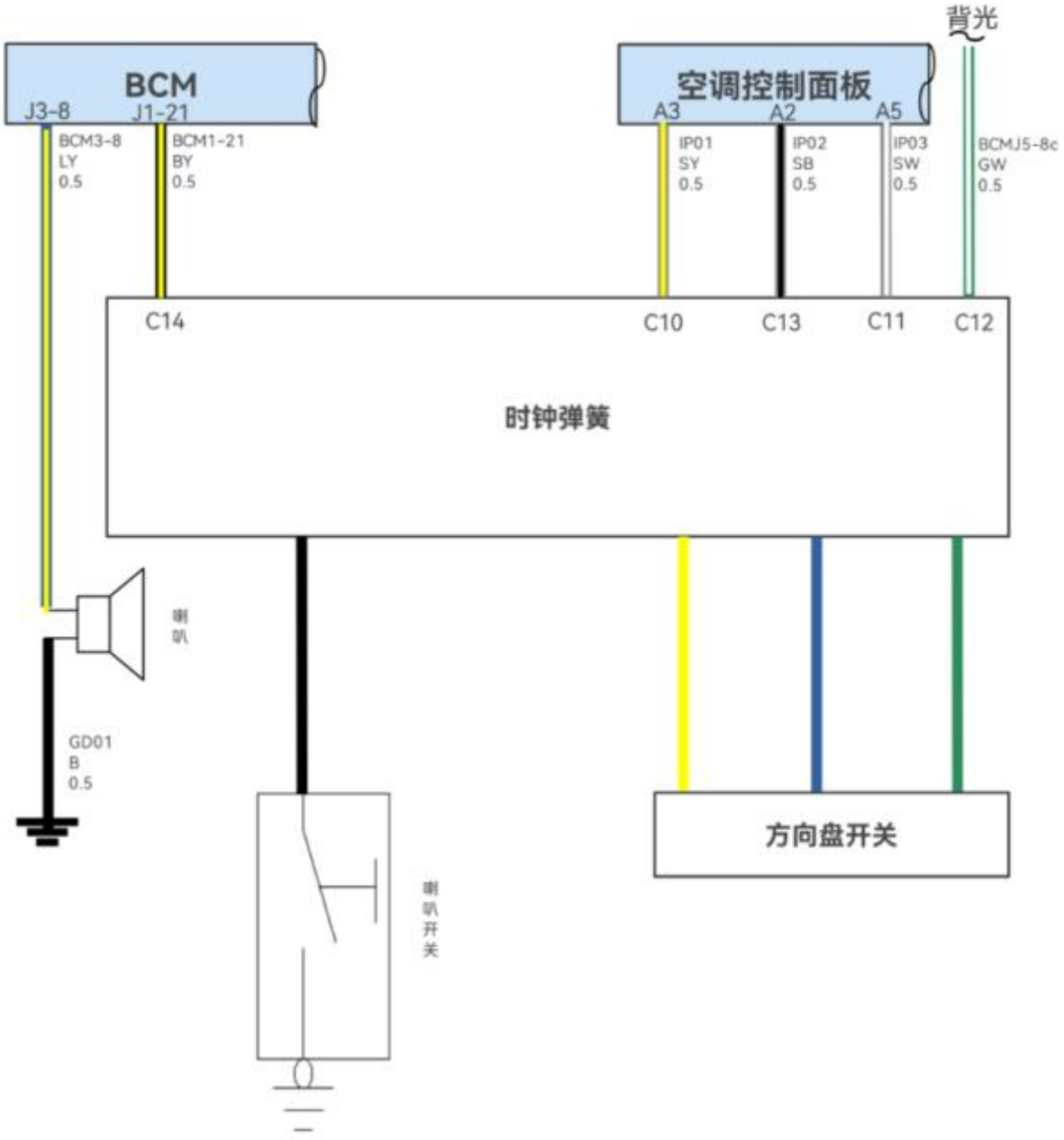
5.9.2 Precautions for Electrical Appliance maintenance

Before starting work, the vehicle power supply must be turned off and the negative terminal of the battery disconnected.

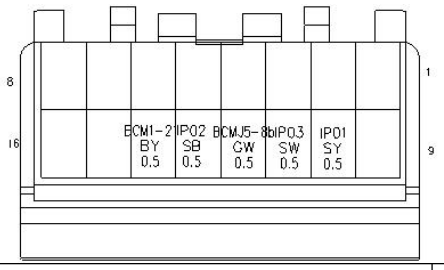
- Do not continuously turn the switch on/off to prevent damage to the motor.
- After installation, all components should be inspected to ensure they are in good working condition.

5.9.3 System working principle, Circuit diagram

5.9.3.1 Diagram of the working principle of a high-pitched speaker

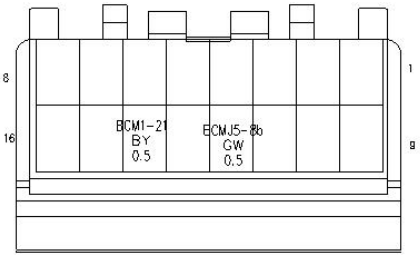


Pin definition of the connector
High-end L7 clock spring



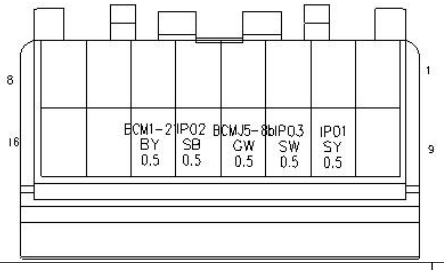
Pin number	Pin definition	Line color	Wire diameter (mm)
10	Fang kong 1 (ACC Function)	SY	0.5
11	Fang kong 2 (Menu)	SW	0.5
12	The steering wheel switch is backlit	GW	0.5
13	The public end of the controlled area	SB	0.5
14	Horn switch	BY	0.5

Low configuration of clock spring L7



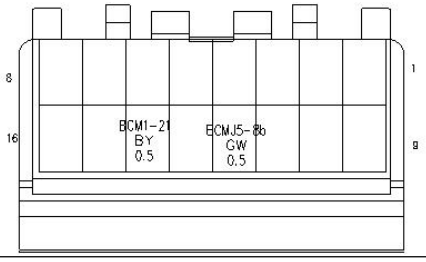
Pin number	Pin definition	Line color	Wire diameter (mm)
12	The steering wheel switch is back lit	GW	0.5
14	Horn switch	BY	0.5

High-end L6 clock spring



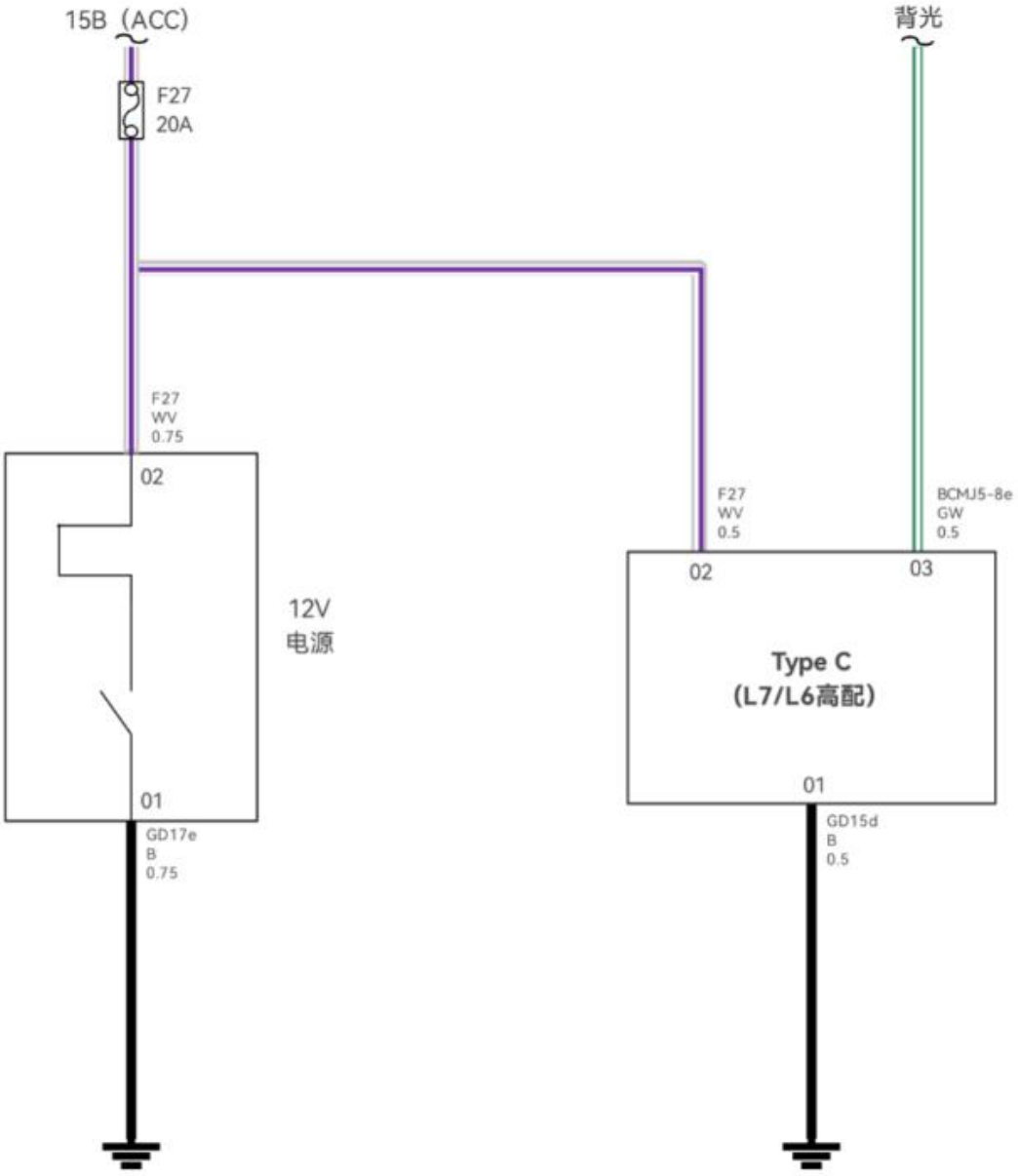
Pin number	Pin definition	Line color	Wire diameter (mm)
10	Fang kong 1 (ACC Function)	SY	0.5
11	Fang kong 2 (Menu)	SW	0.5
12	The steering wheel switch is back lit	GW	0.5
13	The public end of the controlled area	SB	0.5
14	Horn switch	BY	0.5

Low configuration of clock spring L6



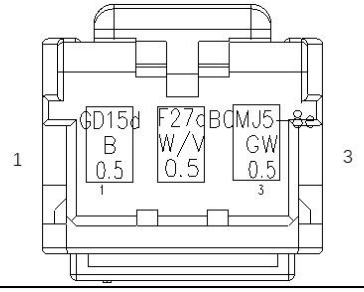
Pin number	Pin definition	Line color	Wire diameter (mm)
12	The steering wheel switch is back lit	GW	0.5
14	Horn switch	BY	0.5

5.9.3.2 Working principle diagram of 12V power supply /Type-c interface



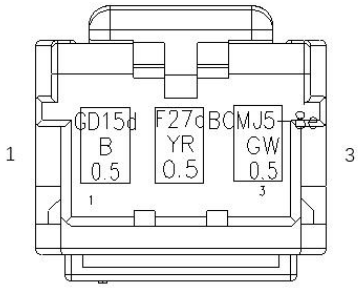
Connector Pin definition

Type-c interface L7 high-end configuration



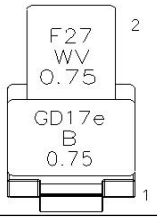
Pin number	Pin definition	Line color	Wire diameter (mm)
1	ground	B	0.5
2	Power supply	WV	0.5
3	Backlight	GW	0.5

Type-c interface L6 high-end configuration



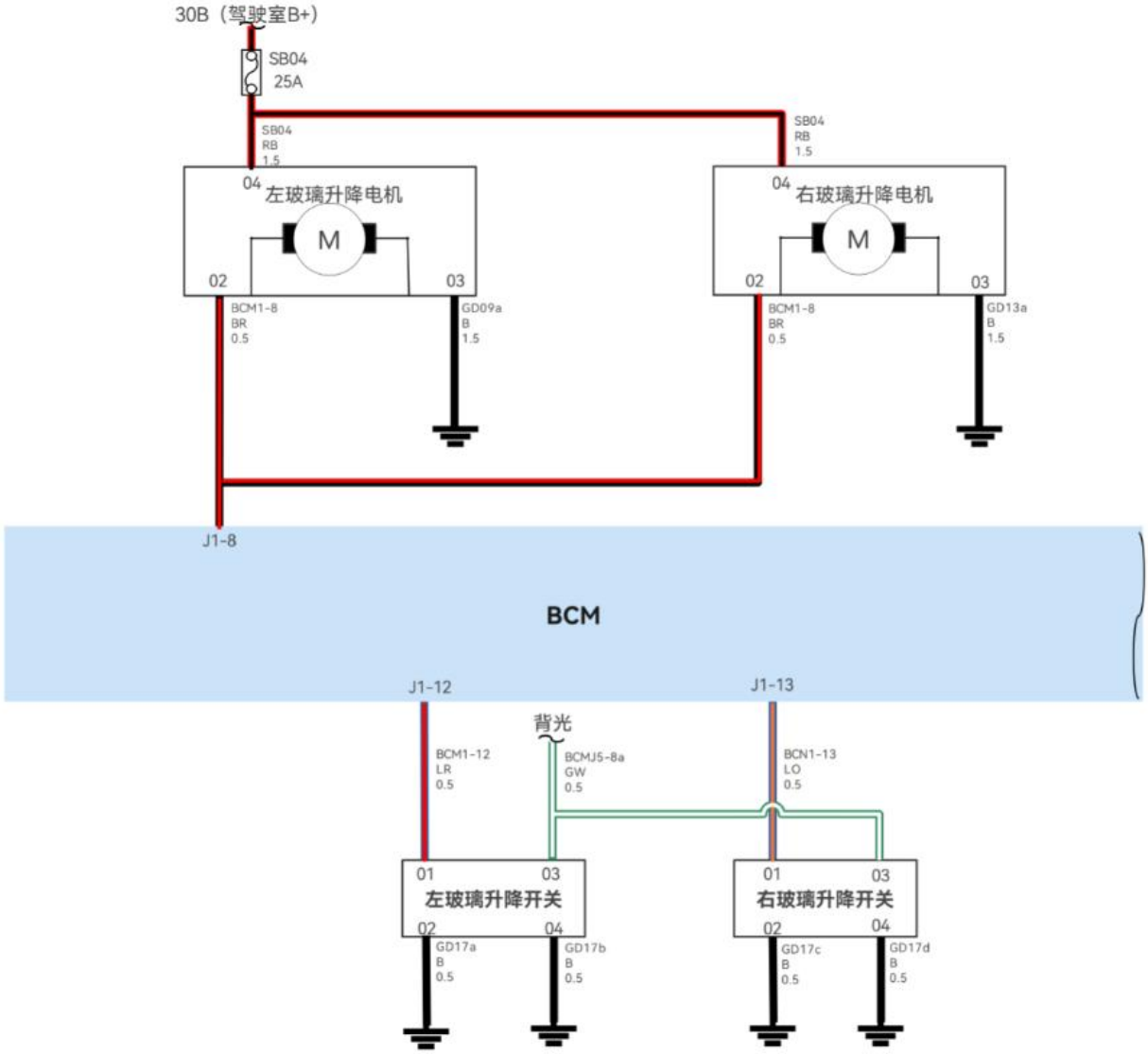
Pin number	Pin definition	Line color	Wire diameter (mm)
1	ground	B	0.5
2	Power supply	YR	0.5
3	Backlight	GW	0.5

12V power supply



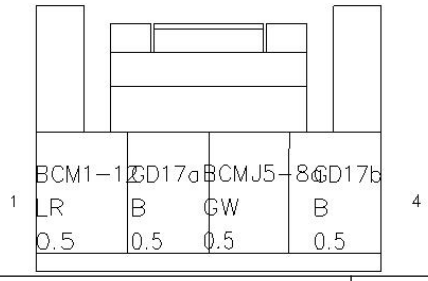
Pin number	Pin definition	Line color	Wire diameter (mm)
1	ground	B	0.75
2	Power supply	WV	0.75

5.9.3.3 Working principle diagram of door and window lift switches



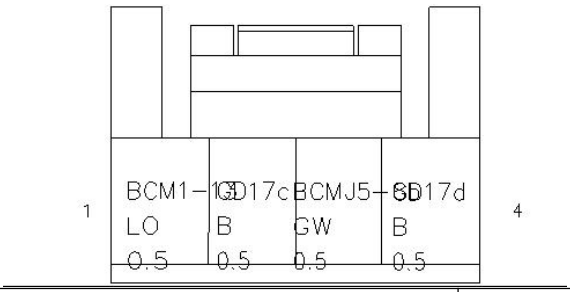
Connector Pin definition

Left front window lifter switch



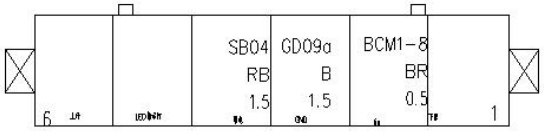
Pin number	Pin definition	Line color	Wire diameter（mm）
1	Left front door lift switch	LR	0.5
2	ground	B	0.5
3	Backlight	GW	0.5
4	ground	B	0.5

Right front window lifter switch



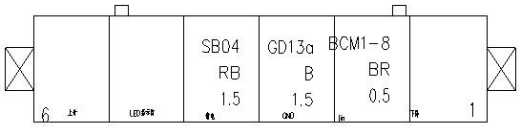
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Right front door lift switch	LO	0.5
2	ground	B	0.5
3	Backlight	GW	0.5
4	ground	B	0.5

Left front glass lifting motor L7



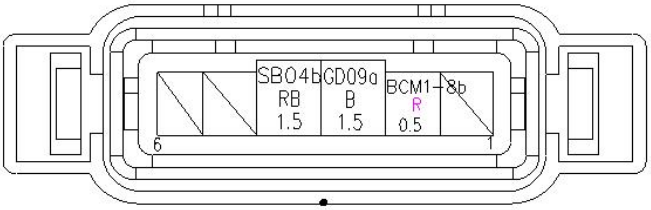
Pin number	Pin definition	Line color	Wire diameter (mm)
1	-	-	-
2	LIN line	BR	0.5
3	ground	B	1.5
4	Power supply	RB	1.5

Right front glass lifting motor L7



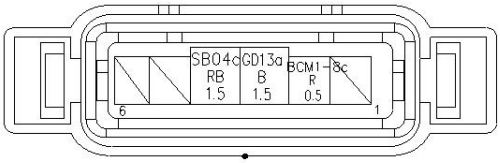
Pin number	Pin definition	Line color	Wire diameter (mm)
1	-	-	-
2	LIN line	BR	0.5
3	ground	B	1.5
4	Power supply	RB	1.5

Left front glass lifting motor L6



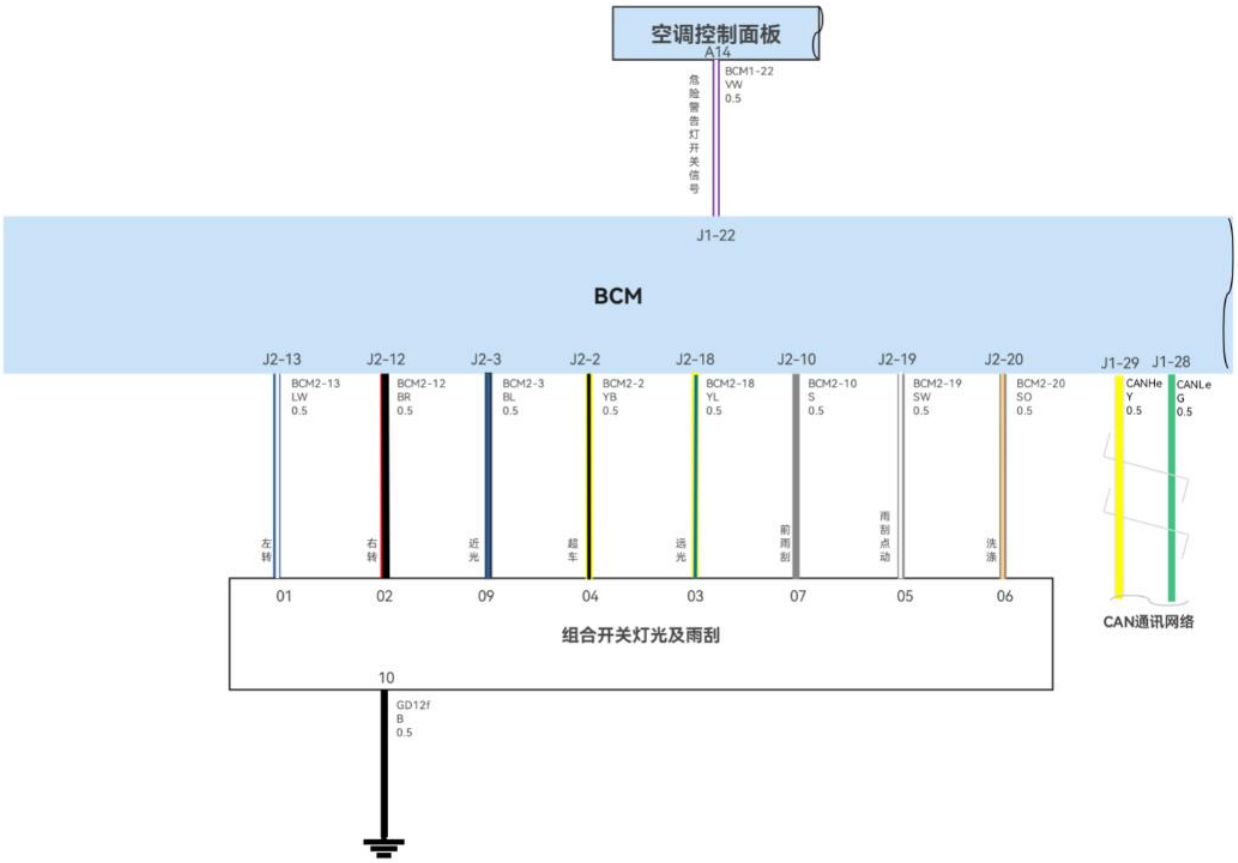
Pin number	Pin definition	Line color	Wire diameter (mm)
1	-	-	-
2	LIN line	R	0.5
3	ground	B	1.5
4	Power supply	BR	1.5

Right front glass lifting motor L6

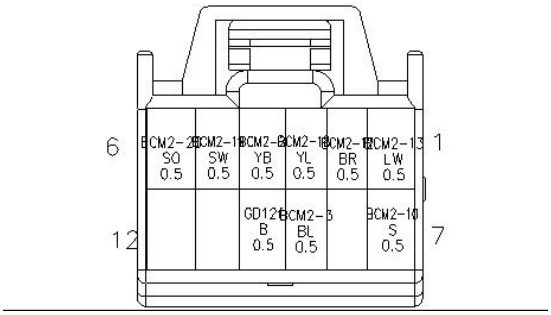


Pin number	Pin definition	Line color	Wire diameter (mm)
1	-	-	-
2	LIN line	R	0.5
3	ground	B	1.5
4	Power supply	BR	1.5

5.9.3.4 Working principle diagram of the combined switch



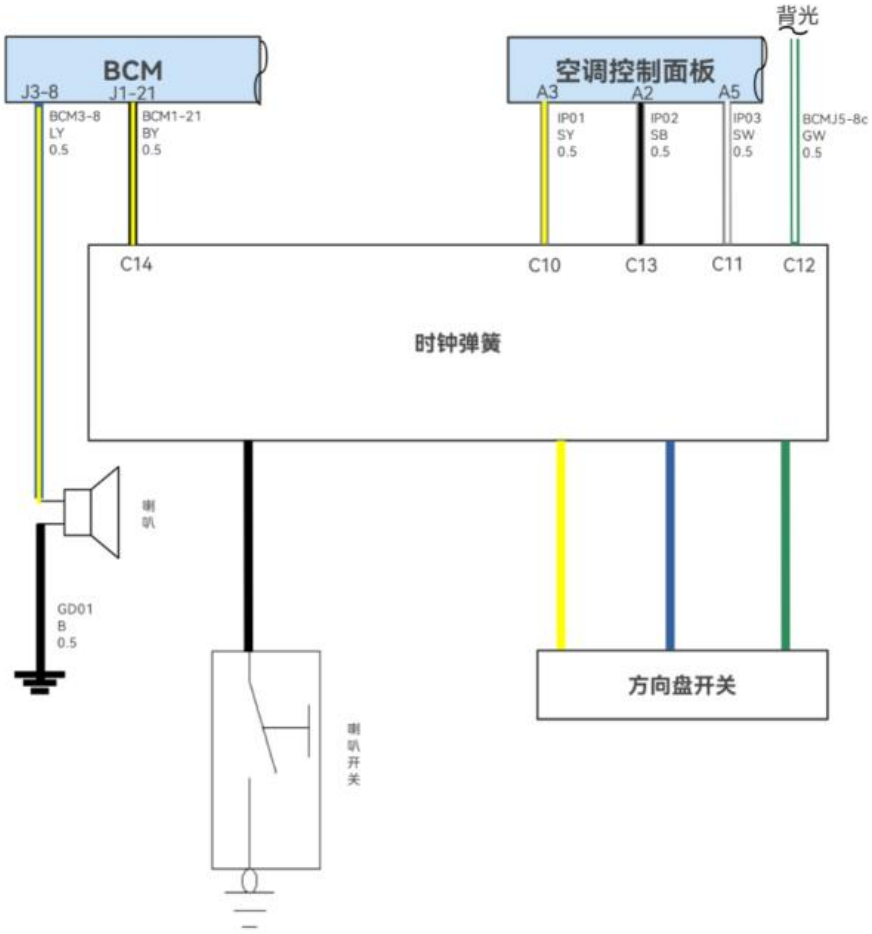
Connector Pin definition



Combination switch

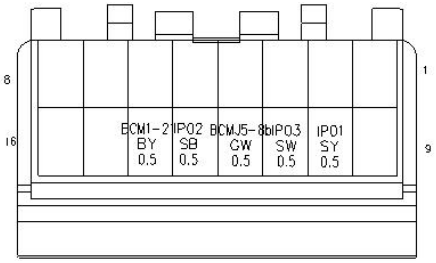
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Turn left	LW	0.5
2	Turn right	BR	0.5
3	High beam	YL	0.5
4	Overtaking switch	YB	0.5
5	The wiper moves a little	SW	0.5
6	Front wash switch	SO	0.5
7	Front wiper switch input	S	0.5
8	-	-	-
9	Low beam lamp	BL	0.5
10	ground	B	0.5
11-12	-	-	-

5.9.3.5 Working principle diagram of the clock spring



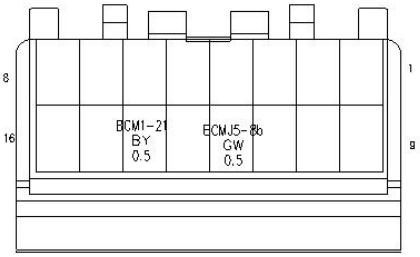
Connector Pin definition

High-end L7 clock spring



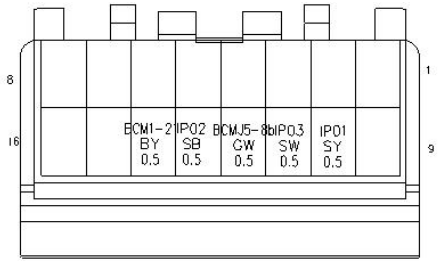
Pin number	Pin definition	Line color	Wire diameter（mm）
10	Fang kong 1 (ACC Function)	SY	0.5
11	Fang kong 2 (Menu)	SW	0.5
12	The steering wheel switch is back lit	GW	0.5
13	The public end of the controlled area	SB	0.5
14	Horn switch	BY	0.5

Low configuration of clock spring L7



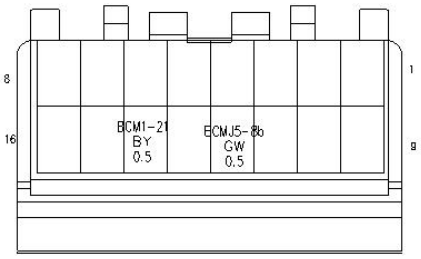
Pin number	Pin definition	Line color	Wire diameter (mm)
12	The steering wheel switch is back lit	GW	0.5
14	Horn switch	BY	0.5

High-end L6 clock spring



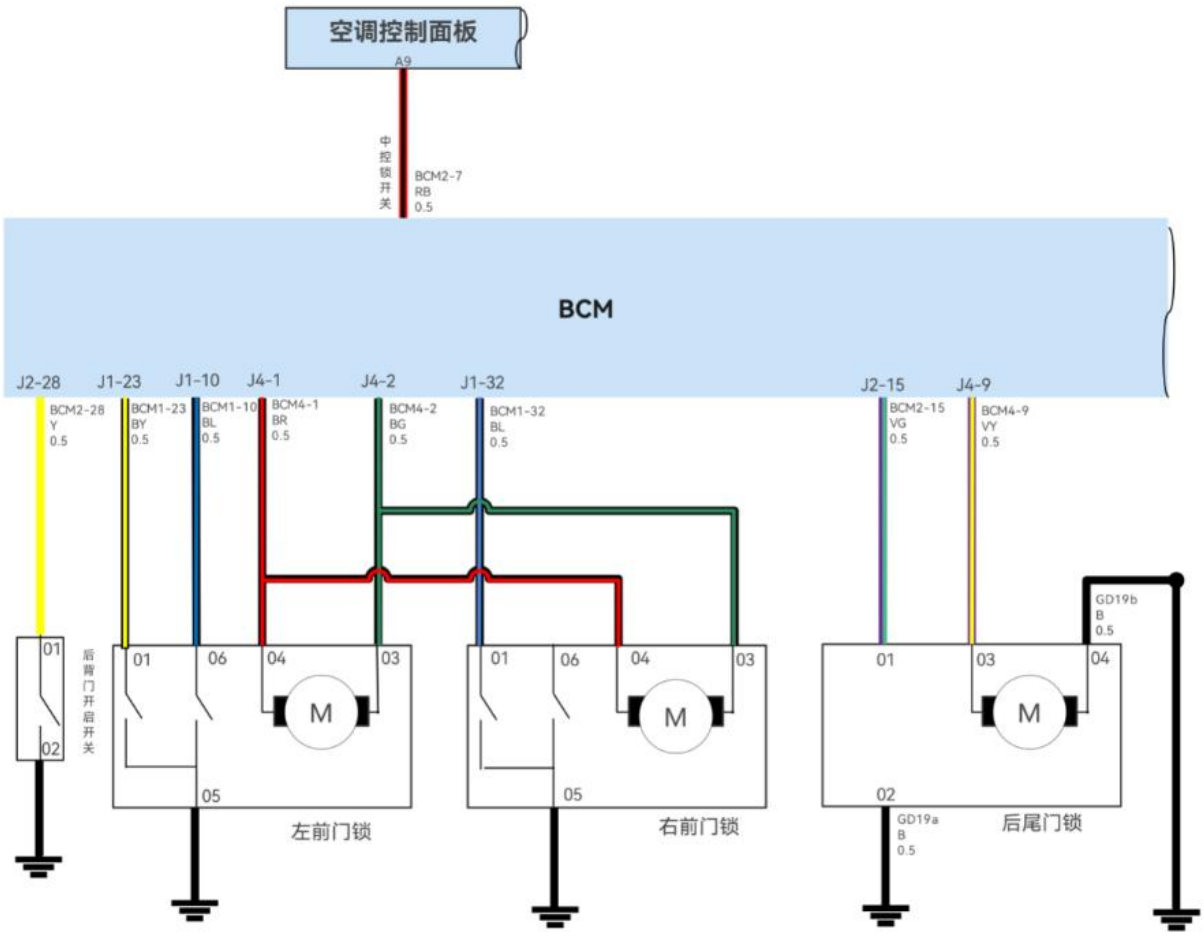
Pin number	Pin definition	Line color	Wire diameter (mm)
10	Fang kong 1 (ACC Function)	SY	0.5
11	Fang kong 2 (Menu)	SW	0.5
12	The steering wheel switch is back lit	GW	0.5
13	Control the public end of the land	SB	0.5
14	Horn switch	BY	0.5

Low configuration of clock spring L6



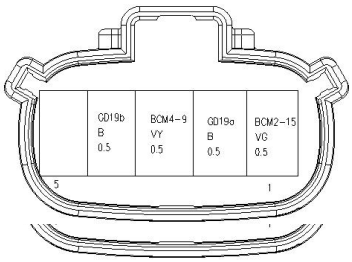
Pin number	Pin definition	Line color	Wire diameter (mm)
12	The steering wheel switch is backlit	GW	0.5
14	Horn switch	BY	0.5

5.9.3.6 Working principle diagram of the car door lock



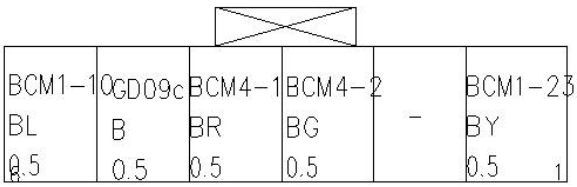
Connector Pin definition

Rear door lock L7/L6



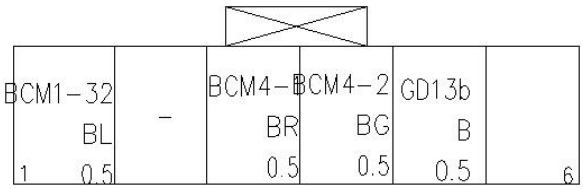
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Input the status of the rear door	VG	0.5
2	ground	B	0.5
3	Door unlocking	VY	0.5
4	ground	B	0.5

Left front door lock L7 high configuration/low configuration



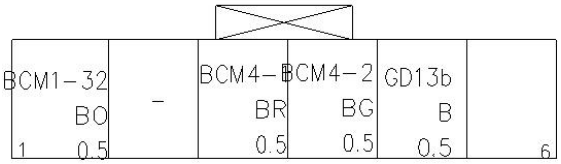
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Left front door status	BY	0.5
3	Door locking	BG	0.5
4	Unlock the positive terminal of the car door	BR	0.5
5	ground	B	0.5
6	The status of the left front lock	BL	0.5

The right front door lock L7 is low-end



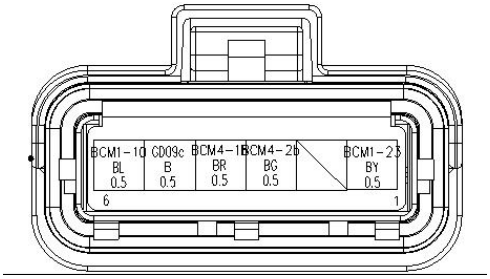
Pin number	Pin definition	Line color	Wire diameter (mm)
1	The status of the right front door	BL	0.5
3	Unlock the positive terminal of the car door	BR	0.5
4	Door locking	BG	0.5
5	ground	B	0.5

Right front door lock L7 high-end configuration



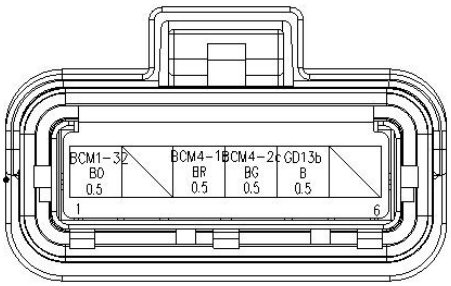
Pin number	Pin definition	Line color	Wire diameter (mm)
1	The status of the right front door	BL	0.5
3	Unlock the positive terminal of the car door	BR	0.5
4	Door locking	BG	0.5
5	ground	B	0.5

Left front door locker L6 High-end configuration/ Low-end



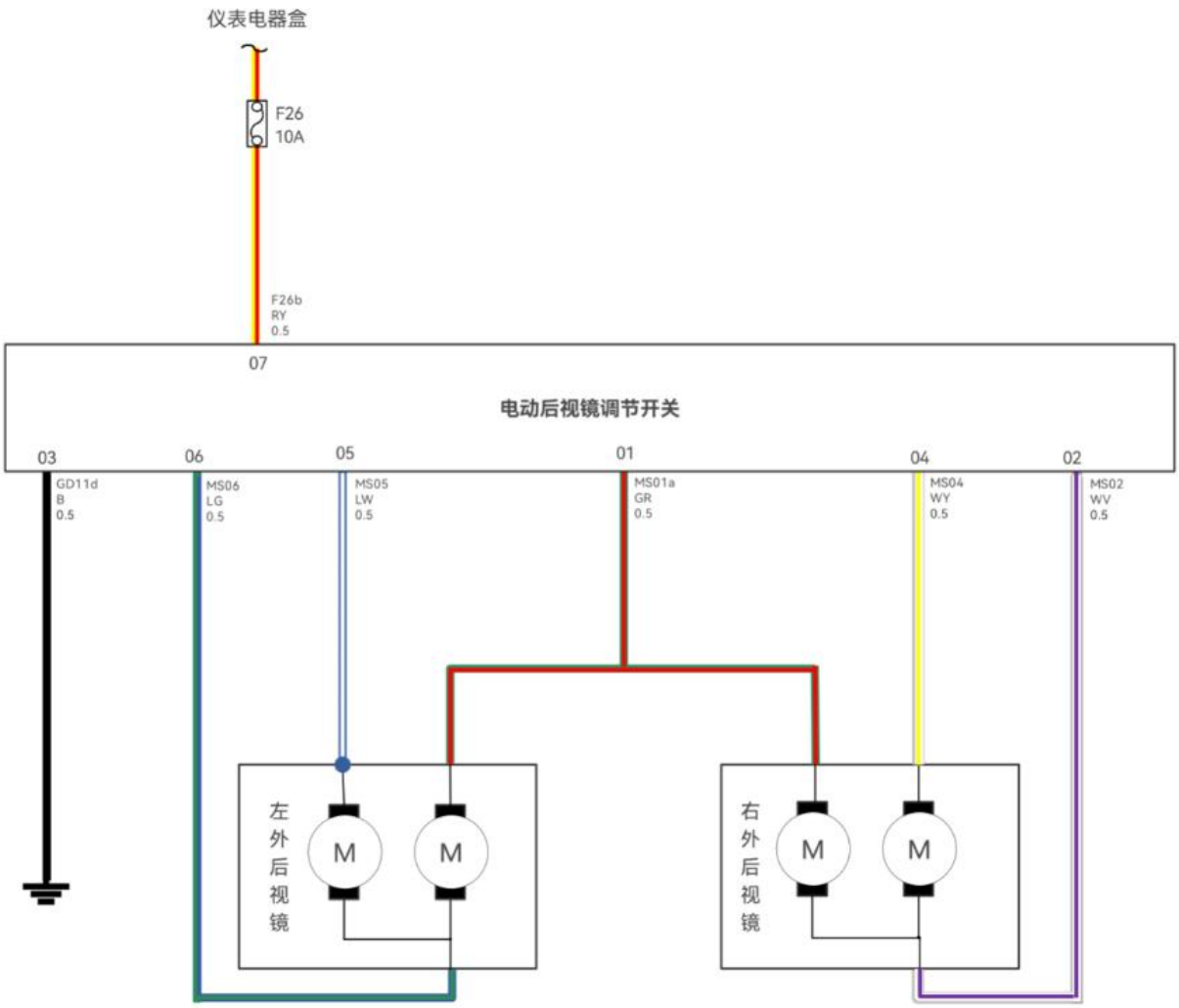
Pin number	Pin definition	Line color	Wire diameter (mm)
1	Left front door status	BY	0.5
3	Door locking	BG	0.5
4	Unlock the positive terminal of the car door	BR	0.5
5	ground	B	0.5
6	The status of the left front lock	BL	0.5

Right front door locker L6 High-end configuration/ Low-end

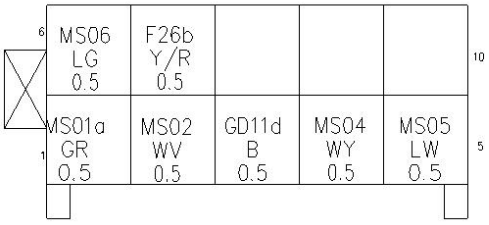


Pin number	Pin definition	Line color	Wire diameter (mm)
1	The status of the right front door	BL	0.5
3	Unlock the positive terminal of the car door	BR	0.5
4	Door locking	BG	0.5
5	ground	B	0.5

5.9.3.7 Working principle diagram of electric rearview mirror



Pin definition of the connector
Electric rearview mirror adjustment switch L7



Pin number	Pin definition	Line color	Wire diameter (mm)
1	The common end of the upper and lower motors on the left rearview mirror	LW	0.5
2	The common terminals of the motors on the left, right, top and bottom of the right rearview mirror	WY	0.5
3	ground	B	0.5
4	The left and right motor ends of the right rearview mirror	WV	0.5
5	The motor ends on both sides of the left rearview mirror	GR	0.5
6	The common terminals of the motors on the left, right, up and down of the left rearview mirror	LG	0.5
7	Power supply	RY	0.5

5.9.4 Disassembly and installation

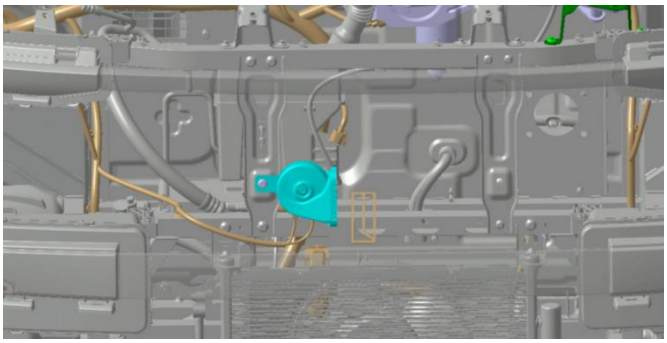
1. Tweeter disassembly

Disassembly and installation

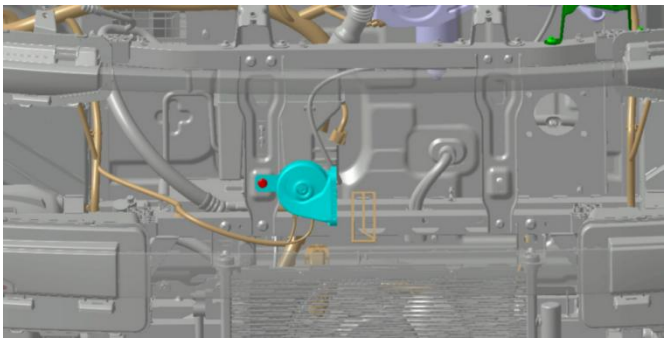
Disassembly

1.1. Remove the front hood.See: Front Hood disassembly and installation

1.2. Disconnect the high-pitched speaker wiring harness connector.



1.3. Remove one fixing bolt of the tweeter and take out the tweeter.



Installation

Install in the reverse order of disassembly

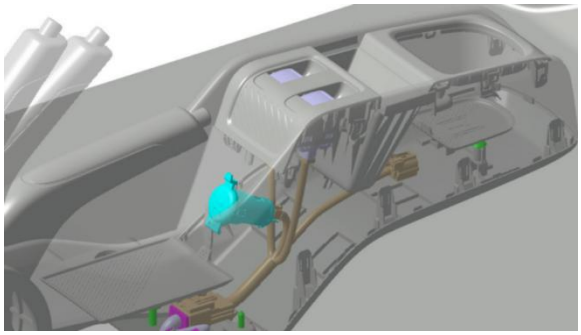
Torque: High-frequency speaker connection bolt (35±3Nm)

2.12V power supply disassembly

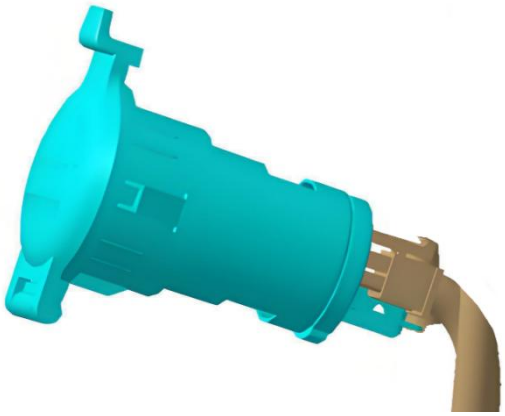
Unloading and installation

Disassembly

2.1. Remove the 12V power supply.



2.2.Disconnect the 12V power wiring harness connector.



Installation

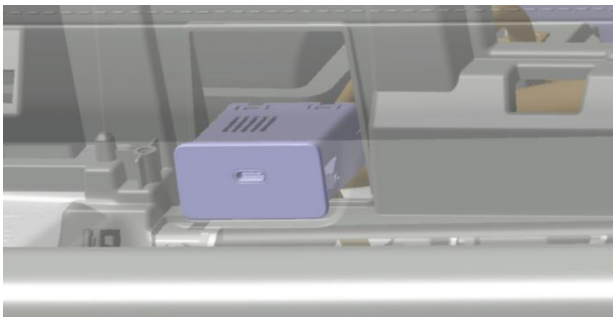
Install in the reverse order of disassembly

3. Disassembly and installation of Type-c interface

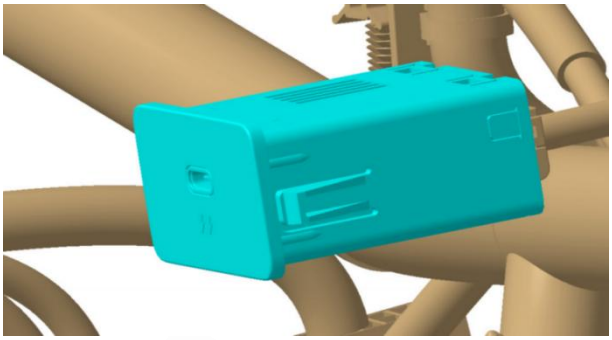
Disassembly

3.1. Disassemble the dashboard assembly. For reference: Disassembly and installation of the dashboard assembly

3.2. Remove the Type-c interface.



3.3. Disconnect the Type-c wiring harness connector.



Installation

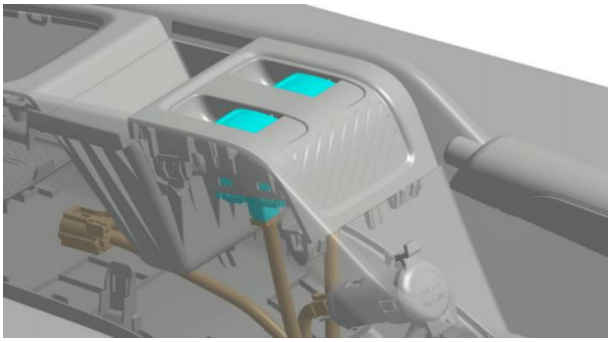
Install in the reverse order of disassembly

4. Disassembly and installation of door and window lift switchesDisassembly

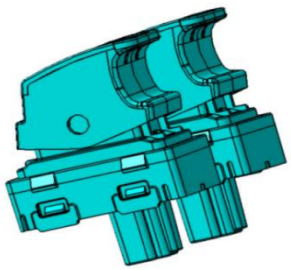
4.1Remove the sub-dashboard paint panel assembly.

See：Disassembly and installation of the painted panel of the secondary instrument panel

4.2. Disconnect the wiring harness connector of the door and window lift switch.



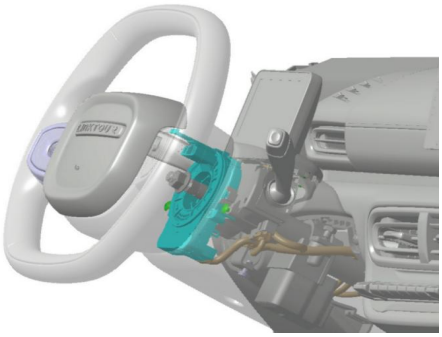
4.3.Remove the door and window lift switches.



Installation
Install in the reverse order of disassembly

5. Disassembly and installation of combination switches

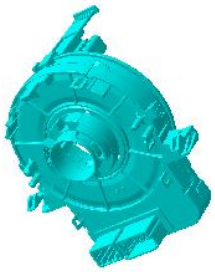
Disassembly
5.1.Remove the steering wheel. See: Steering Wheel Disassembly and installation



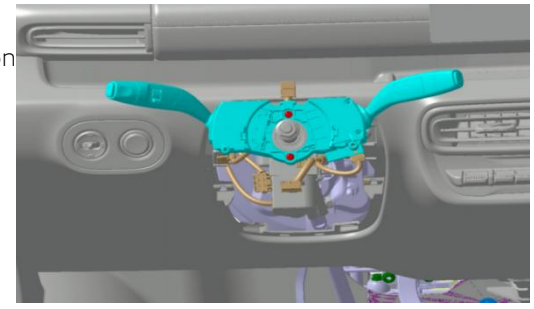
5.2. Remove the guard on the steering column. See: Disassembly and installation of the guard on the Steering Column

5.3.Remove the lower guard assembly of the steering column. See: Disassembly and installation of the lower guard of the Steering column

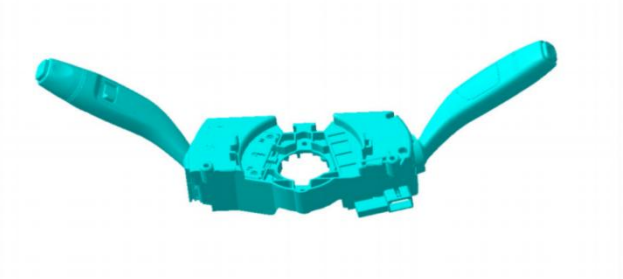
5.4. Remove the clock spring.



5.5.Disconnect the wiring harness connector of the combination switch.



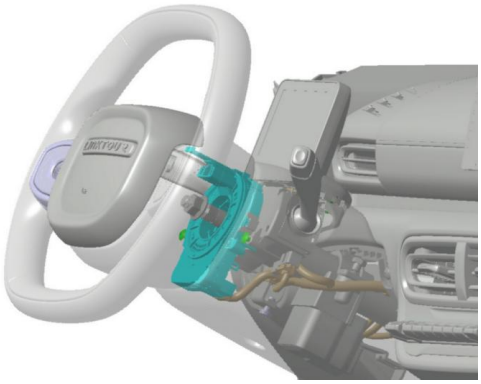
5.6. Remove the two fixing screws and take out the combination switch.



Installation
Install in the reverse order of disassembly

6.Disassembly and installation of clock springs

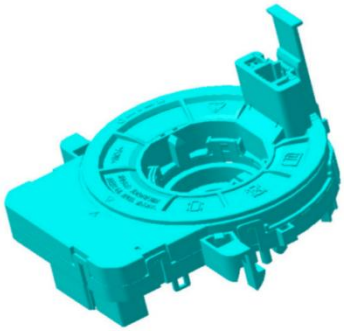
Disassembly
6.1. Remove the steering wheel. See: Steering Wheel Disassembly and installation



6.2. Remove the guard on the steering column. See: Disassembly and installation of the guard on the Steering column

6.3. Remove the lower guard assembly of the steering column. See: Disassembly and installation of the lower guard of the Steering column

6.4. Disconnect the clock spring harness connector.



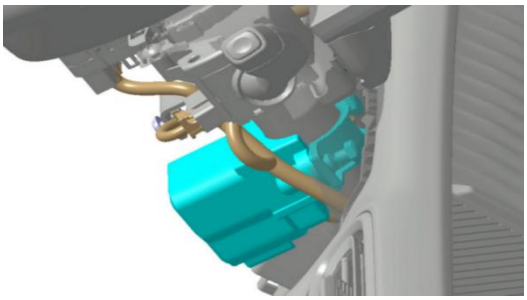
6.5. Pry open the three fixed clips of the clock spring and remove the clock spring.
Installation
Install in the reverse order of disassembly

7. Disassembly and installation of the steering wheel lock

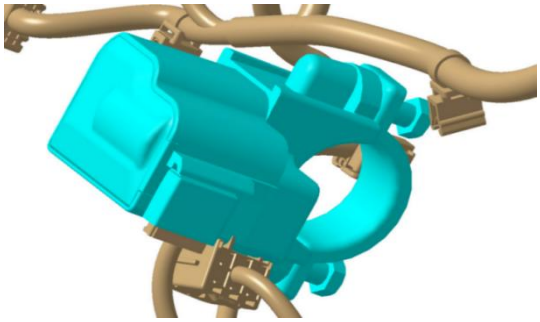
Disassembly

7.1. Remove the guard on the steering column. See: Disassembly and installation of the guard on the Steering column
7.2. Remove the lower guard assembly of the steering column. See: Disassembly and installation of the lower guard of the Steering column

7.3. Remove the two fixing bolts of the steering wheel lock.

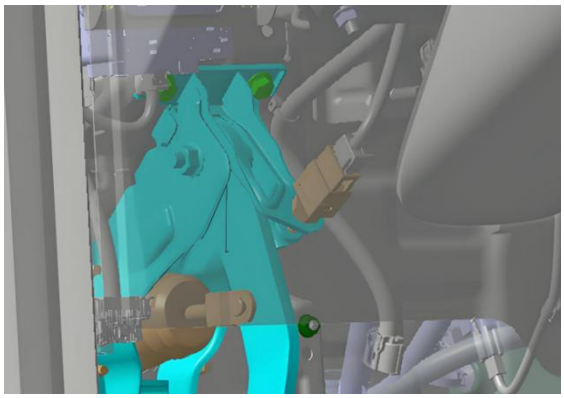


7.4. Disconnect the steering wheel lock harness connector.



Installation
Install in the reverse order of disassembly
Torque: Steering wheel lock connection bolt (35±3Nm)

8. Disassembly and installation of the brake switch



Disassembly
8.1. Remove the brake switch from the brake pedal bracket.

8.2. Disconnect the brake switch and connect the wiring harness plug.

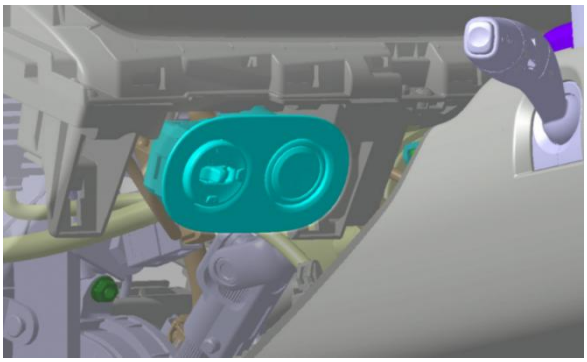
Installation
Install in the reverse order of disassembly

9.Dashboard switch

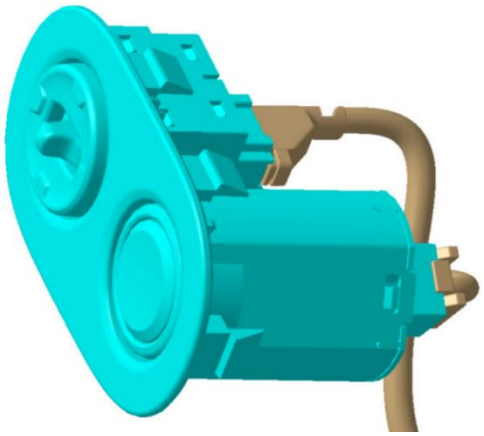
Disassembly and installation

Disassembly

9.1. Remove the dashboard switch.



9.2.Disconnect the dashboard switch wiring harness connector and remove the dashboard switch.



Installation

In the reverse order of disassembly

6. Interior and exterior decoration

6.1 Overview

The interior and exterior systems of automobiles can be divided into two major systems: interior and exterior, covering decorative, functional and safety components. Among them, the interior mainly includes cabin panels and comfort configurations, while the exterior mainly focuses on functional decorations and protective devices on the exterior of the vehicle body.

6.2 It is composed of components of the interior and exterior decoration systems

❖Automobile interior system

The interior of a car mainly covers the interior space of the cockpit and includes the following core components

❖Cockpit coverage system

Dashboard system: Integrates instrument display, air conditioning control and storage functions.

Door inner guard plate system: It includes handrails, storage compartments and window control modules.

Roof system: Integrated with sun visors, interior lighting and sunroof devices.

❖Riding system

Seat assembly: including frame, foam layer, headrest and electric adjustment mechanism.

Seat belt system: Pre-tensioning seat belts and collision Detection devices.

❖Functional components

Center console system: Integrates gear shifting mechanism, cup holders and electronic device interfaces.

Acoustic system: It includes noise reduction materials such as carpets and sound insulation cotton.

❖Automobile exterior system

The exterior components are mainly distributed on the exterior of the vehicle body and consist of three major functional modules:

❖Body protection components

Front and rear bumpers: Made of PP/PC-ABS material and integrated with energy-absorbing structure.

Wheel arch trim: Protects wheel arches and optimizes aerodynamics.

❖Functional exterior decoration

Lighting system: It includes LED headlights and turn signal lights.

Rearview mirror system: Electrically adjustable lenses.

❖Exterior decorative parts

Air intake grille: A combination of design elements and heat dissipation function.

Roof rack: Load-bearing structure made of aluminum alloy.

Body trim: Chrome decorative strips and anti-scratch strips.

❖Special functional components

Special Note should be paid to some bridging components

Environmental control system: The air conditioning vents are integrated into the dashboard design.

Intelligent components: The display module is seamlessly integrated with the dashboard.

6.3 Technical parameters of main components

Technical parameters of main components, bolt tightening torque

Connection information description	Number	Torque	L6 Low	L6 Medium	L6 high	L7 Low	L7 high
The fixation of the dashboard body	8	4±1	Y	Y	Y	Y	Y
The fixation of the instrument panel lower guard assembly 1	3	4±1	Y	Y	Y	Y	Y
Fixing of the instrument panel lower guard assembly 2	6	2±0.5	Y	Y	Y	Y	Y
The upper guard of the steering column is installed on the lower guard plate and the combination switch 1	4	2±0.5	Y	Y	Y	Y	Y
The upper guard of the steering column is installed on the lower guard plate and the combination switch 2	1	2±0.5	Y	Y	Y	Y	Y

The sub-dashboard is fixed to the vehicle body	4	4±1	Y	Y	Y	Y	Y
From the lower trim panel of the sub-dashboard to the main body of the sub-dashboard	4	2±0.5	Y	Y	Y	Y	Y
The left rear side panel inside the side panel is installed on the vehicle body	2	2±0.5	Y	Y	Y	Y	Y
The right rear side panel inside the side panel is installed on the vehicle body	2	2±0.5	Y	Y	Y	Y	Y
The lower guard plate assembly of the left A-pillar inside the side panel is installed onto the vehicle body	1	2±0.5	Y	Y	Y	Y	Y
The lower guard plate assembly of the right A-pillar inside the side panel is installed onto the vehicle body	1	2±0.5	Y	Y	Y	Y	Y
The left sill trim assembly inside the side panel is installed on the vehicle body	1	2±0.5	Y	Y	Y	Y	Y
The right sill trim assembly inside the side panel is installed on the vehicle body	1	2±0.5	Y	Y	Y	Y	Y
From the inner panel of the left door to the body 1	3	2±0.5	Y	Y	Y	Y	Y
From the inner panel of the left door to the body 2	4	2±0.5	Y	Y	Y	Y	Y
From the inner panel of the left door to the body 3	1	2±0.5	Y	Y	Y	Y	Y
From the inner panel of the right door to the body 1	3	2±0.5	Y	Y	Y	Y	Y
From the inner panel of the right door to the body 2	4	2±0.5	Y	Y	Y	Y	Y
From the inner panel of the right door to the body 3	1	2±0.5	Y	Y	Y	Y	Y
Left front guide rail interior panel assembly	1	2±0.5	Y	Y	Y	Y	Y
Left front guide rail interior panel assembly	1	2±0.5	Y	Y	Y	Y	Y
The seat belt should be moved up and down	/	50±5	Y	Y	Y	Y	Y
Seat installation	8	50±5	Y	Y	Y	Y	Y
The sun visor is installed on the vehicle body	6	4±1	N	N	N	Y	Y
Left front wheel grille installation 1	6	3±1	Y	Y	Y	Y	Y
Left front wheel grille installation 2	3	7±1	Y	Y	Y	Y	Y
Right front wheel cover installation 1	6	3±1	Y	Y	Y	Y	Y
Right front wheel cover installation 2	3	7±1	Y	Y	Y	Y	Y
Left rear wheel cover installation 1	7	3±1	Y	Y	Y	Y	Y
Left rear wheel cover installation 2	2	7±1	Y	Y	Y	Y	Y
Installation of the right rear wheel cover 1	7	3±1	Y	Y	Y	Y	Y
Right rear wheel cover installation 2	3	7±1	Y	Y	Y	Y	Y
From the left rear combination light to the rear bumper	4	3±1	Y	Y	Y	Y	Y
From the right rear combination lamp to the rear guard	4	3±1	Y	Y	Y	Y	Y

The left front combination light leads to the vehicle body	3	7±1	Y	Y	Y	Y	Y
The right front combination light leads to the vehicle body	3	7±1	Y	Y	Y	Y	Y
Combine the small light on the left front into the vehicle body	3	7±1	Y	Y	Y	Y	Y
Combine the small light on the right front into the vehicle body	3	7±1	Y	Y	Y	Y	Y
The left A-pillar trim panel assembly is installed on the vehicle body 1	3	3±1	Y	Y	Y	Y	Y
The left A-pillar trim panel assembly is installed on the vehicle body 2	2	7±1	Y	Y	Y	Y	Y
The right side A-pillar trim panel assembly is installed on the vehicle body 1	3	3±1	Y	Y	Y	Y	Y
The right A-pillar trim assembly is installed on the vehicle body 2	2	7±1	Y	Y	Y	Y	Y
Installation of the left outer panel assembly 1	5	3±1	Y	Y	Y	Y	Y
Installation of the left outer panel assembly 2	6	7±1	Y	Y	Y	Y	Y
Installation of the right outer panel assembly 1	5	3±1	Y	Y	Y	Y	Y
Installation of the right outer panel assembly 2	6	7±1	Y	Y	Y	Y	Y
The lower left threshold assembly is installed onto the vehicle body	4	7±1	Y	Y	Y	Y	Y
The lower right threshold assembly is installed onto the vehicle body	4	7±1	Y	Y	Y	Y	Y
The left side trim assembly is installed onto the vehicle body	5	3±1	Y	Y	Y	Y	Y
The right side trim assembly is installed onto the vehicle body	5	3±1	Y	Y	Y	Y	Y
Three left-side A-column decorative panel brackets	6	7±1	Y	Y	Y	Y	Y
Three right-side A-column decorative panel brackets	6	7±1	Y	Y	Y	Y	Y
The exterior panel of the left B-pillar	1	3±1	Y	Y	Y	Y	Y
The exterior panel of the right B-pillar	1	3±1	Y	Y	Y	Y	Y
The decorative panel on the top cover	4	7±1	Y	Y	Y	Y	Y
Installation bracket 1 on the left side of the rear bumper	3	3±1	Y	Y	Y	Y	Y
Installation bracket 2 on the left side of the rear bumper	2	7±1	Y	Y	Y	Y	Y
Installation bracket 1 on the right side of the rear bumper	3	3±1	Y	Y	Y	Y	Y
Installation bracket 2 on the right side of the rear bumper	2	7±1	Y	Y	Y	Y	Y
Left rear bumper trim	3	3±1	Y	Y	Y	Y	Y
Right rear bumper trim	3	3±1	Y	Y	Y	Y	Y
The upper part of the rear bumper body	2	7±1	Y	Y	Y	Y	Y
The lower part of the rear bumper body	2	7±1	Y	Y	Y	Y	Y

Front fender water channel assembly	8	7±1	Y	Y	Y	Y	Y
Front panel assembly	4	3±1	Y	Y	Y	Y	Y
The front bumper extends to the vehicle body	7	7±1	Y	Y	Y	Y	Y
The left bracket of the front bumper is installed onto fender 1	3	3±1	Y	Y	Y	Y	Y
The left bracket of the front bumper is installed on the fender 2	3	7±1	Y	Y	Y	Y	Y
The front bumper right bracket is installed onto fender 1	3	3±1	Y	Y	Y	Y	Y
The front bumper right bracket is installed on the fender 2	3	7±1	Y	Y	Y	Y	Y
The main decorative panel of the left wing sub-panel is installed on the fender	7	3±1	Y	Y	Y	Y	Y
The main decorative panel of the right wing fender is installed on the fender	7	3±1	Y	Y	Y	Y	Y
Left wing sub-board assembly	7	7±1	Y	Y	Y	Y	Y
Left wing sub-board assembly	7	7±1	Y	Y	Y	Y	Y

6.4 Maintenance Operation Guide

Maintenance Operation guidance

一、Exterior operation guidance

- When disassembling, an interior prying board should be used to assist in the disassembly. If an interior prying board is not available, a screwdriver or an equivalent can be used as a substitute, but it should be wrapped.
- When disassembling exterior parts with clips, operate with caution to avoid damage to the clips or the main body of the component
- When prying the snap tongue or claws, do not apply excessive force to avoid damaging them.
- When disassembling the bumper assembly, operate with caution to avoid damaging the bumper fixing latch.
- When disconnecting the wiring harness connectors of the bumper assembly, be careful not to tear the wiring harness connectors and other components.
- When disassembling glass components, protective gloves and goggles should be worn to avoid skin or eye injuries
- When disassembling the glass, handle it gently and place it firmly to prevent damage to the glass during the operation
- Since most of the trim pieces are fixed by clips, when removing the trim pieces, it is necessary to ensure that all clips have been pried out first, and then remove the trim pieces.
- Do not forcibly remove the decorative parts to avoid causing damage to them.
- Inspect and replace all damaged clips.
- The placement position of the decorative parts should be clean and flat to avoid friction on the surface of the decorative parts.
- When installing components with tongue clamps, ensure they are properly installed to prevent them from falling off after installation and affecting the decorative effect.
- When installing components, check whether the fixing clips of the components are missing. If they are missing, add fixing clips.

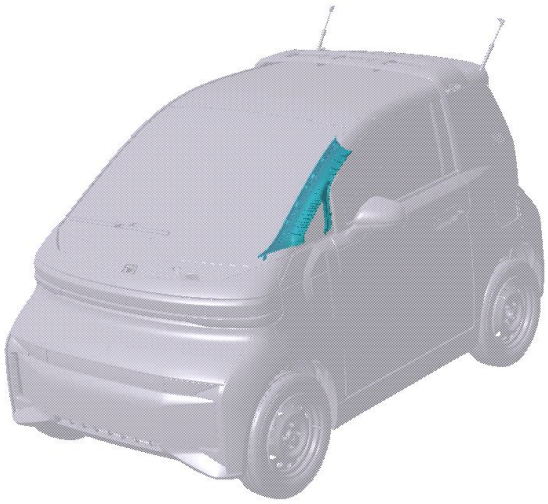
二、Interior operation guidance

- When it is necessary to enter the vehicle for work, the seats and other components should be covered to prevent them from getting stained with oil.
- When disassembling interior parts, an interior prying board should be used. If an interior prying board is not available, a screwdriver or an equivalent can be used as a substitute, but it should be wrapped.
- Do not use sharp tools to remove interior parts.
- Since most interior parts are fixed by clips, when removing the interior and exterior parts, it is necessary to ensure that all clips have been pried out first, and then remove the interior parts.
- Do not forcibly disassemble the interior parts to avoid causing damage to them.
- When installing components, check whether the fixing clips of the components are missing. If they are missing, add fixing clips.
- Inspect and replace all damaged clips.
- The placement of interior parts should be clean and flat to avoid friction on the surface of the trim parts.

6.5 Inner side guard face

6.5.1 The upper guard plate assembly of the left A-pillar inside the side enclosure

Component drawing



Disassembly and installation

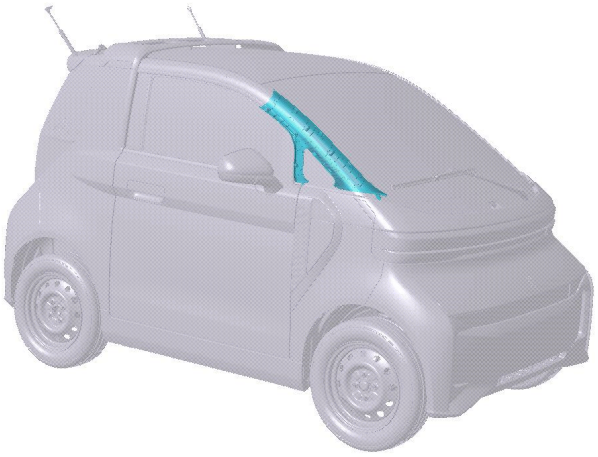
1.Remove the sealing strip of the left door opening.

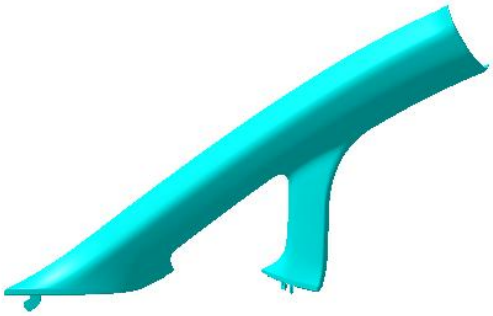
2. Disassemble the upper guard plate assembly of the left A-pillar inside the side enclosure.

Installation: Install in the reverse order of disassembly

6.5.2 The upper guard plate assembly of the right A-pillar inside the side enclosure

Component drawing

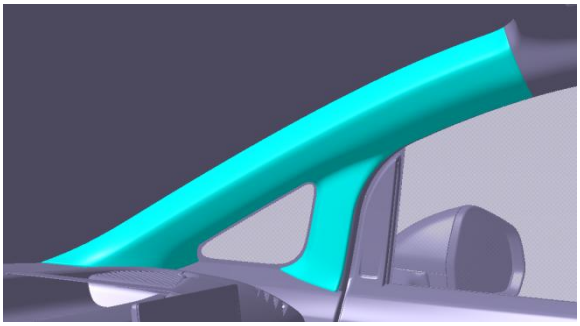




Disassembly and installation

1.Remove the sealing strip of the right door opening.

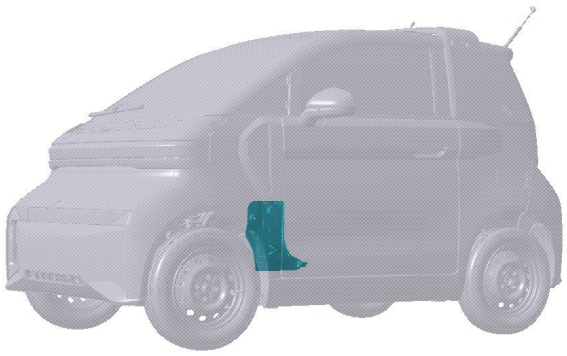
2.Disassemble the upper guard plate assembly of the right A-pillar inside the side enclosure.



Installation: Install in the reverse order of disassembly

6.5.3 The lower guard plate assembly of the left A-pillar inside the side enclosure

Component drawing

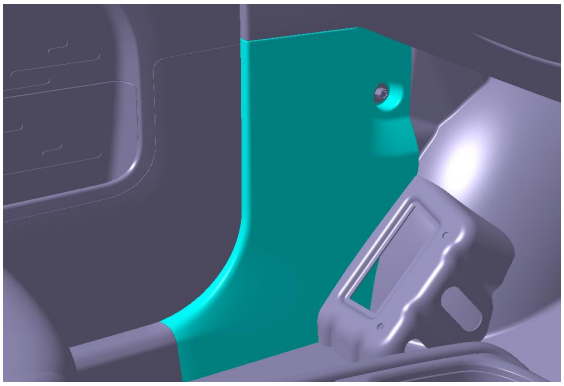


Disassembly and installation

1.Remove the sealing strip on the left door opening.

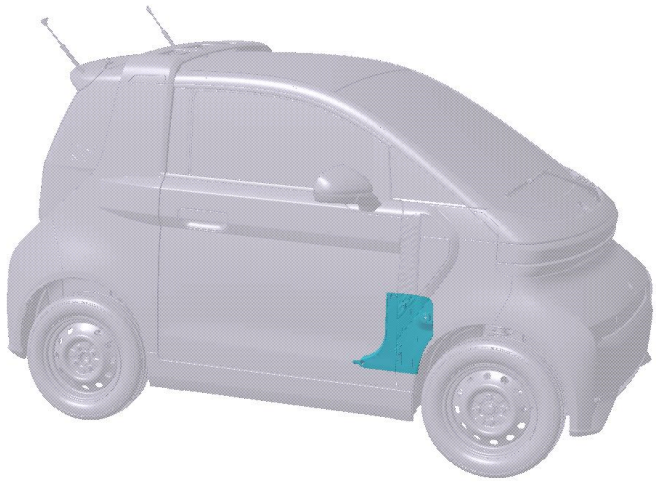
2.Remove the plastic hexagonal fixing screws.

3.Disassemble the lower guard plate assembly of the left A-pillar inside the side enclosure.



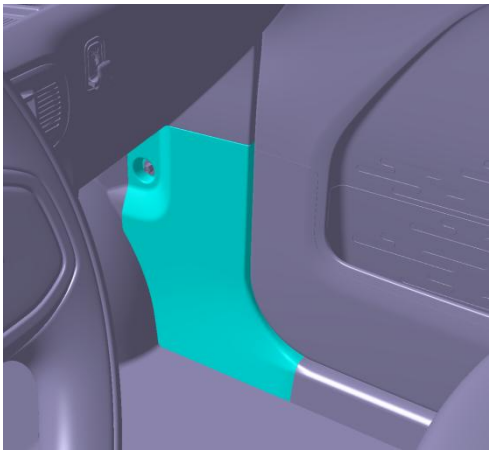
Installation: Install in the reverse order of disassembly

6.5.4 Component drawing of the lower guard plate assembly of the right A-pillar inside the side panel



Disassembly and installation
1.Remove the sealing strip of the right door opening.

2.Remove the plastic hexagonal fixing screws.

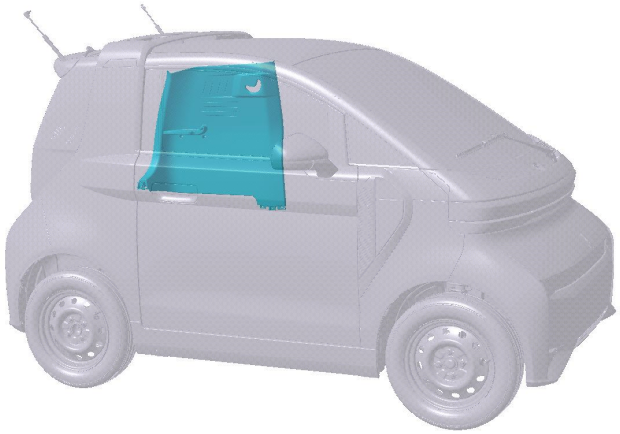


3.Disassemble the lower guard plate assembly of the right A-pillar inside the side enclosure.

Installation: Install in the reverse order of disassembly

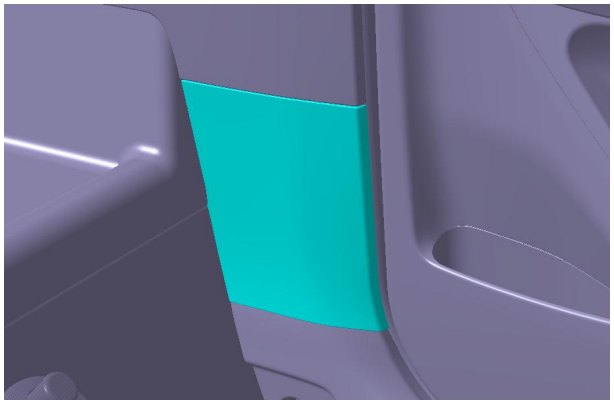
6.5.5 The main body of the upper guard plate of the left rear side enclosure inside the side enclosure

Component drawing



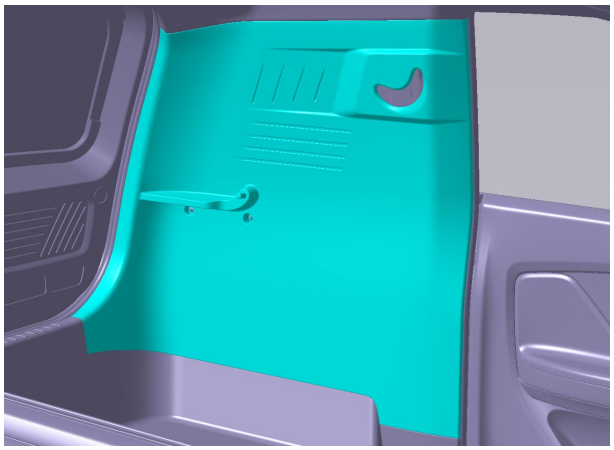
Disassembly and installation

1.Remove the sealing strip of the left rear door opening



2.Disassemble the left rear lower guard plate assembly inside the side panel

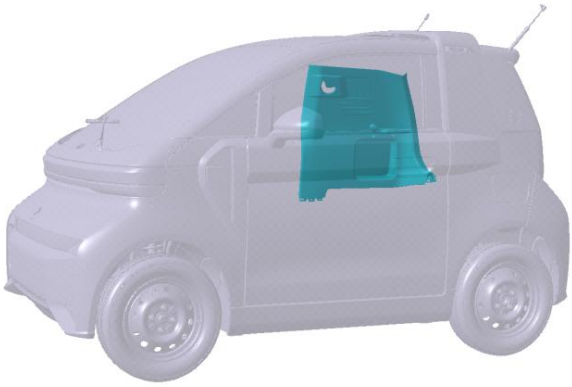
3.Remove the two fixing bolts and take off the upper guard plate of the left rear side enclosure inside the side enclosure.

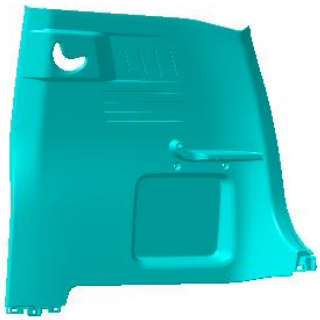


Installation: Install in the reverse order of disassembly

6.5.6 The main body of the upper guard plate on the right rear side of the inner side enclosure

Component drawing

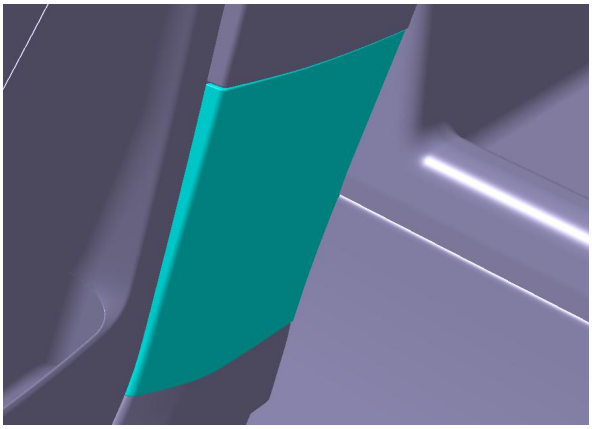




Disassembly and installation

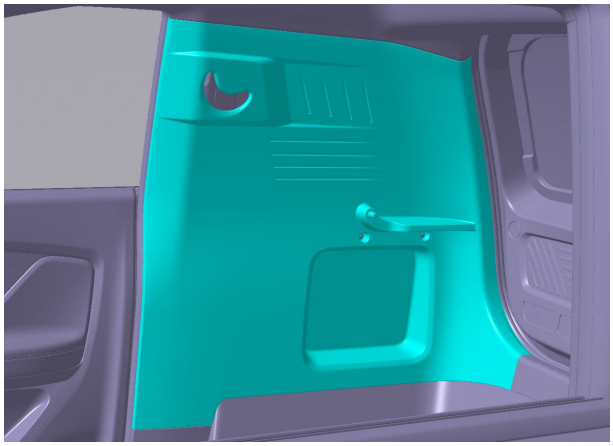
1.Remove the sealing strip of the right rear door opening

2.Disassemble the assembly of the right rear lower guard plate inside the side panel



3.Remove the two fixing bolts and take off the main body of the upper guard plate of the right rear side enclosure inside the side enclosure..

Installation: Install in the reverse order of disassembly



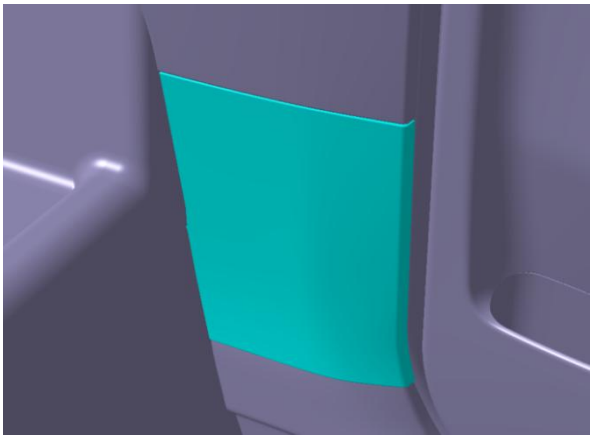
6.5.7 The assembly of the left rear lower guard plate inside the side panel

Component drawing

Disassembly and installation

1.Remove the sealing strip of the left rear door opening

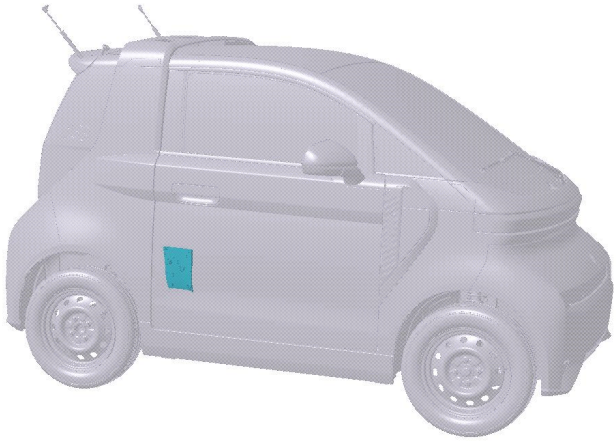
2.Disassemble the left rear lower guard plate assembly inside the side panel

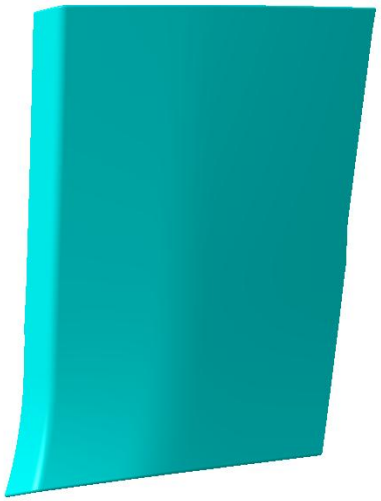


Installation: Install in the reverse order of disassembly

6.5.8 The assembly of the right rear lower guard plate inside the side panel

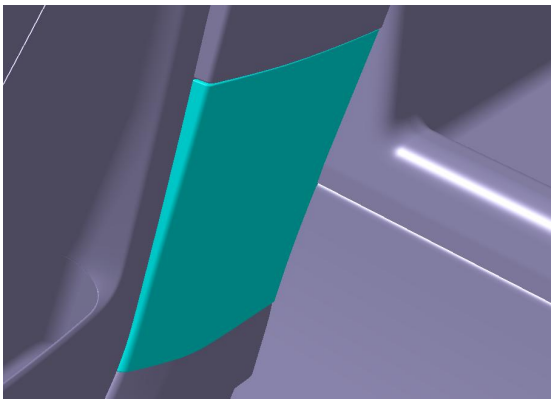
Component drawing





Disassembly and installation

1.Remove the sealing strip of the right rear door opening

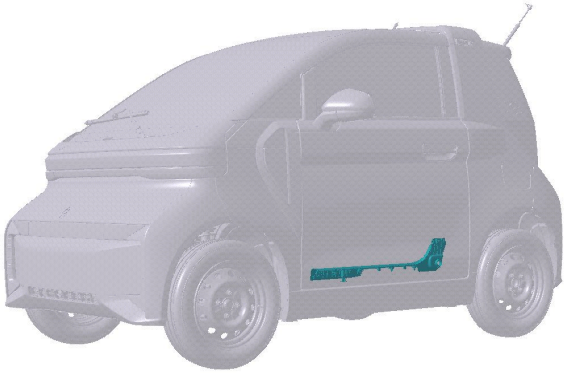


2.Disassemble the assembly of the right rear lower guard plate inside the side panel

Installation: Install in the reverse order of disassembly

6.5.9 The assembly of the left front threshold guard plate inside the side panel

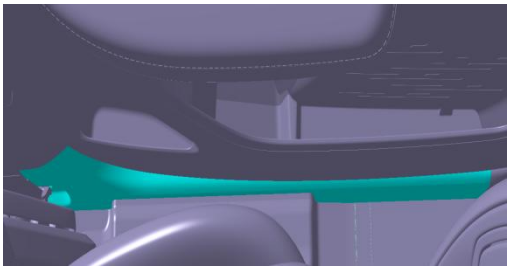
Component drawing



Disassembly and installation

1.Remove the sealing strip on the left door opening

2.Remove the fixing screws at the lower part of the left seat belt



3.Disassemble the left front threshold guard plate assembly inside the side panel

Installation: Install in the reverse order of disassembly

6.5.10 The assembly of the right front threshold guard plate inside the side panel

Component drawing

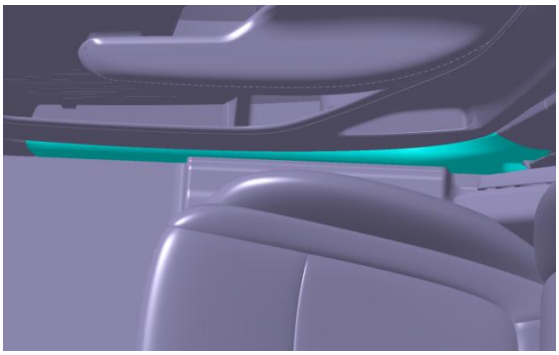
Disassembly and installation

1.Remove the sealing strip on the left door opening

2. Remove the screws that fix the lower part of the right seat belt

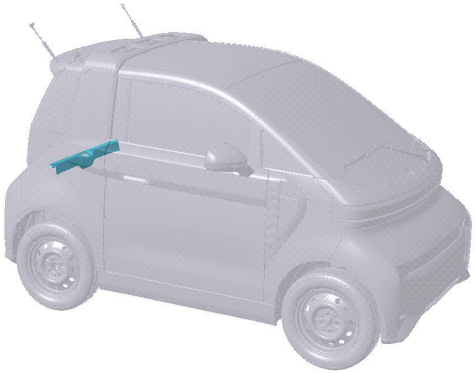
3.Disassemble the left front threshold guard plate assembly inside the side panel

Installation: Install in the reverse order of disassembly



6.5.11 Rear threshold guard plate assembly inside the side panel

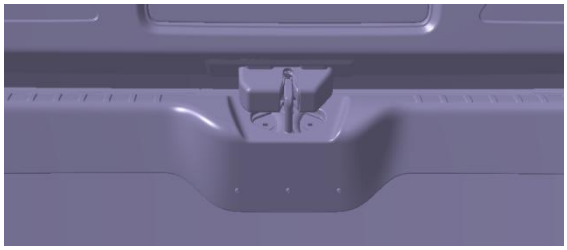
Component drawing



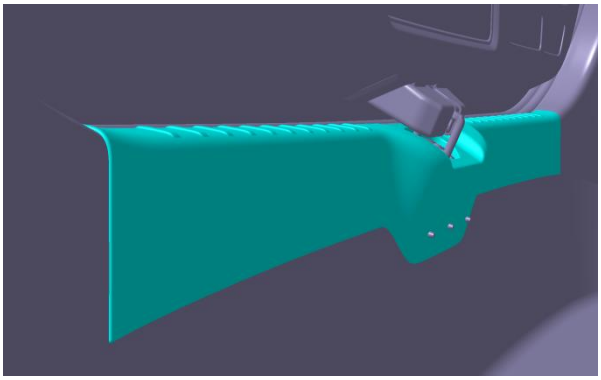
Disassembly and installation

1.Remove the sealing strip of the door opening

2.Remove the spare door lock latch



3.Disassemble the rear threshold guard plate assembly inside the side panel

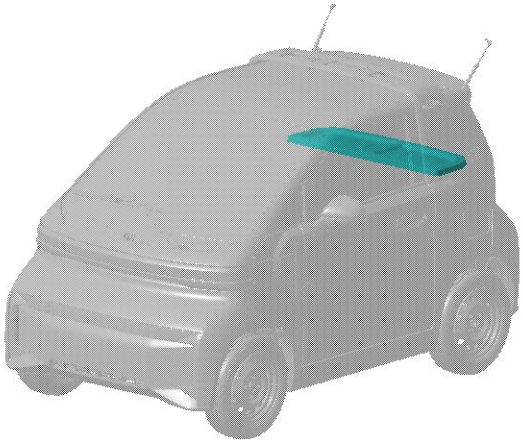


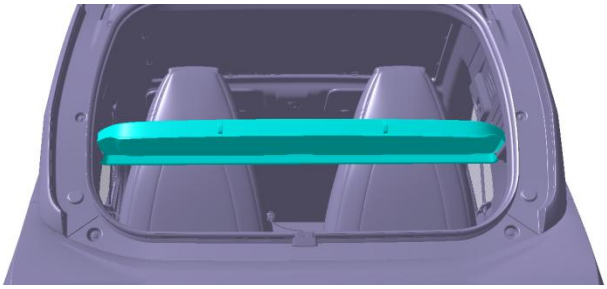
Installation: Install in the reverse order of disassembly

6.6 Suitcase face protection

6.6.1 Coat rack assembly

Component drawing





Disassembly and installation

1.Disengage both sides of the coat rack assembly from the clips.

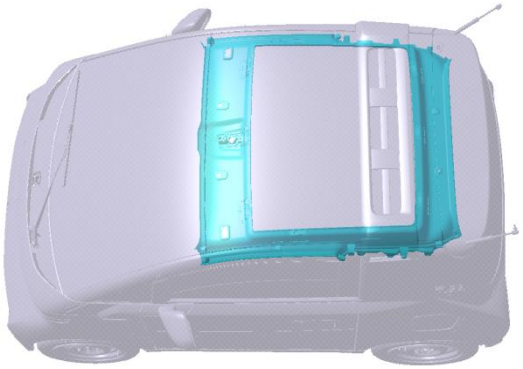
2.After the clips on both sides are removed, take off the coat rack assembly.

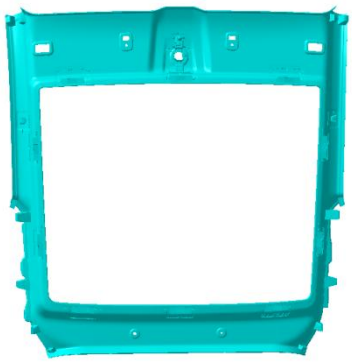
Installation: Install in the reverse order of disassembly

6.7 The inner protective surface of the top cover

6.7.1 Ceiling assembly

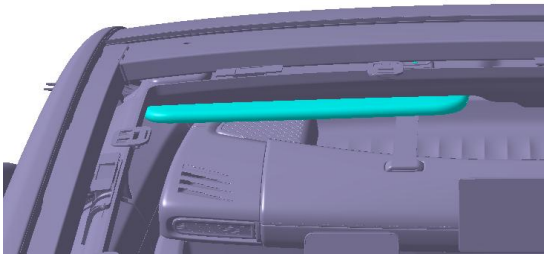
Component drawing



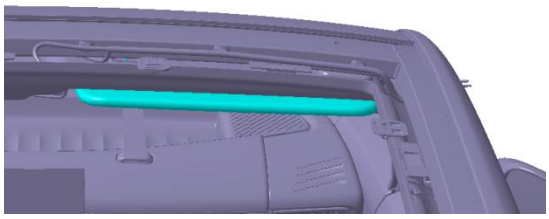


Disassembly and installation

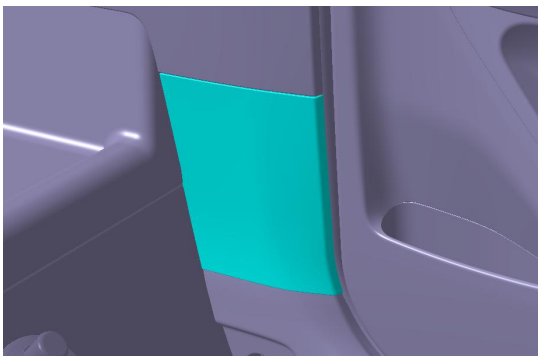
1.Disassemble the left sun visor assembly



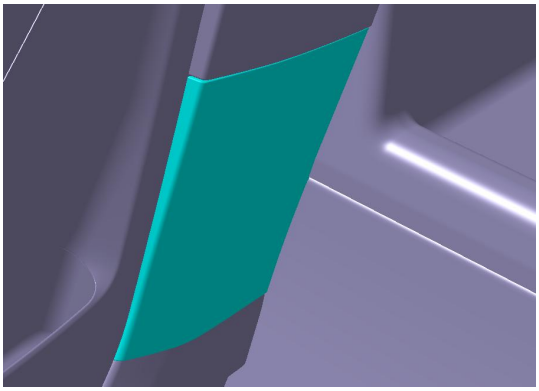
2.Disassemble the right sun visor assembly



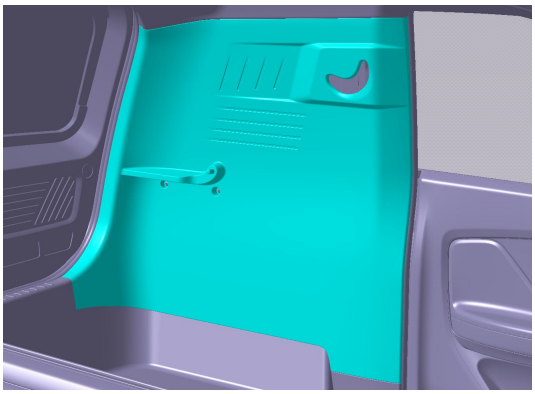
3.Disassemble the left rear lower guard plate assembly inside the side panel



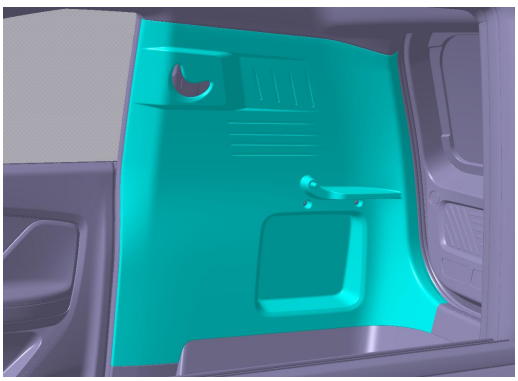
4.Disassemble the assembly of the right rear lower guard plate inside the side panel



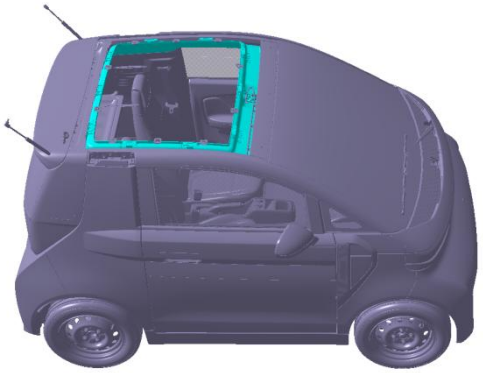
5.Disassemble the assembly of the left rear side enclosure panel inside the side enclosure



6.Disassemble the assembly of the right rear side enclosure panel inside the side enclosure



7.Disassemble the ceiling assembly

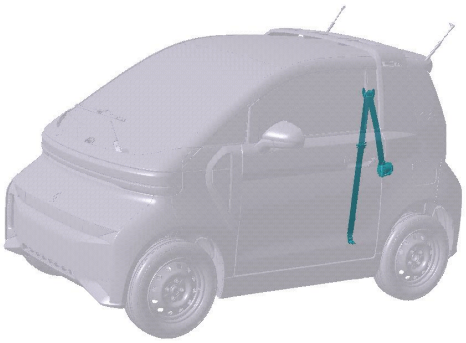


Installation: Install in the reverse order of disassembly

6.8 Seat belt

6.8.1 Left seat belt assembly

Component drawing

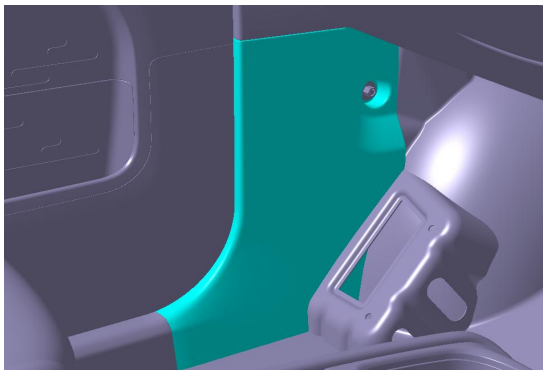


Disassembly and installation

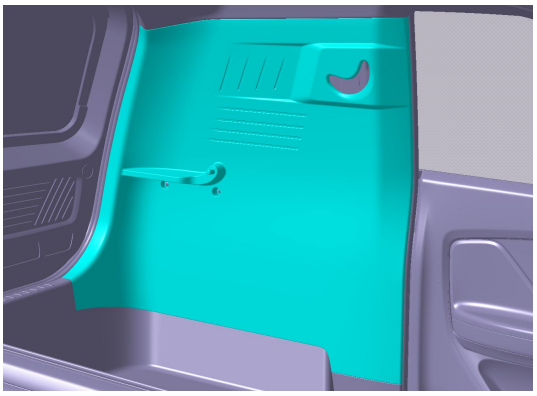
1.Loosen the sealing strip on the left door opening

2.Disassemble the left rear lower guard plate assembly

3.Remove the fixing bolts on the lower side of the safety belt



4.Disassemble the assembly of the left rear side enclosure panel inside the side enclosure

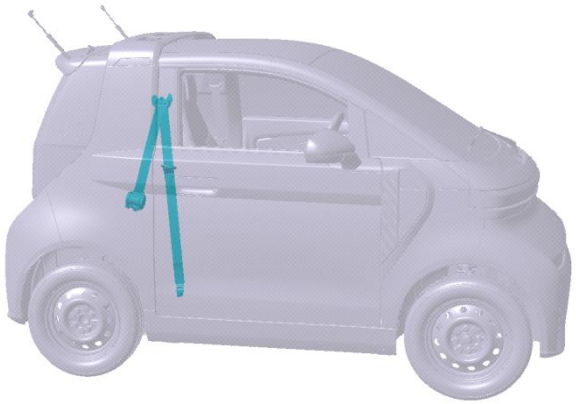


5.Disassemble the left seat belt assembly

Installation: Install in the reverse order of disassembly

6.8.2 Right seat belt assembly

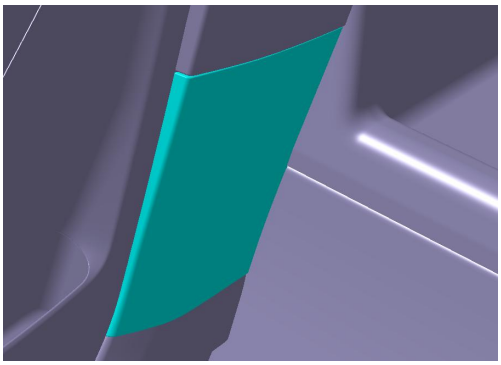
Component drawing



Disassembly and installation

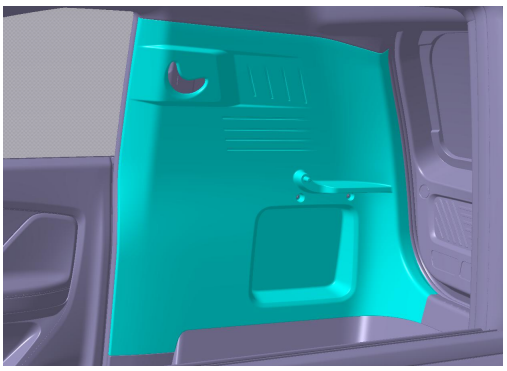
1. Loosen the sealing strip on the right door opening

2. Disassemble the right rear lower guard plate assembly



3.Remove the fixing bolts on the lower side of the safety belt

4.Disassemble the assembly of the right rear side enclosure panel inside the side enclosure

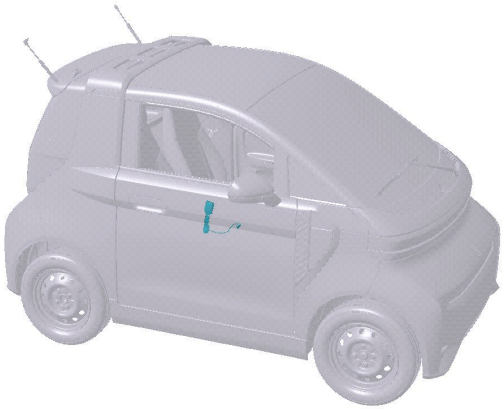


5.Disassemble the right seat belt assembly

Installation: Install in the reverse order of disassembly

6.8.3 Left seat belt buckle assembly

Component drawing

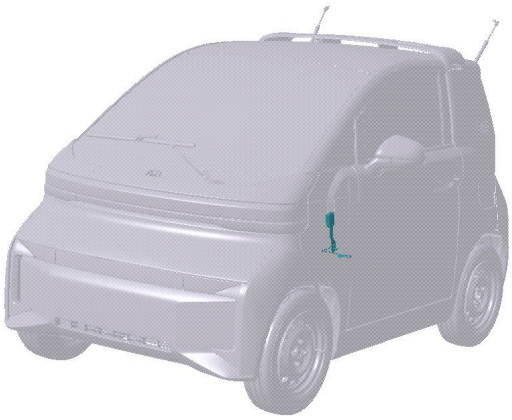


Disassembly and installation

1.Disassemble the left front seat assembly. See: Disassembly and Installation of the Left Front Seat Assembly

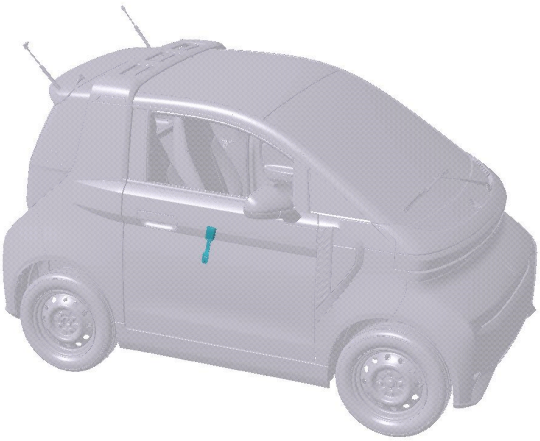
2.Disassemble the seat belt buckle assembly

Installation: Install in the reverse order of disassembly



6.8.4 Right seat belt buckle assembly

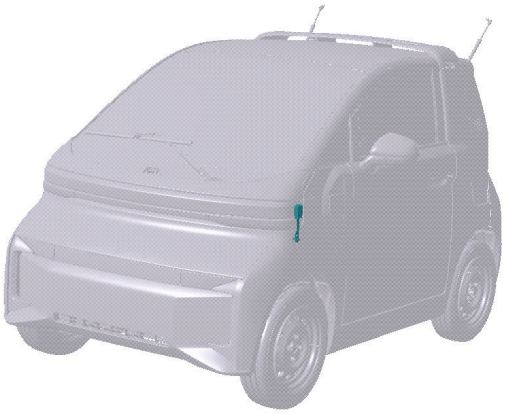
Component drawing



Disassembly and installation

1.Disassemble the right front seat assembly. See: Disassembly and Installation of the Right Front Seat Assembly

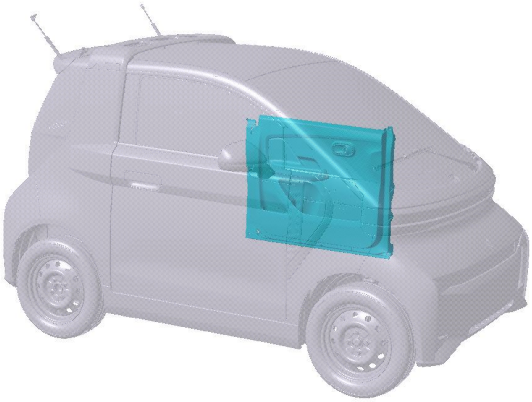
2.Disassemble the seat belt buckle assembly



6.9 Door guard

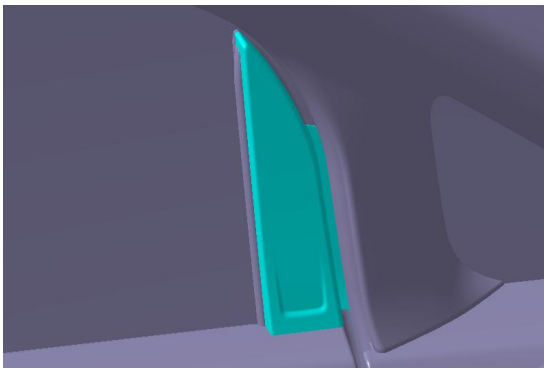
6.9.1 Left door inner guard panel assembly

Component drawing

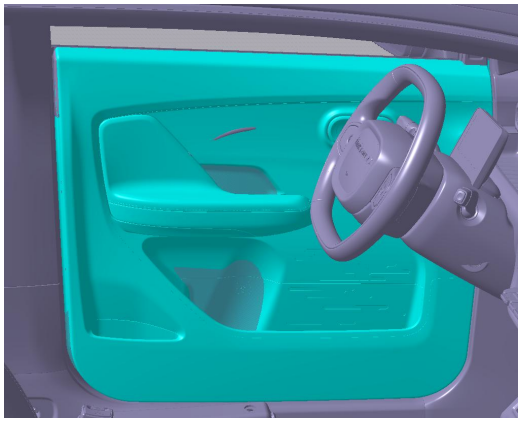


Disassembly and installation

1.Remove the interior panel of the left front door guide rail



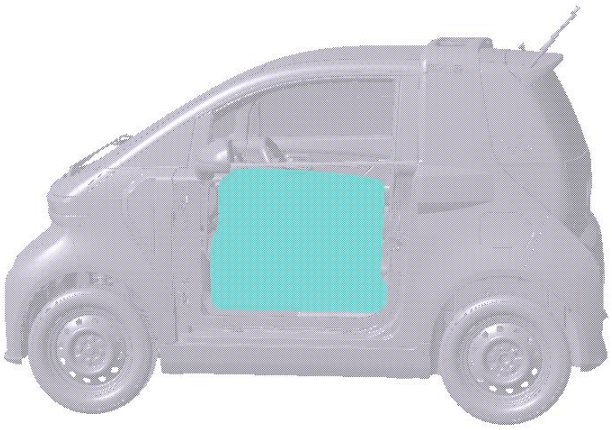
2.Disassemble the inner guard plate assembly of the left door

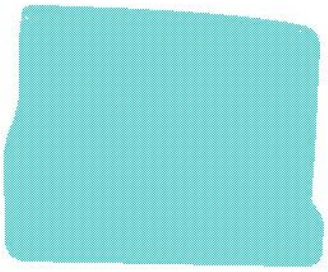


Installation: Install in the reverse order of disassembly

6.9.2 Left door waterproof film assembly

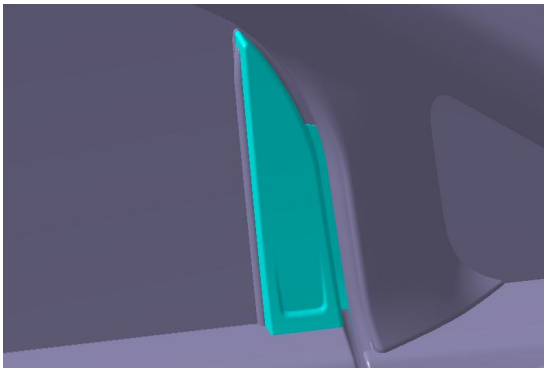
Component drawing



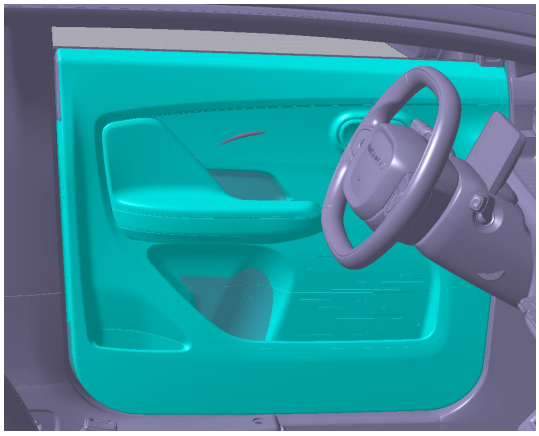


Disassembly and installation

1.Remove the interior panel of the left front door guide rail

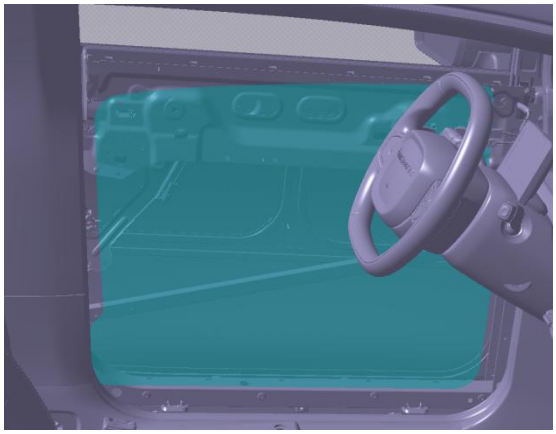


2.Disassemble the inner guard plate assembly of the left door



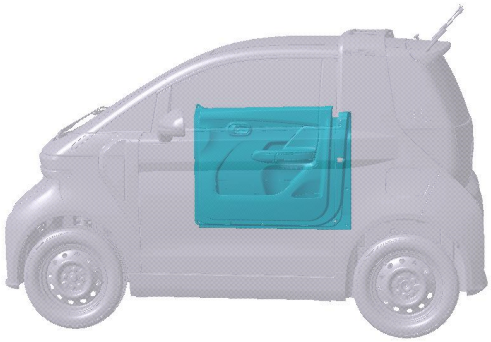
3.Remove the waterproof membrane assembly of the left door

Installation: Install in the reverse order of disassembly

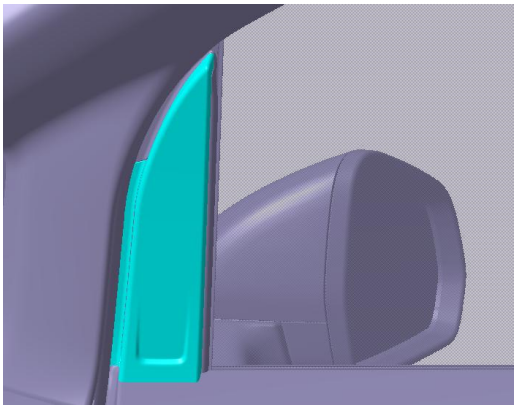


6.9.3 Right door inner guard panel assembly

Component drawing



Disassembly and installation



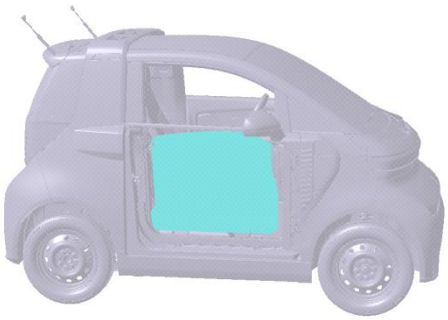
1.Remove the interior panel of the left front door guide rail

2.Disassemble the inner guard plate assembly of the left door

Installation: Install in the reverse order of disassembly

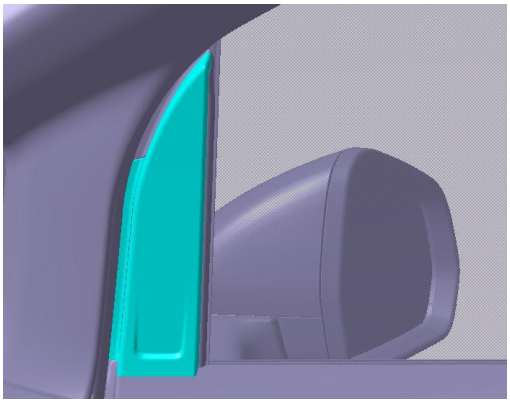
6.9.4 Right door waterproof film assembly

Component drawing



Disassembly and installation

1.Remove the interior panel of the left front door guide rail



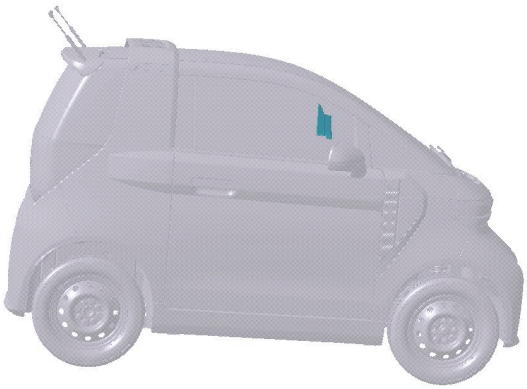
2.Disassemble the inner guard plate assembly of the left door

3.Remove the waterproof membrane assembly of the left door

Installation: Install in the reverse order of disassembly

6.9.5 Left front guide rail interior panel assembly

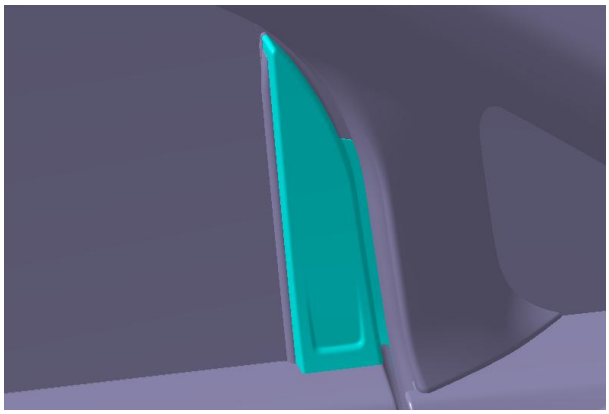
Component drawing



Disassembly and installation

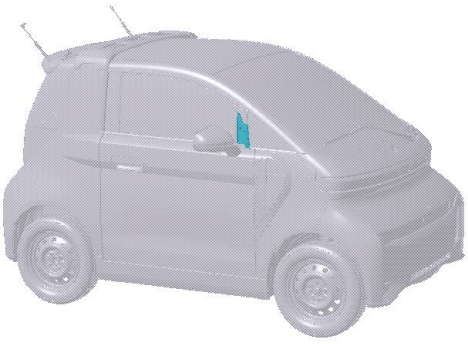
Remove the interior panel of the left front door guide rail

Installation: Install in the reverse order of disassembly



6.9.6 Right front guide rail interior panel assembly

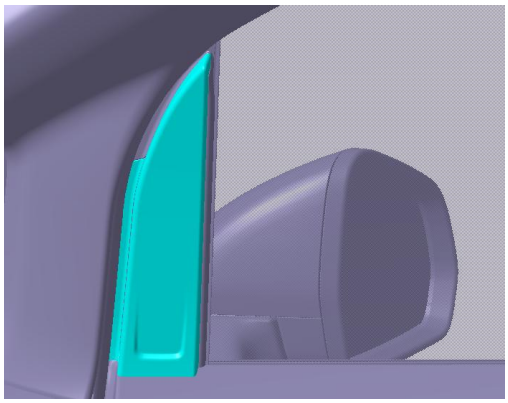
Component drawing



Disassembly and installation

Remove the interior panel of the right front door guide rail

Installation: Install in the reverse order of disassembly



6.10 Seat

6.10.1 Left front seat assembly

Component drawing

Disassembly and installation

1.Move the seat forward to the very front and remove the two fixing bolts at the rear.

2.Move the seat backward to the rear end and remove the two fixing bolts at the front.

3.Adjust the seat Angle and remove the left front seat assembly.

Note: When removing the seat, be careful not to bump into the vehicle's interior and paint surface.

Installation: Install in the reverse order of disassembly

6.10.2 Adjust the handle

Component drawing

Disassembly and installation

1.To disassemble the seat assembly, see: Seat Assembly disassembly and installation.

2.Remove the decorative cover of the seat adjustment handle.

3.Remove the seat adjustment handle.

Installation: Install in the reverse order of disassembly

6.10.3 Adjust the handle decorative cover Component

Disassembly and installation

Remove the decorative cover of the seat adjustment handle.

Installation: Install in the reverse order of disassembly

6.10.4 Adjust the handle guard

Component drawing

Disassembly and installation

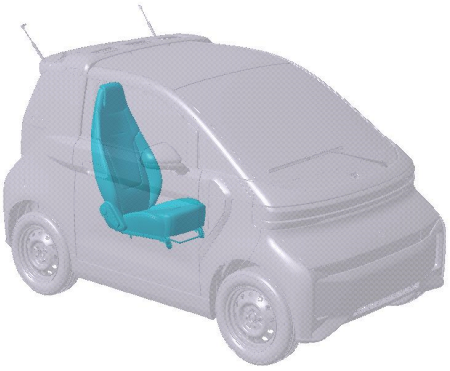
1. Disassemble the seat adjustment handle. See: Disassembly and Installation of Seat Adjustment Handle.

2. Remove the fixing screws and take off the seat adjustment handle cover.

Installation: Install in the reverse order of disassembly

6.10.5 Right front seat assembly

Component drawing



Disassembly and installation

1.Move the seat forward to the very front and remove the two fixing bolts at the rear.

2.Move the seat backward to the rear end and remove the two fixing bolts at the front.

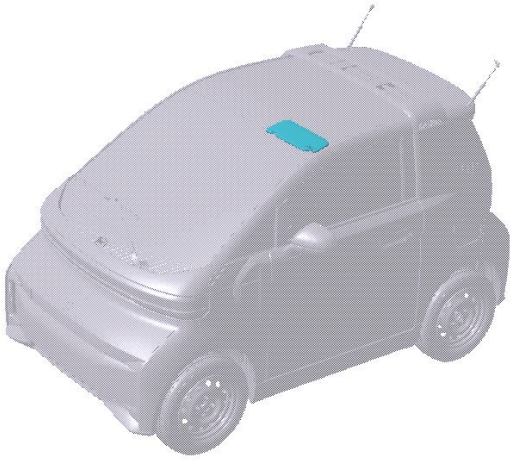
3.Adjust the seat Angle and remove the right front seat assembly.

Note: When removing the seat, be careful not to bump into the vehicle's interior and paint surface.

Installation: Install in the reverse order of disassembly

6.11 Sun visor

6.11.1 Component diagram of the left sun visor assembly

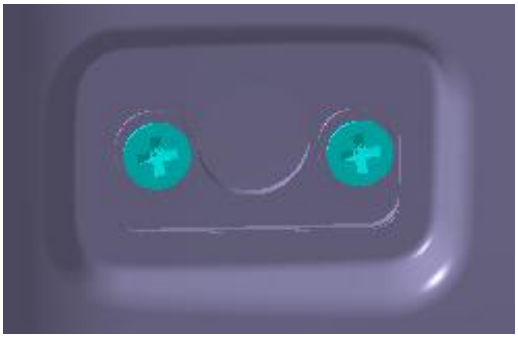


Disassembly and installation

1.Remove the left sun visor from the hook.

2.Flip the sun visor to an appropriate Angle and pry open the cover plate of the flip shaft.

3.Remove the two fixing screws and take off the left sun visor assembly

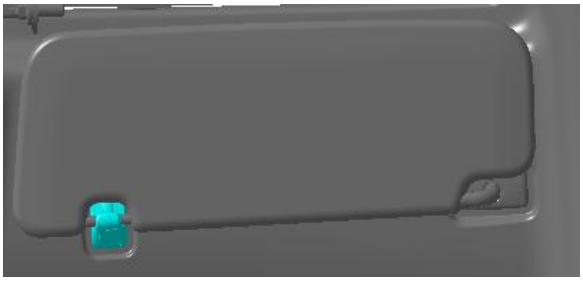


Installation: Install in the reverse order of disassembly

6.11.2 Component diagram of the right sun visor assembly

Disassembly and installation

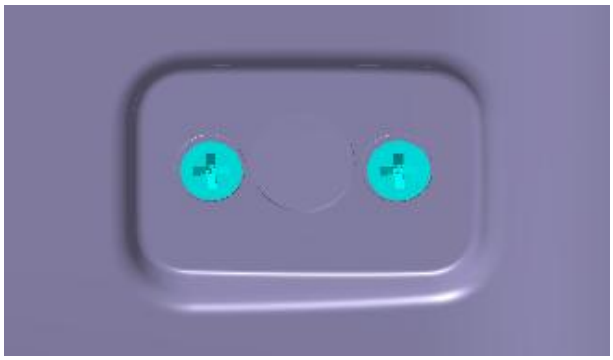
1.Remove the right sun visor from the hook.



2.Flip the sun visor to an appropriate Angle and pry open the cover plate of the flip shaft.

3.Remove the two fixing screws and take off the right sun visor assembly

Installation: Install in the reverse order of disassembly



6.11.3 Component drawing of the sunshade hook assembly

Disassembly and installation

1.Remove the sun visor from the hook.

2.Pry open the hook screw cover plate, remove the fixing screws, and take off the sunshade hook.

Installation: Install in the reverse order of disassembly

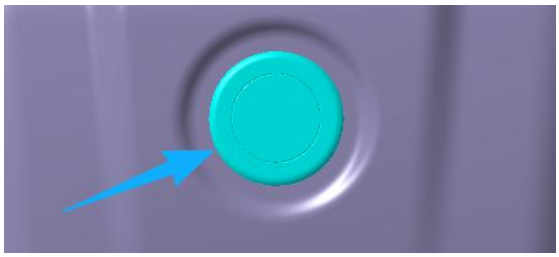
6.12 Internal lighting fixtures and switches

6.12.1 Ceiling light assembly component drawing

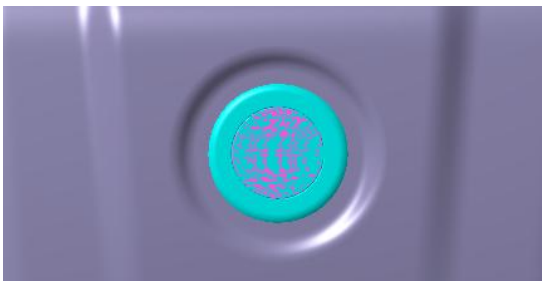
Disassembly and installation

Disassembly

1.Use a plastic crowbar to pry along the periphery of the internal lighting fixtures to remove them from the ceiling clips.



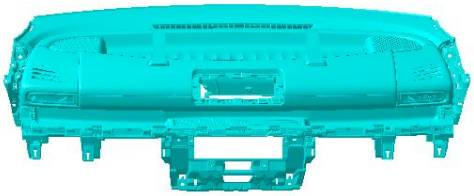
2.Disconnect the plug of the internal lighting connection harness and remove the internal lighting.



Installation: Install in the reverse order of disassembly

6.13 Dashboard

6.13.1 Instrument panel assembly component diagram



Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

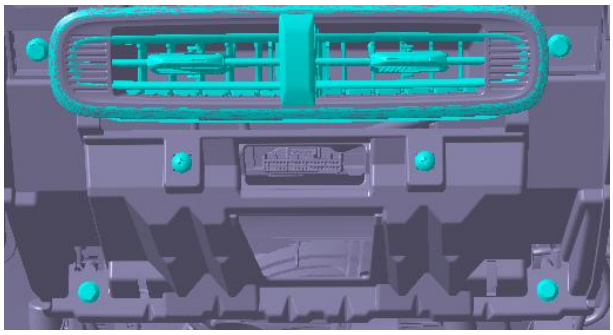
➢ • The assembly clearance of the contact surface is uniform and not loose.

➢ • The screws are firmly assembled.

Disassembly and installation

1.Disassemble the instrument panel lower guard assembly. See: Disassembly and installation of Instrument panel Lower Guard Assembly

2.Remove six fixing screws from the lower part of the dashboard

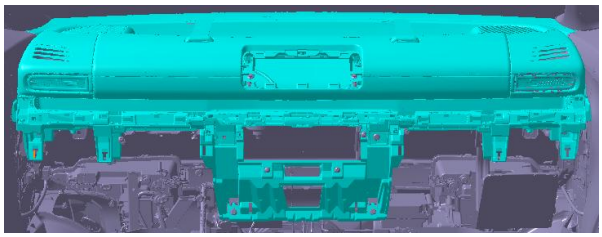


3.Disassemble the A-pillar covers on both sides of the dashboard. See: Disassembly and Installation of A-pillar Covers

4.Remove one screw each for fixing the A-pillars on both sides of the dashboard

5.Disassemble the dashboard body assembly

Disassemble the dashboard body assembly



6.13.2 Instrument upper cover plate assembly

Component drawing

Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

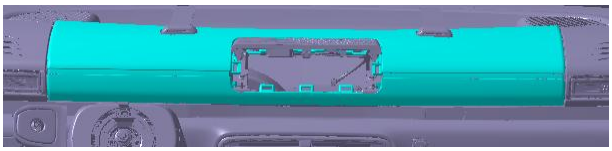
➢ • The assembly clearance of the contact surface is uniform and not loose.

➢ • The screws are firmly assembled.

Disassembly and installation

Disassembly

1.Disassemble the dashboard assembly. See: Disassembly and installation of Dashboard Assembly

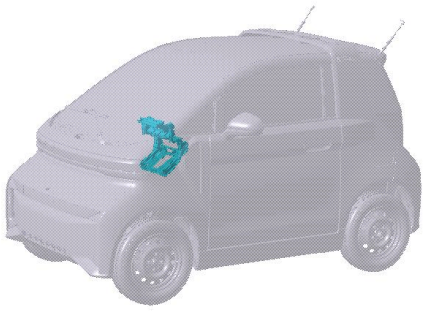


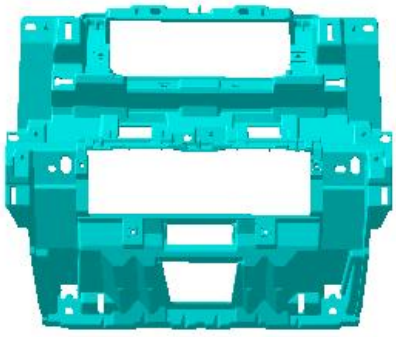
2.Remove the edge fixing screws of the upper cover plate assembly of the instrument and take off the upper cover plate.

Installation: Install in the reverse order of disassembly

6.13.3 Instrument lower cover plate assembly

Component drawing





Maintenance Precautions

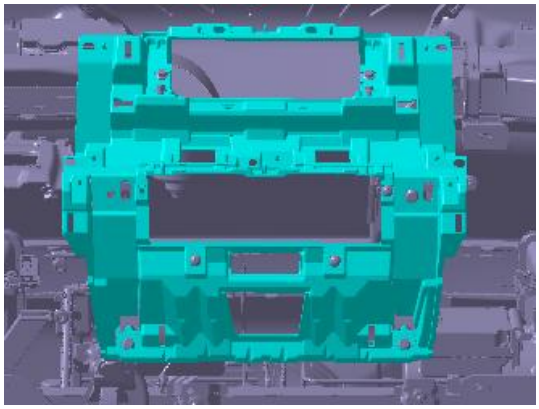
➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

➢ • The screws are firmly assembled.

Disassembly and installation

Disassembly



1.Disassemble the dashboard assembly. See: Disassembly and installation of Dashboard Assembly

2.Remove the edge fixing screws of the lower cover plate assembly of the instrument and take off the lower cover plate.

Installation: Install in the reverse order of disassembly

6.13.4 Pull strap cover plate

component drawing

Maintenance Precautions

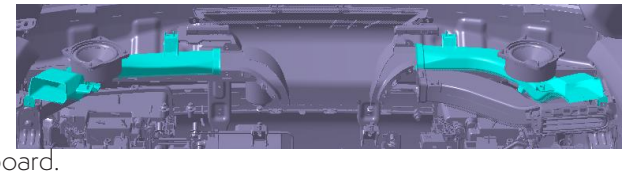
➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

➢ • The screws are firmly assembled.

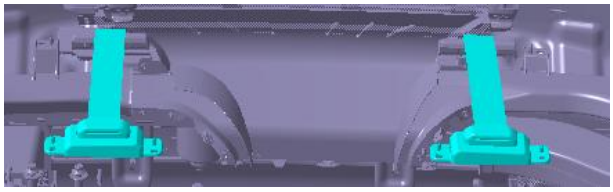
Disassembly and installation

1.To disassemble the dashboard body assembly, see: Disassembly and assembly of the dashboard body assembly

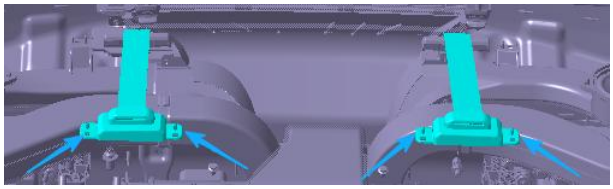


2.Disassemble the internal connecting air ducts of the dashboard.

3.Remove the hooks between the two pull straps and the dashboard



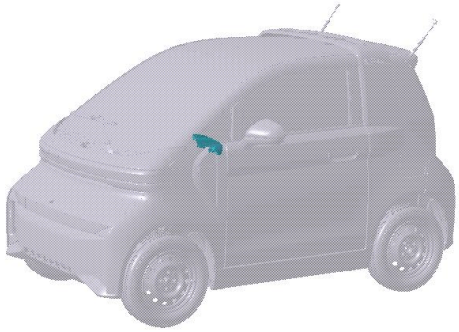
4.Remove the fixing screws of the pull strap cover plate and take off the cover plate



Installation: Install in the reverse order of disassembly

6.13.5 Side cover plate

component drawing



Maintenance Precautions

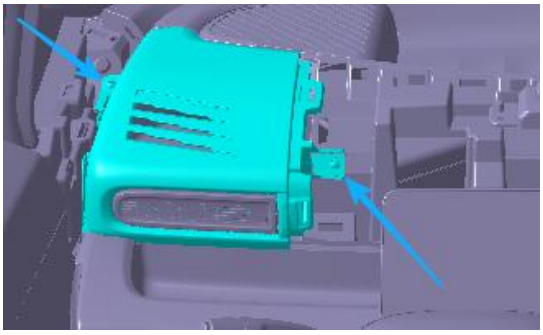
➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation

1.To disassemble the dashboard pull TAB cover assembly, see: Disassembly and Installation of pull TAB Cover Assembly

2.Remove two screws that fix the side cover plate

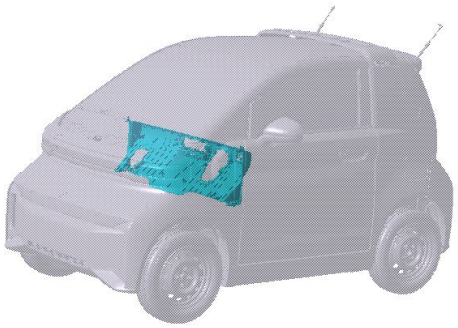


3.Pry along the edge of the side cover plate to separate it from the snap.

4.Remove the side cover plate.

Installation: Install in the reverse order of disassembly

6.13.6 Component diagram of the instrument panel lower guard plate

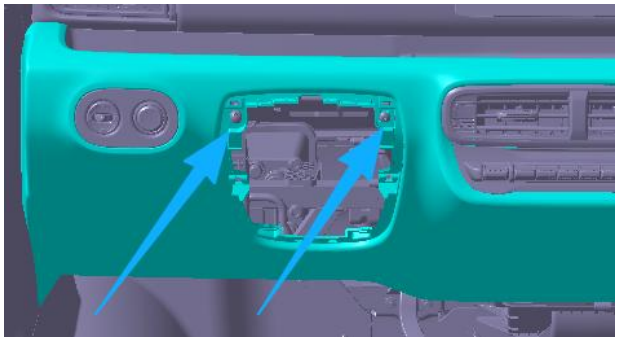


Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation



1.To disassemble the steering wheel combination switch assembly, see: Disassembly and Installation of the steering wheel combination switch Assembly.

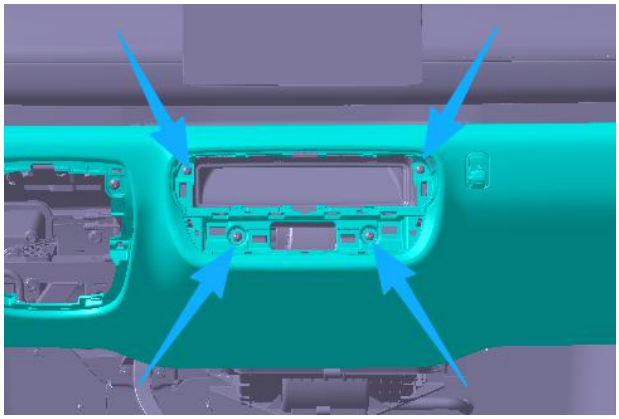
2.Remove two screws that fix the lower guard plate.

3.For disassembly of the combined instrument display screen, please refer to: Disassembly and Installation of the combined instrument display screen.

4.For disassembly of the central screen all-in-one machine assembly, see: Disassembly and Installation of the central Screen All-in-one Machine.

5.To disassemble the start switch, see: Disassembly and installation of the start switch.

6.Disassemble the air conditioning control panel assembly See: Disassembly and installation of Air Conditioning Control Panels.

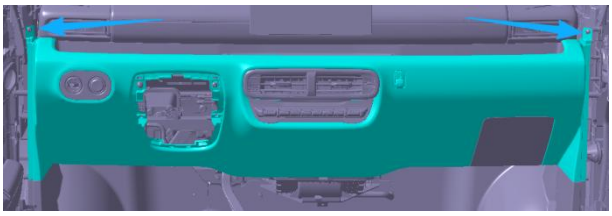


7.Remove two screws that fix the lower guard plate.

8.To disassemble the central air outlet of the air conditioner, see: Disassembly and installation of the Central Air Outlet

9.Remove two screws that fix the lower guard plate.

10.Disassemble the upper guard plate assembly of the A-pillar inside the side panels on both sides. See: Disassembly and Installation of the upper guard Plate Assembly of the A-pillar inside the Side panels



11.Remove one screw each for fixing the lower guard plates of the A-pillar instrument panels on both sides.

12.Disassemble the lower guard plate assembly of the A-pillar inside the side panels on both sides. For details, please refer to: Disassembly and Installation of the lower guard plate Assembly of the A-pillar inside the side panels

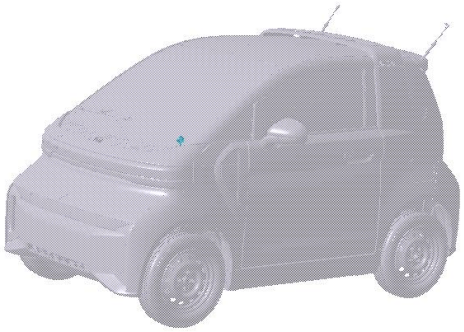
13.Remove one screw each for fixing the lower guard plates on both sides.

14.Pry along the edge of the lower guard plate of the dashboard to disengage the fixed clips and remove the lower guard plate of the dashboard.

Installation: Install in the reverse order of disassembly

6.13.7 Hook

Component drawing

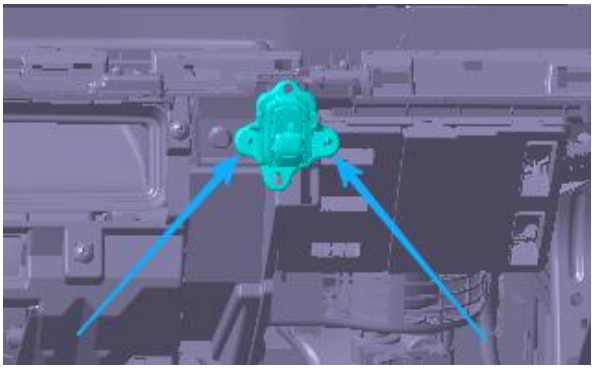


Maintenance Precautions

➢•Pay attention to protecting the surface of the parts from scratches and bumps.

➢•The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation



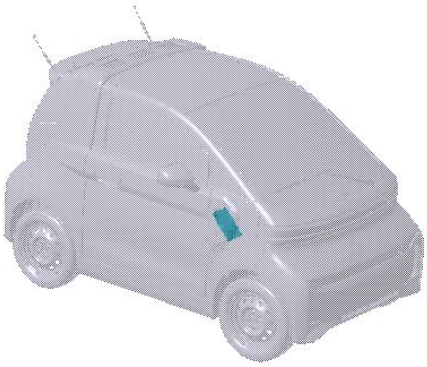
1.To disassemble the lower dashboard guard, see: Disassembly and Installation of the lower dashboard Guard

2.Remove the two fixing screws of the hook and take off the hook.

Installation: Install in the reverse order of disassembly

6.13.8 Electrical appliance repair cover plate

component drawing



Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation

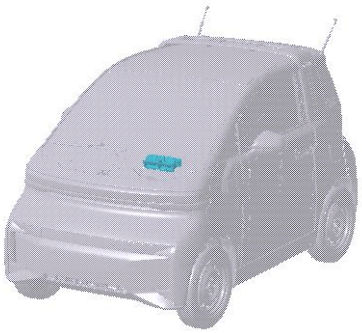
1.Pry the cover along the lower edge of the electrical appliance repair cover to loosen the snap.

2.Remove the electrical appliance repair cover plate.

Installation: Install in the reverse order of disassembly

6.13.9 Central air outlet assembly

component drawing



Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

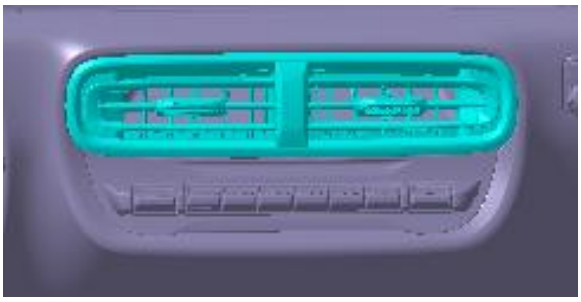
Disassembly and installation

Disassembly

1.Pry along the edge of the air outlet to loosen the fixed clips.

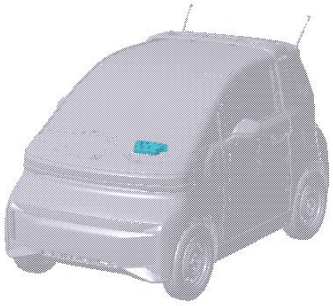
2.Remove the central air outlet assembly

Installation: Install in the reverse order of disassembly



6.13.10 Central storage box

Component drawing



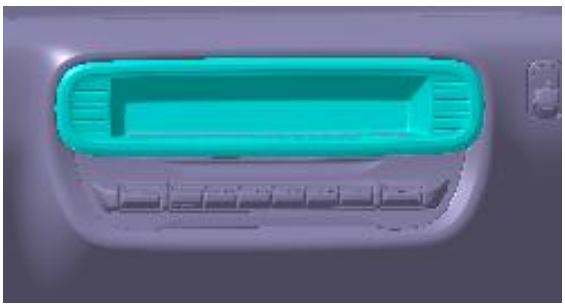
Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation

Disassembly

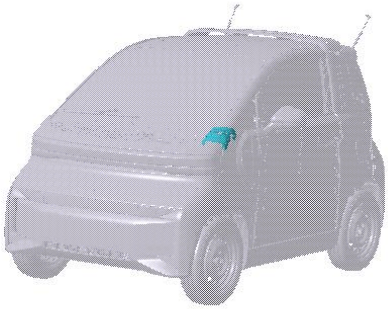


1.Pry along the edge of the storage box to loosen the fixed clips.

2.Remove the central storage box

Installation: Install in the reverse order of disassembly

6.13.11 Drawing of the shield component on the steering column



Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

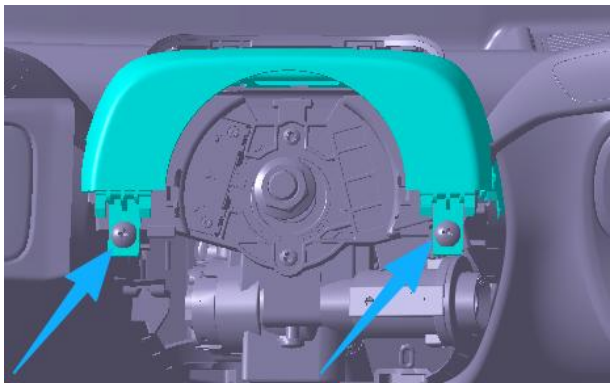
➢ • The screws are firmly assembled.

Disassembly and installation

Disassembly

1.Disassemble the lower guard plate of the steering column.

see: Disassembly and installation of the lower guard cover of the steering column



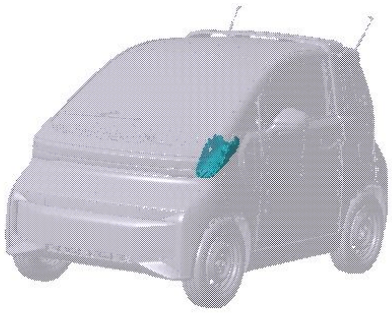
2.For disassembling the combined instrument,

see: Disassembly and installation of combined Instruments

3.Remove the two fixing screws of the upper guard of the steering column and take off the upper guard.

Installation: Install in the reverse order of disassembly

6.13.12 Component drawing of the lower guard cover for the steering column



Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

➢ • The screws are firmly assembled.

Disassembly and installation

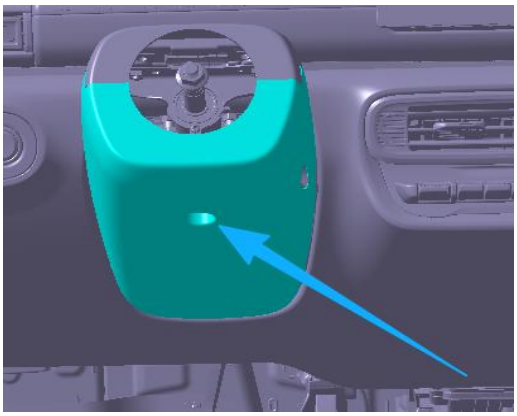
Disassembly

1.To disassemble the steering wheel assembly, see: Disassembly and installation of the steering wheel assembly

2.The assembly clearance of the contact surface is uniform and not loose

3.The screws are firmly assembled.

Installation: Install in the reverse order of disassembly



6.13.13 Component diagram of the central mobile phone stand

Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from

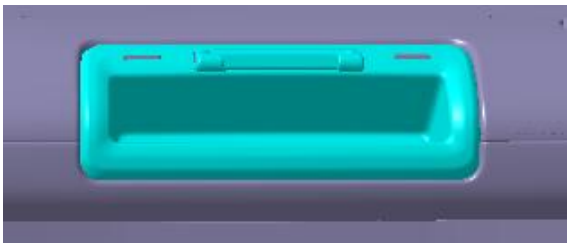
scratches and bumps

➢ • The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation

Disassembly

Pry along the edge of the phone stand to disengage the fixed clip and remove the central phone stand.



Installation: Install in the reverse order of disassembly

6.13.14 Component diagram of the large screen screw cover plate

Maintenance Precautions

➢ • Pay attention to protecting the surface of the parts from

scratches and bumps

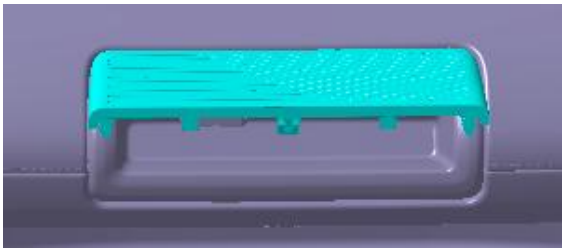
• The assembly clearance of the contact surface is uniform and not loose

Disassembly and installation

Disassembly

1.Pry along the rear edge of the large screen screw cover plate to separate the cover plate from the snap.

2.After all six clips have completely disengaged, remove the screw cover plate of the large screen.



Installation: Install in the reverse order of disassembly

6.13.15 Diagram of the A-pillar cover plate component on the left

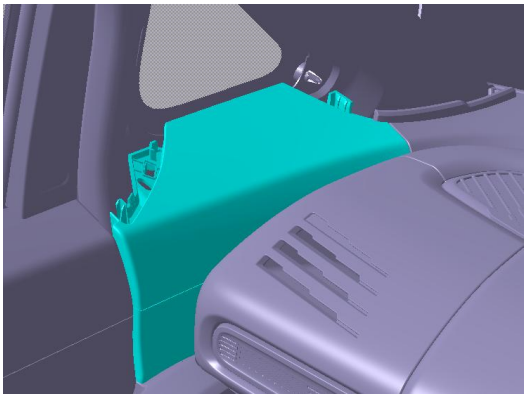
Maintenance Precautions

➢•Pay attention to protecting the surface of the parts from scratches and bumps.

➢•The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation

Disassembly

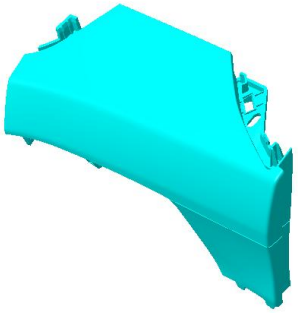


1.Disassemble the upper guard plate assembly of the left A-pillar inside the side enclosure. See: Disassembly and installation of the upper guard plate Assembly of the left A-pillar inside the side enclosure

2.Pry along the edge of the A-column cover plate to disengage the cover plate clamp, and then remove the left A-column cover plate.

Installation: Install in the reverse order of disassembly

6.13.16 Diagram of the A-pillar cover plate component on the right side



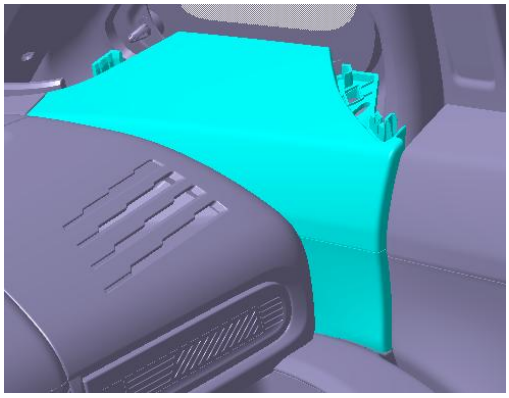
Maintenance Precautions

➢•Pay attention to protecting the surface of the parts from scratches and bumps.

➢•The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation

Disassembly

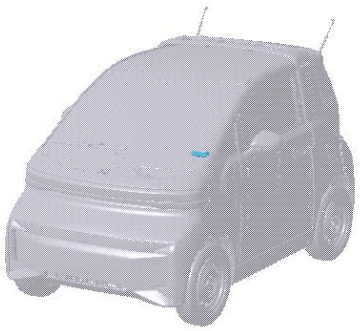


1.Disassemble the upper guard plate assembly of the left A-pillar inside the side enclosure. See: Disassembly and installation of the upper guard plate Assembly of the left A-pillar inside the side enclosure

2.Pry along the edge of the A-column cover plate to disengage the cover plate clamp, and then remove the left A-column cover plate.

Installation: Install in the reverse order of disassembly

6.13.17 Component diagram of the screw cover plate for the combined instrument



Maintenance Precautions

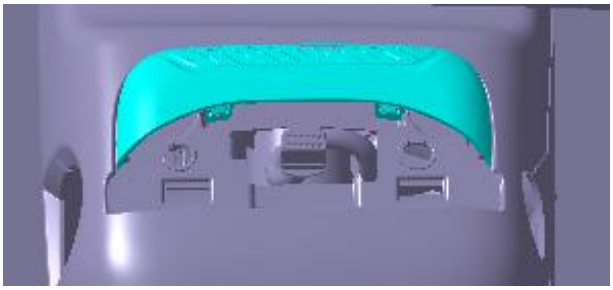
➢ • Pay attention to protecting the surface of the parts from scratches and bumps.

➢ • The assembly clearance of the contact surface is uniform and not loose.

Disassembly and installation

1.Pry the cover plate along the periphery of the screw cover plate of the combined instrument to disengage it from the snap.

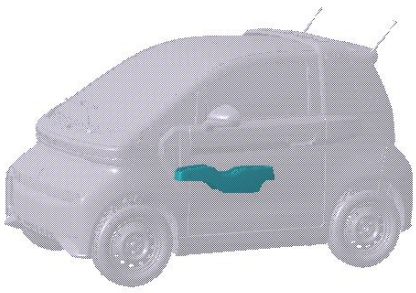
2.Remove the screw cover plate of the combined instrument.



Installation: Install in the reverse order of disassembly

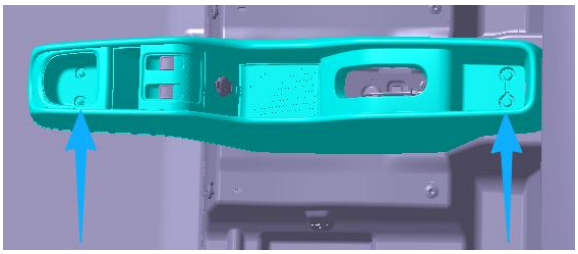
6.14 Sub-instrument panel

6.14.1 Component diagram of the sub-instrument panel body assembly

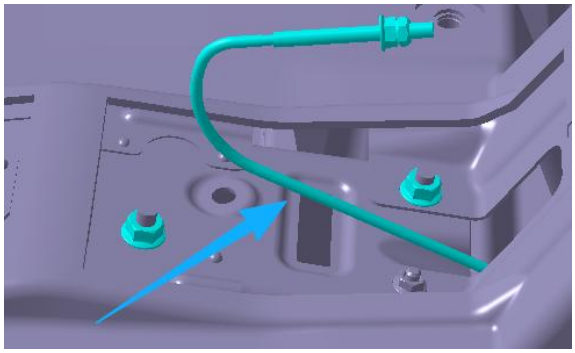


Disassembly and installation

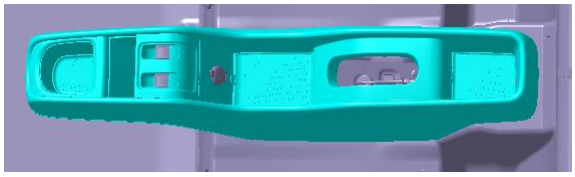
1.Remove the rubber pads from the storage slots in the middle and rear of the secondary instrument panel, and take off the four fixing screws.



2.Lift the rear part of the secondary instrument panel and disconnect the secondary instrument panel wiring harness.

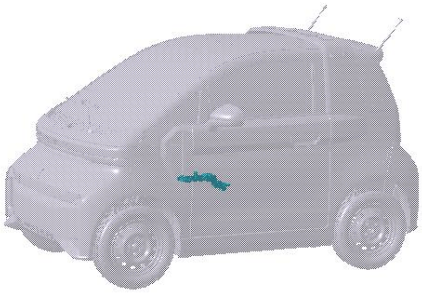


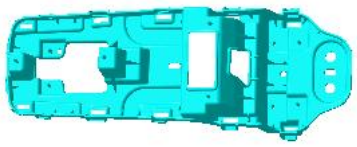
3.Remove the main assembly of the secondary instrument panel.



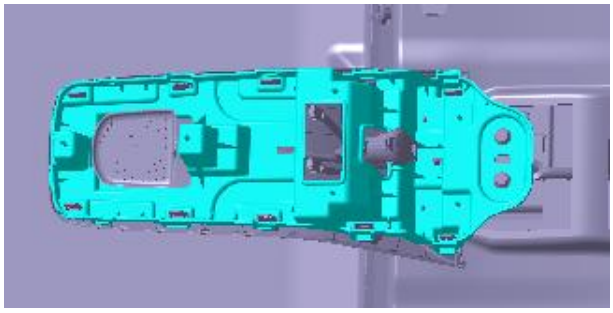
Installation: Install in the reverse order of disassembly

6.14.2 Diagram of the reinforcing frame components for the secondary instrument panel





Disassembly and installation



1.Disassemble the sub-instrument panel assembly.

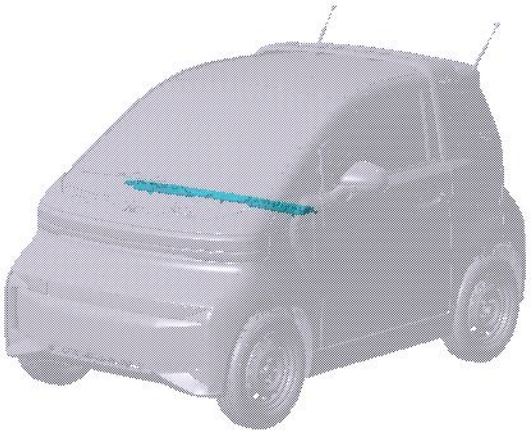
See: Disassembly and installation of the sub-instrument panel assembly.

2.Remove the four fixing screws of the secondary instrument panel reinforcing frame and take off the secondary instrument panel reinforcing frame.

Installation: Install in the reverse order of disassembly

6.14.3 Storage box body

Component drawing



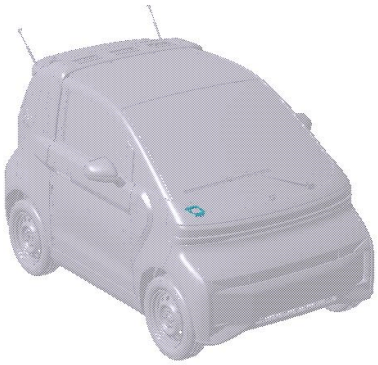
Disassembly and installation

1.Disassemble the sub-instrument panel assembly. See: Disassembly and installation of the sub-instrument panel assembly.

2.Remove the main body of the secondary instrument panel, take off the fixing screws of the storage box body and the secondary instrument panel assembly, and then remove the storage box body.

Installation: Install in the reverse order of disassembly

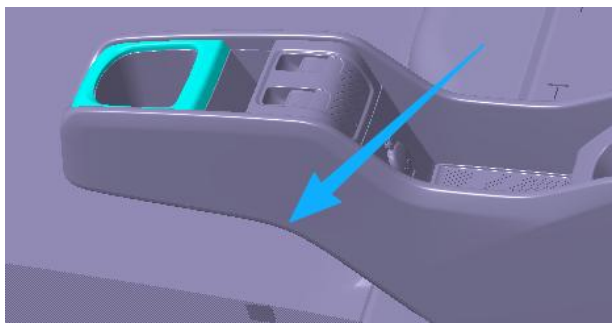
6.14.4 Component drawing of the cup holder panel assembly



Disassembly and installation

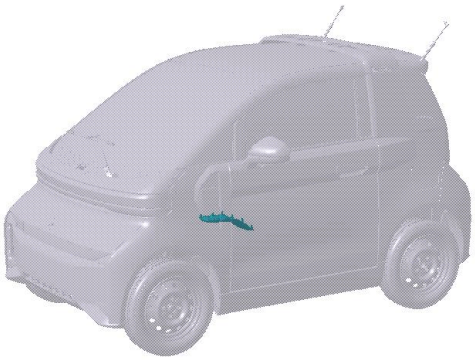
1.Disassemble the sub-instrument panel assembly. See: Disassembly and installation of the sub-instrument panel assembly.

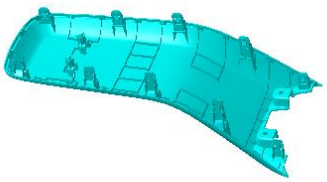
2.Remove the main body of the sub-instrument panel, pry open the fixing clips of the cup holder panel, and then take off the cup holder panel assembly.



Installation: Install in the reverse order of disassembly

6.14.5 Component drawing of the lower trim panel assembly of the sub-instrument panel

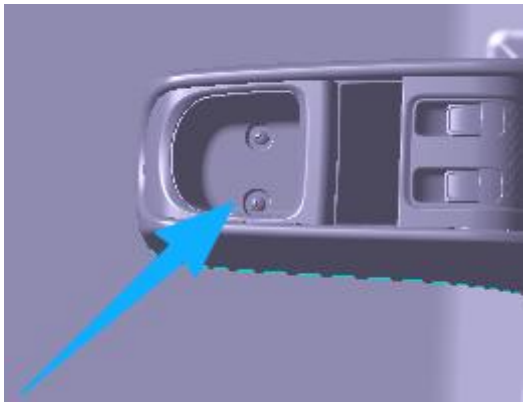




Disassembly and installation

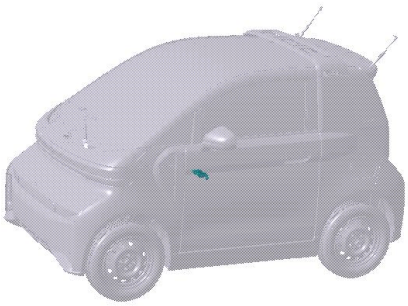
1.Disassemble the sub-instrument panel body assembly. See: Disassembly and installation of the sub-instrument panel Body assembly

2.Remove the screws that fix the lower decorative panel of the sub-instrument panel to the main body of the sub-instrument panel, and then take off the lower decorative panel of the sub-instrument panel.



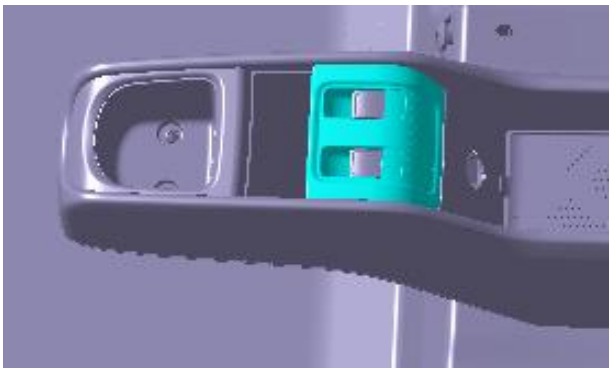
Installation: Install in the reverse order of disassembly

6.14.6 Bright strips on the painted panel of the secondary instrument panel Component drawing



1.Disassemble the sub-instrument panel body assembly. See: Disassembly and installation of the sub-instrument panel Body assembly

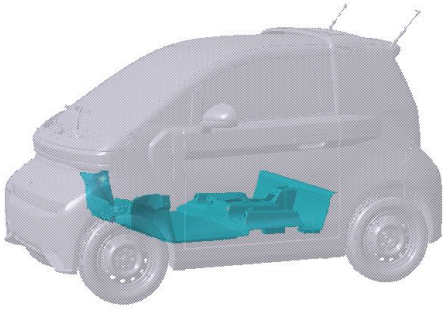
2.Remove the bright strips of the painted panel on the sub-dashboard

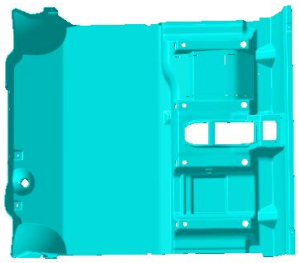


Installation: Install in the reverse order of disassembly

6.15 Carpet

6.15.1 Diagram of carpet assembly components





Disassembly and installation

1.Disassemble the left front seat assembly. See: Disassembly and installation of the Left Front Seat Assembly

2.Disassemble the right front seat assembly. See: Disassembly and installation of the Right Front Seat Assembly

3.Disassemble the main body of the secondary instrument panel, see: Disassembly and installation of the main body of the secondary instrument panel

4.Disassemble the right rear lower guard plate assembly inside the side panel. For details, please refer to: Disassembly and Installation of the right rear Lower guard Plate Assembly inside the Side Panel

5.Disassemble the right front threshold guard plate assembly inside the side panel. For details, please refer to: Disassembly and Installation of the Right front threshold Guard Plate Assembly inside the Side Panel

6.Disassemble the lower guard plate assembly of the right A-pillar inside the side enclosure. For details, please refer to: Disassembly and Installation of the lower guard plate Assembly of the right A-pillar inside the side enclosure

7.Disassemble the left rear lower guard plate assembly inside the side panel. For details, please refer to: Disassembly and Installation of the left rear Lower guard Plate Assembly inside the Side Panel

8.Disassemble the left front threshold guard plate assembly inside the side panel. For details, please refer to: Disassembly and Installation of the Left front threshold Guard Plate Assembly inside the Side Panel

9.Disassemble the lower guard plate assembly of the left A-pillar inside the side enclosure. For details, please refer to: Disassembly and Installation of the lower guard plate Assembly of the left A-pillar inside the side enclosure

10.Disassemble the carpet assembly

Installation: Install in the reverse order of disassembly

6.15.2 Diagram of the luggage compartment carpet assembly components

Disassembly and installation
1.Disassemble the left rear lower guard plate assembly inside the side panel. For details, please refer to: Disassembly and Installation of the left rear Lower guard Plate Assembly inside the Side Panel

2.Disassemble the right rear lower guard plate assembly inside the side panel. For details, please refer to: Disassembly and Installation of the right rear Lower guard Plate Assembly inside the Side Panel

3.Disassemble the left rear side panel assembly inside the side enclosure. For details, please refer to: Disassembly and Installation of the Left rear side Panel Assembly inside the side Enclosure

4.Disassemble the right rear side panel assembly inside the side enclosure. See: Disassembly and Installation of the Right rear side Panel Assembly inside the side Enclosure

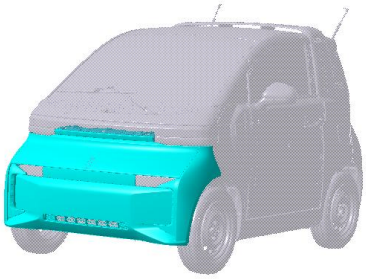
5.Disassemble the rear threshold guard plate assembly inside the side enclosure. For details, see: Disassembly and Installation of the rear threshold guard Plate Assembly inside the side Enclosure

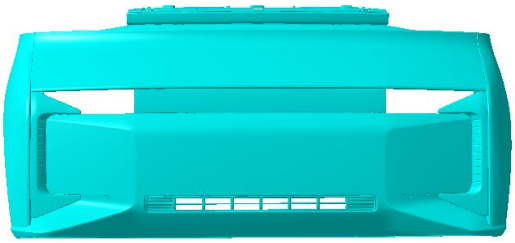
6.Disassemble the suitcase carpet assembly

Installation: Install in the reverse order of disassembly

6.16 Front bumper

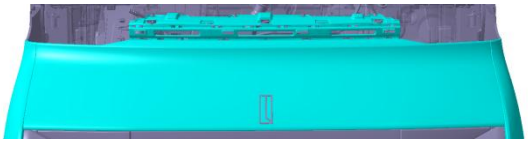
6.16.1 Front bumper component drawing



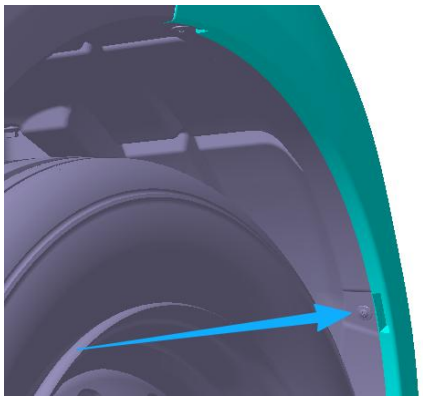


Disassembly and installation

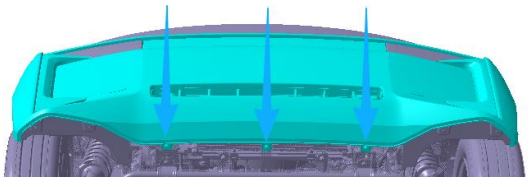
1. For the disassembly of the front panel, see: Disassembly and installation of the Front Panel



2. Remove the fixing screws on the upper part of the front bumper



3. Remove the fixing screws on both sides of the front bumper that connect to the inner linings of the two front wheels



4.Remove the fixing screws at the lower part of the front bumper

5.Disengage along both sides of the bumper from the slots and remove the bumper

Note:

➢-When disassembling and installing components, proper protection measures should be taken to prevent them from being scratched or damaged.

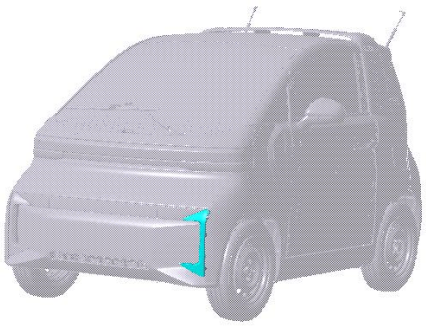
➢-When removing the exterior panel clips, cover the blade of the flat-head screwdriver with a cloth to prevent scratches on the vehicle body and the exterior panel.When removing the exterior panel clips, cover the blade of the flat-head screwdriver with a cloth to prevent scratches on the vehicle body and the exterior panel.

➢-When disassembling and assembling larger components, multiple people need to cooperate.

➢-To avoid falling and causing damage to components and injury to personnel. When removing decorative parts, do not apply excessive force to avoid deformation or damage of the components.

Installation: Install in the reverse order of disassembly

6.16.2 Component drawing of the headlight panel on the left side of the front bumper

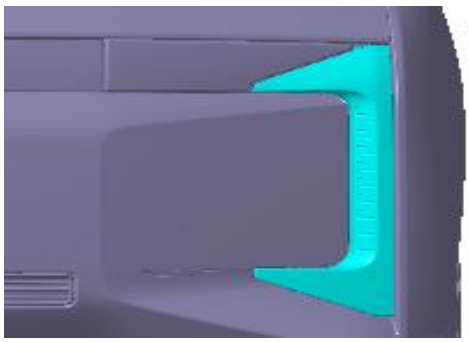


Disassembly and installation

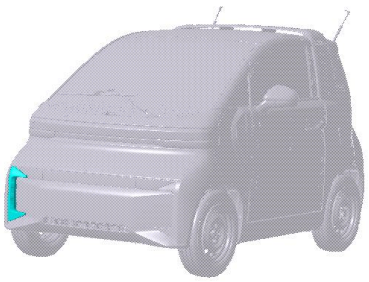
1.To remove the front bumper, see: Front Bumper disassembly and installation

2.Remove the headlight panel on the left side of the front bumper.

Installation: Install in the reverse order of disassembly



6.16.3 Component drawing of the headlight panel on the right side of the front bumper



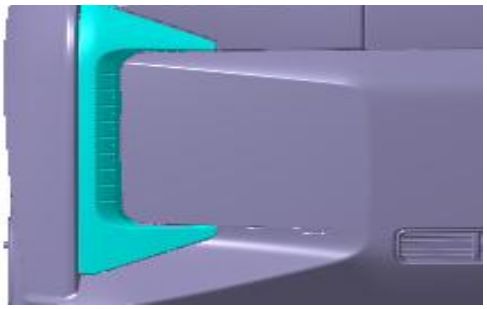
Disassembly and installation

Disassembly：

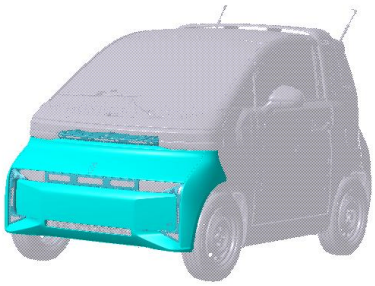
1. Disassemble the front bumper. See: Disassembly and installation of the front bumper

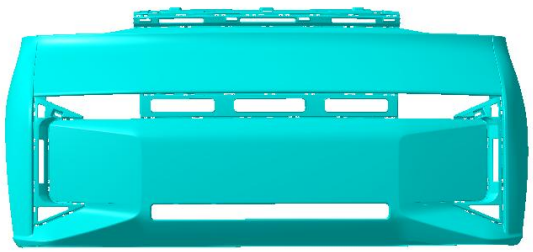
2.Remove the headlight panel on the right side of the front bumper。

Installation：Install in the reverse order of disassembly



6.16.4 Front bumper body component drawing



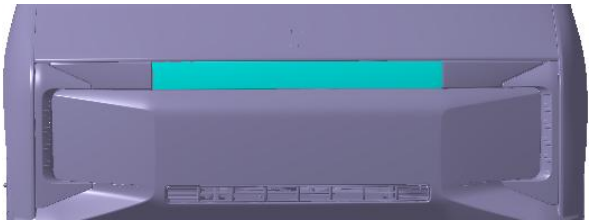


Disassembly and installation

1.To remove the front bumper, see: Front Bumper disassembly and installation

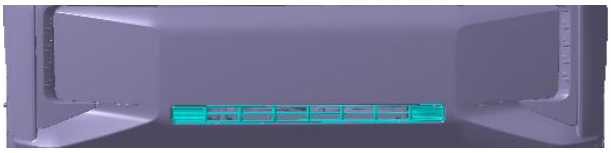
2.Remove the trim on the front bumper.

3.Remove the front bumper trim

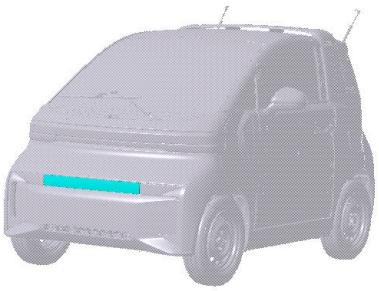


4.Remove the grille assembly

Installation: Install in the reverse order of disassembly



6.16.5 Front bumper trim panel component drawing



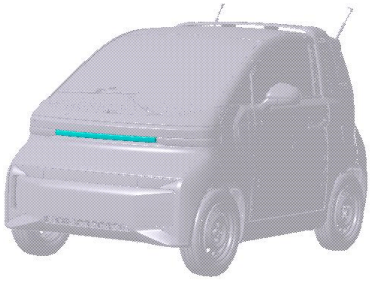
Disassembly and installation

1.To remove the front bumper, see: Front Bumper disassembly and installation

2.Remove the front bumper trim

Installation: Install in the reverse order of disassembly

6.16.6 Component drawing of the front bumper trim panel



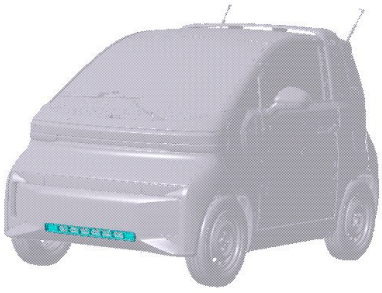
Disassembly and installation

1.To remove the front bumper, see: Front Bumper disassembly and installation

2.Remove the trim on the front bumper.

Installation: Install in the reverse order of disassembly

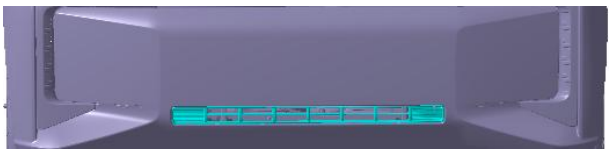
6.16.7 Component diagram of the lower grille assembly



Disassembly and installation

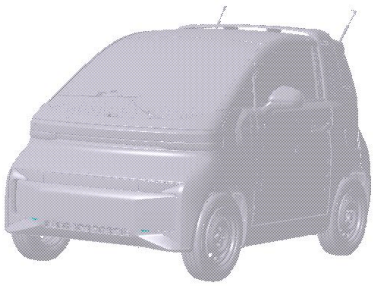
1.To remove the front bumper, see: Front Bumper disassembly and installation

2.Remove the grille assembly



Installation: Install in the reverse order of disassembly

6.16.8 Component drawing of bumper trim

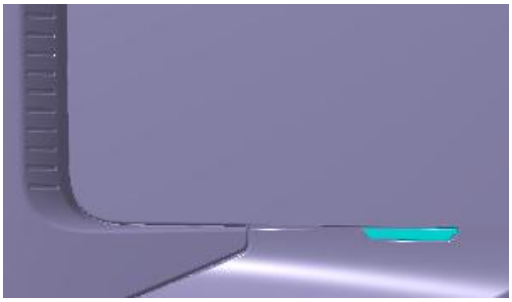


Disassembly and installation

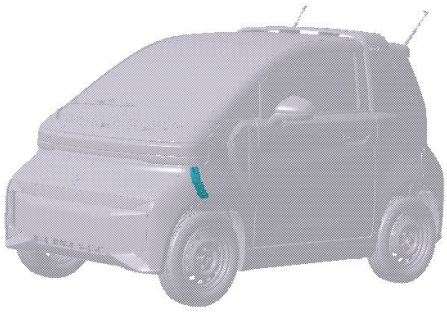
1.Disassemble the front bumper. See: Disassembly and installation of the front bumper

2.Remove the front bumper trim

Installation: Install in the reverse order of disassembly



6.16.9 Component diagram of the installation bracket on the left side of the front bumper

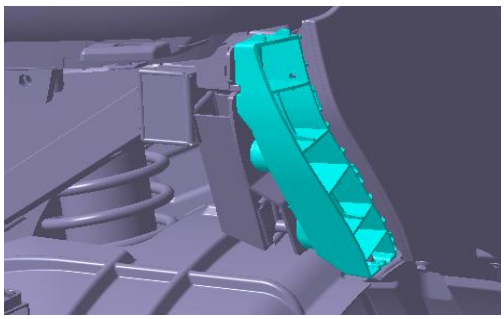


Disassembly and installation

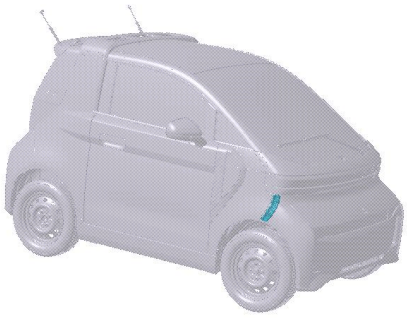
1. Disassemble the front bumper. See: Disassembly and installation of the front bumper

2. Remove the installation bracket on the left side of the front bumper

Installation: Install in the reverse order of disassembly



6.16.10 Component diagram of the installation bracket on the right side of the front bumper

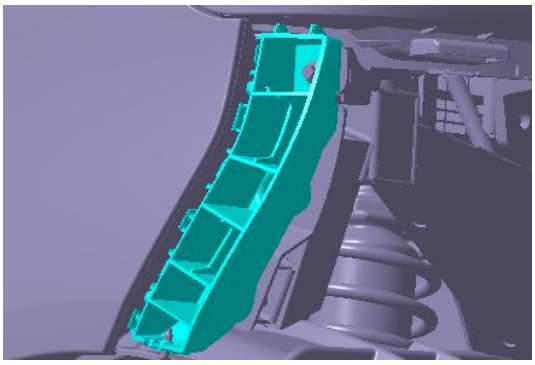


Disassembly and installation

1.Disassemble the front bumper. See: Disassembly and installation of the front bumper

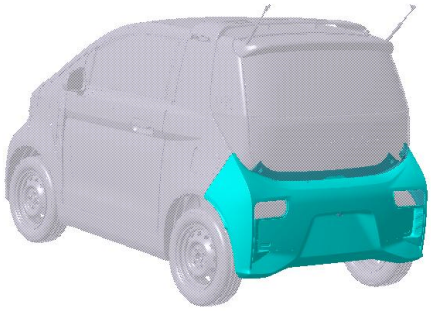
2. Remove the installation bracket on the right side of the front bumper

Installation: Install in the reverse order of disassembly



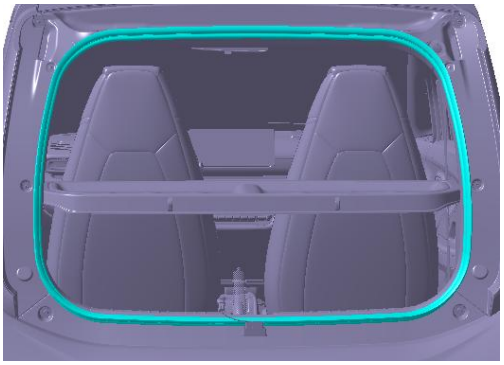
6.17 Rear bumper

6.17.1 Rear bumper component drawing

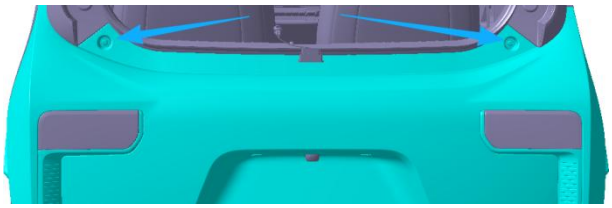


Disassembly and installation

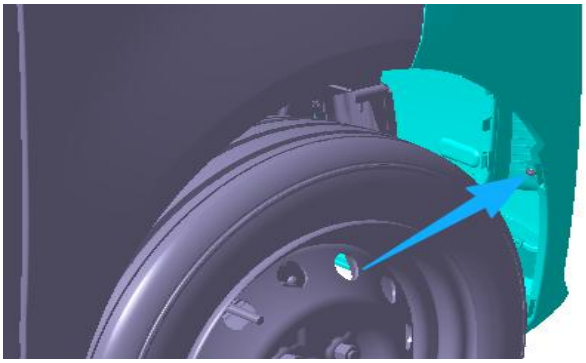
1.Remove the sealing strip of the suitcase door opening.



2.Remove the fixing screws on the upper part of the bumper



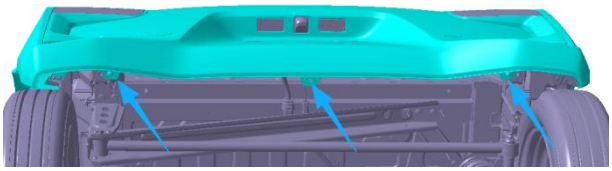
3.Remove the fixing screws that connect the rear bumper to the two rear wheels



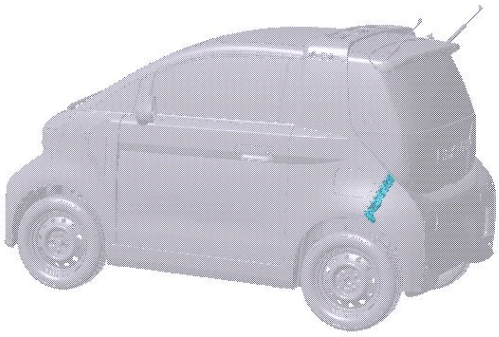
4.Remove the screws that fix the lower part of the bumper.

5.Disconnect the plug connecting the rear camera and the rear bumper wiring harness, and remove the rear bumper.

Installation: Install in the reverse order of disassembly



6.17.2 Component diagram of the installation bracket on the left side of the rear bumper

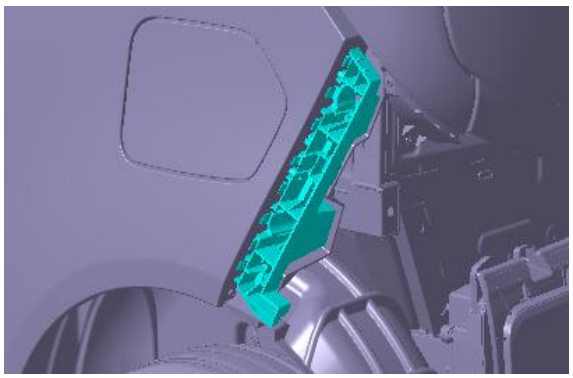


Disassembly and installation

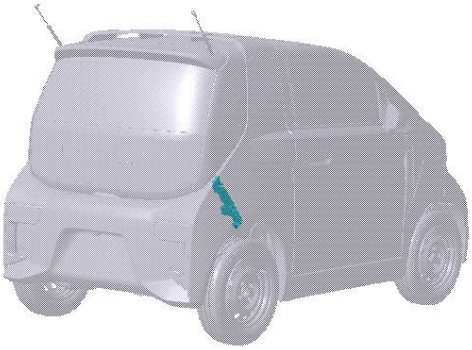
1.To remove the rear bumper, see: Rear Bumper disassembly and installation

2.After disassembling, install the bracket on the left side of the bumper

Installation: Install in the reverse order of disassembly



6.17.3 Component diagram of the installation bracket on the right side of the rear bumper

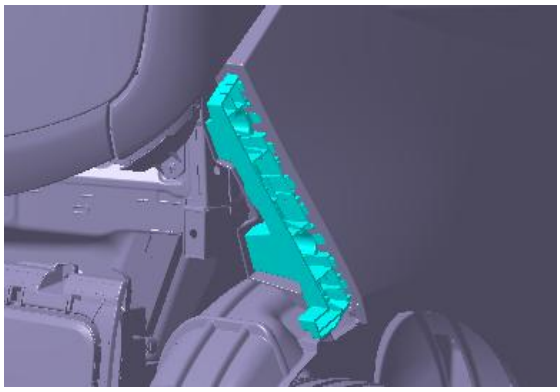


Disassembly and installation

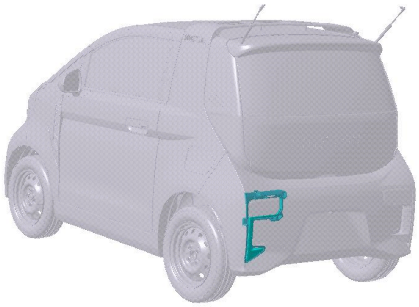
1.To remove the rear bumper, see: Rear Bumper disassembly and installation

2.After disassembling, install the bracket on the right side of the bumper

Installation: Install in the reverse order of disassembly



6.17.4 Component drawing of the left rear bumper trim

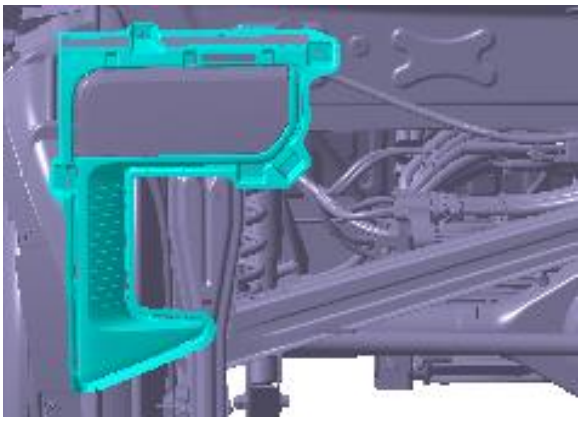


Disassembly and installation

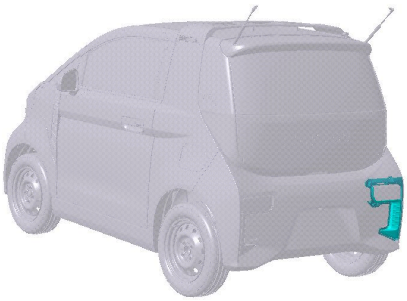
1.To remove the rear bumper, see: Rear Bumper disassembly and installation

2.Remove the left trim of the rear bumper

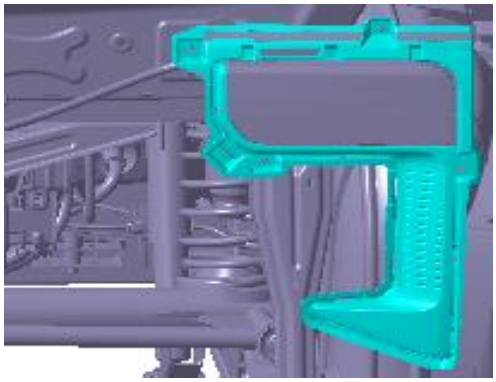
Installation: Install in the reverse order of disassembly



6.17.5 Component drawing of the right rear bumper trim



Disassembly and installation



1.To remove the rear bumper, see: Rear Bumper disassembly and installation

2.Remove the right trim of the rear bumper

Installation: Install in the reverse order of disassembly

6.17.6 Component drawing of bumper trim

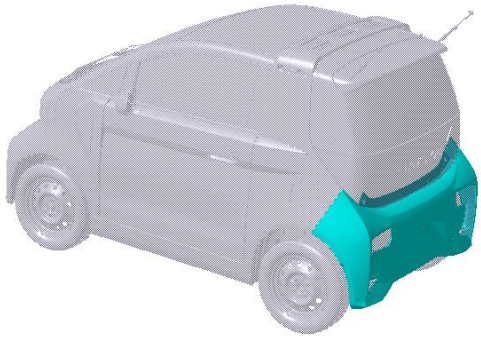
Disassembly and installation

1.To remove the rear bumper, see: Rear Bumper disassembly and installation

2.Remove the rear bumper trim

Installation: Install in the reverse order of disassembly

6.17.7 Rear bumper body component drawing



Disassembly and installation

1.To remove the rear bumper, see: Rear Bumper disassembly and installation

2.Remove the rear bumper trim

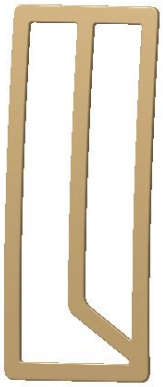
3.Remove the left and right trim panels of the rear bumper

4. After disassembling the left and right bumpers, please refer to: Disassembly and Installation of the left and Right bumpers

Installation: Install in the reverse order of disassembly

6.18 Sign

6.18.1 Front sign component diagram



Disassembly and installation

1.Before disassembling, heat the front sign in a circular motion for about 30 seconds.

2.Use tape to stick and protect the installation surface.

3.Use a flat-edge tool to lift off the panel surface to remove the front sign.

Note:
Do not damage the car body's paint surface.

Installation
1.Clean the area where the previous sign is installed to ensure it is completely dry.
2.Heat the installation surface to approximately 27 to 41°C.
3.Remove the protective tape layer on the back of the decorative sign and press the sign into the correct position.

Note:
Install the signs in an environment free of dust as much as possible. Dust or other foreign objects may cause inappropriate adhesion.

6.18.2 Rear sign component diagram

LINKTOUR

Disassembly and installation

1.Before disassembling, heat the rear sign in a circular motion for about 30 seconds.

2.Use tape to stick and protect the installation surface.

3.Use a flat-edge tool to lift off the panel surface to remove the rear sign.

Note:
Do not damage the car's paint surface.

Installation
1.Clean the area where the sign is installed to ensure it is completely dry.
2.Heat the installation surface to approximately 27 to 41°C.
3.Remove the protective tape layer on the back of the sign and press it into the correct position.

Note:
Install the signs in an environment free of dust as much as possible. Dust or other foreign objects may cause inappropriate adhesion.

6.18.3 A component diagram of the rear vehicle license plate

Disassembly and installation

1.Before disassembling, heat the tail sign in a circular motion for about 30 seconds.
2.Use tape to stick and protect the installation surface.

3.Use a flat-edge tool to lift off the panel surface to remove the tail sign.

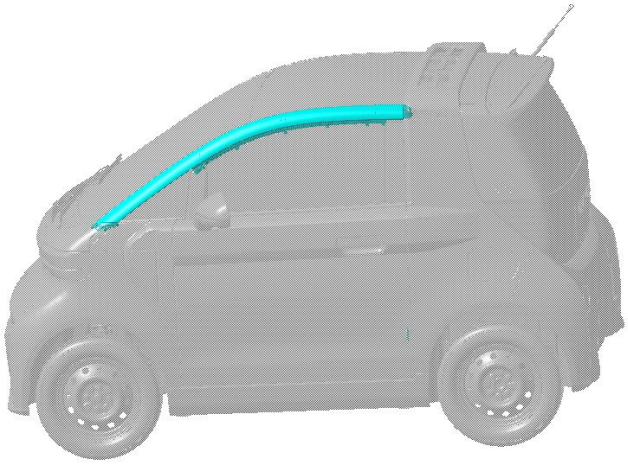
Note:
Do not damage the car's paint surface.

Installation
1. Clean the area where the tail sign is installed to ensure it is completely dry.
2. Heat the installation surface to approximately 27 to 41°C.
3. Remove the protective tape layer on the back of the sign and press it into the correct position.

Note:
Install the signs in an environment free of dust as much as possible. Dust or other foreign objects may cause inappropriate adhesion.

6.19 Exterior decoration of the vehicle body

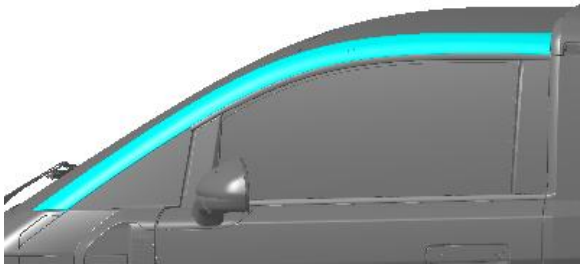
6.19.1. Component drawing of the left A-column decorative panel assembly



Disassembly and installation

1.Remove the sealing strip on the left door opening

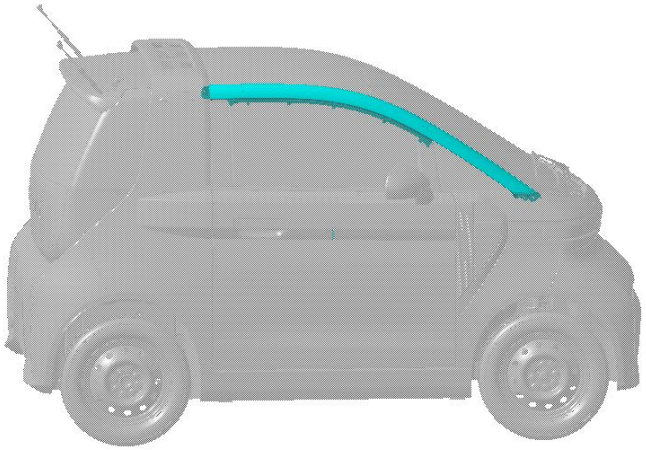
2.Disassemble the upper guard plate assembly of the A-pillar inside the side panel



3.Disassemble the left A-column cover plate assembly

Installation: Install in the reverse order of disassembly

6.19.2 Component drawing of the right A-pillar decorative panel assembly



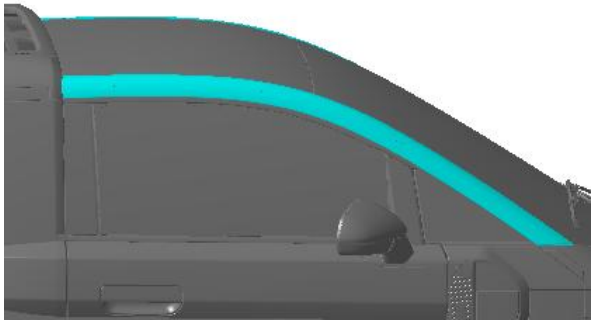
Disassembly and installation

1.Remove the sealing strip of the right door opening

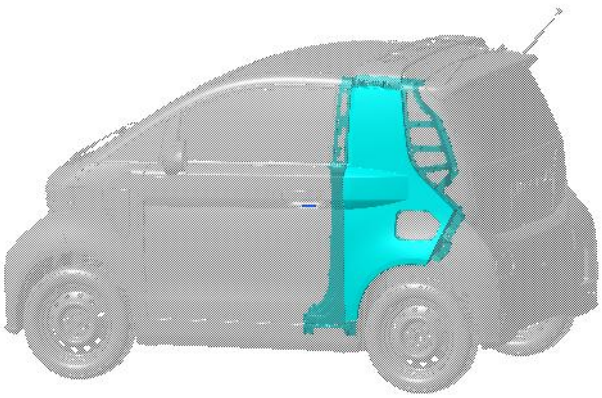
2.Disassemble the upper guard plate assembly of the A pillar inside the side panel

3.Disassemble the right A-column cover plate assembly

Installation: Install in the reverse order of disassembly



6.19.3 The component diagram of the left outer panel



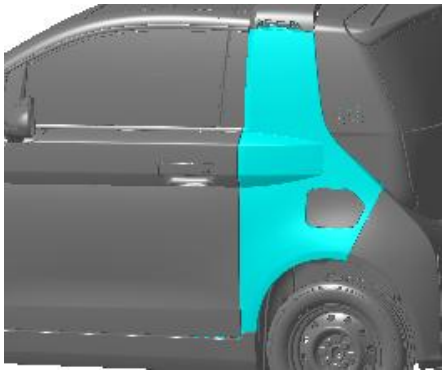
Disassembly and installation

1.Disassemble the left top cover decorative assembly

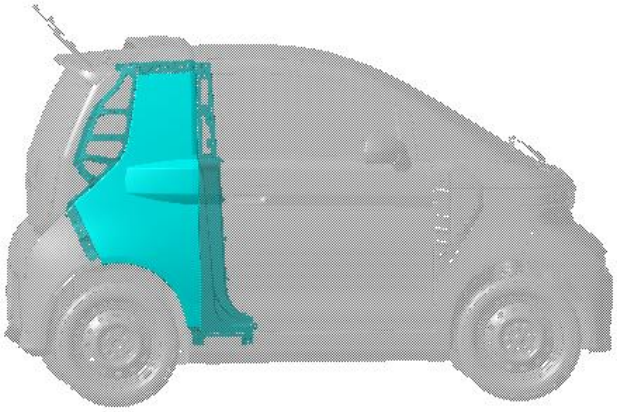
2.Disassemble the left decorative panel assembly

3.Remove the left outer panel

Installation: Install in the reverse order of disassembly



6.19.4 Component drawing of the right outer panel



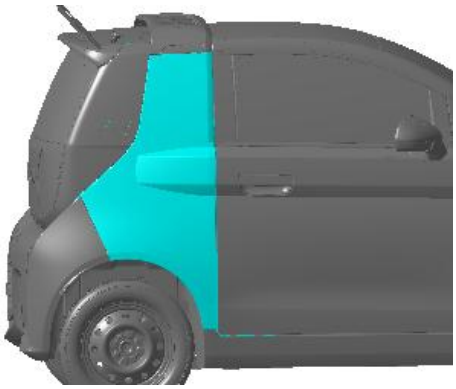
Disassembly and installation

1.Disassemble the decorative assembly of the right top cover

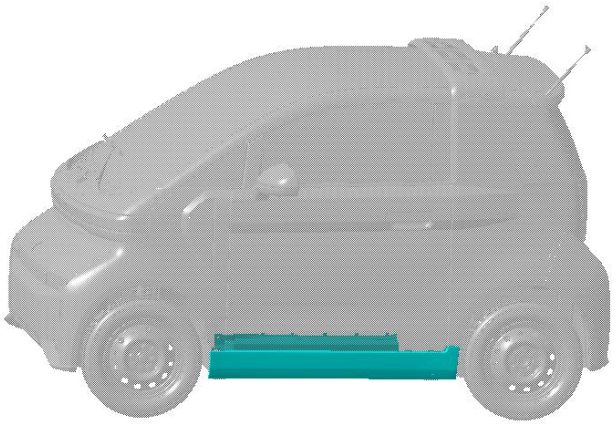
2.Disassemble the right side decorative panel assembly

3.Remove the right outer panel

Installation: Install in the reverse order of disassembly



6.19.5 Component diagram of the lower left threshold assembly



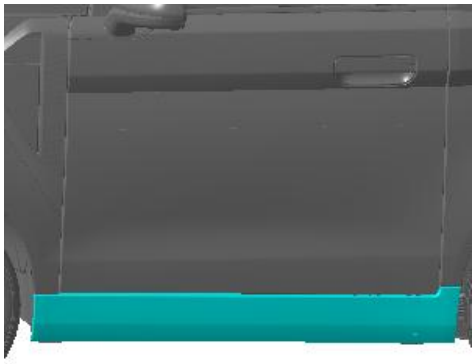
Disassembly and installation

1.Disassemble the left rear lower guard plate assembly inside the side panel

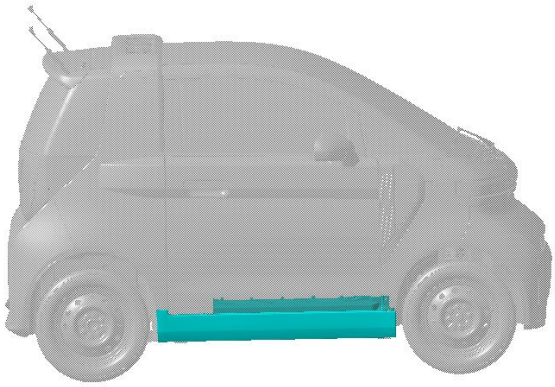
2.Remove the fixing screws of the left seat belt. See: Disassembly and Installation of the Left seat Belt Assembly

3.Disassemble the left lower threshold guard plate assembly inside the side panel

Installation: Install in the reverse order of disassembly



6.19.6 The assembly component diagram of the lower right threshold



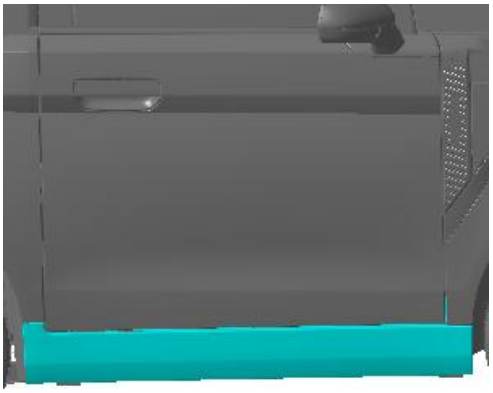
Disassembly and installation

1.Disassemble the assembly of the right rear lower guard plate inside the side panel

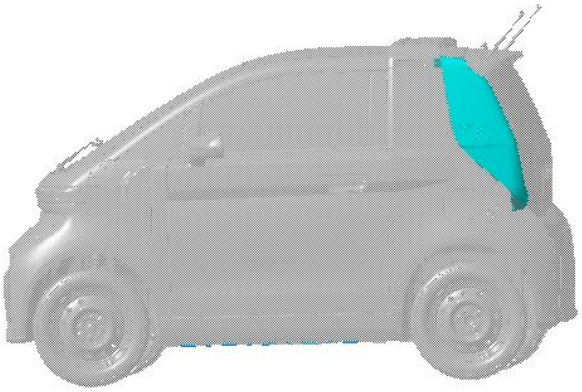
2.Remove the fixing screws of the right seat belt. See: Disassembly and Installation of the Right seat Belt Assembly

3.Disassemble the right lower threshold guard plate assembly inside the side panel

Installation: Install in the reverse order of disassembly



6.19.7 Component diagram of the left decorative panel assembly

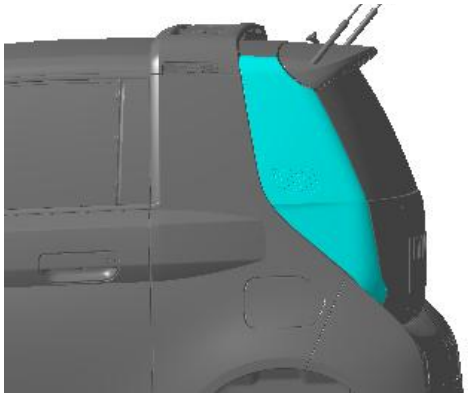


Disassembly and installation

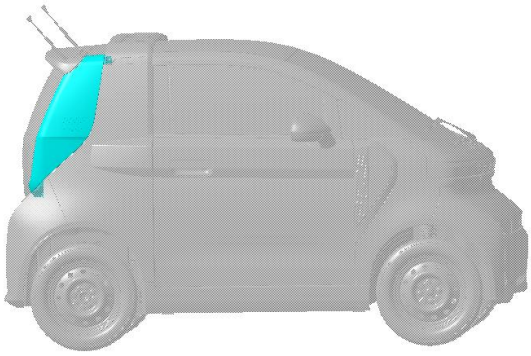
1.Disassemble the left top cover decorative assembly

2.Disassemble the left decorative panel assembly

Installation: Install in the reverse order of disassembly



6.19.8 Component diagram of the right side decorative panel assembly



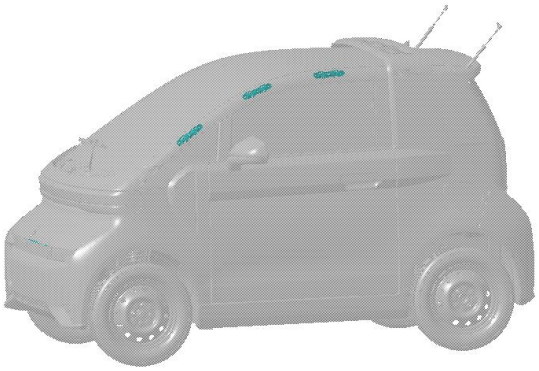
Disassembly and installation

1. Remove the decorative assembly of the right top cover.

2. Disassemble the right side decorative panel assembly.

Installation: Install in the reverse order of disassembly.

6.19.9 Component diagram of the left A-column decorative panel bracket



Disassembly and installation

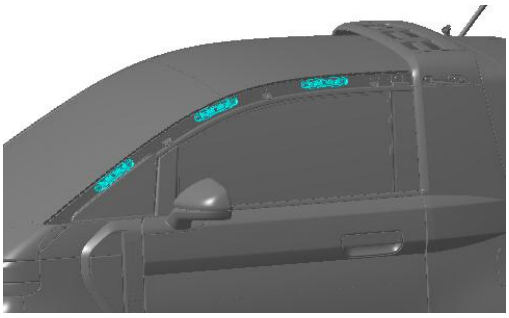
1. Remove the decorative panel on the left wing sub-board

2. Disassemble the left top cover decorative assembly

3. Disassemble the left A-column decorative panel assembly

4. Remove the bracket of the left A-column decorative panel

Installation: Install in the reverse order of disassembly



6.19.10 Component diagram of the decorative panel support for the right A-column

Disassembly and installation

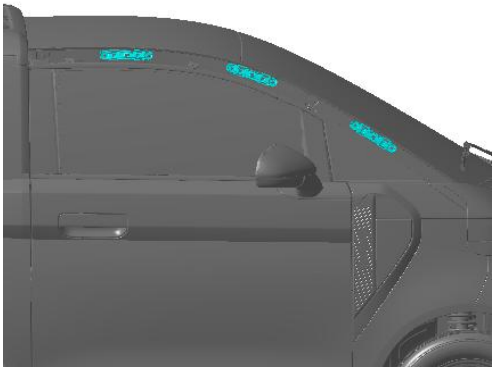
1. Remove the decorative panel on the right wing sub-board

2. Remove the decorative assembly of the right top cover

3. Disassemble the assembly of the right A-column decorative panel

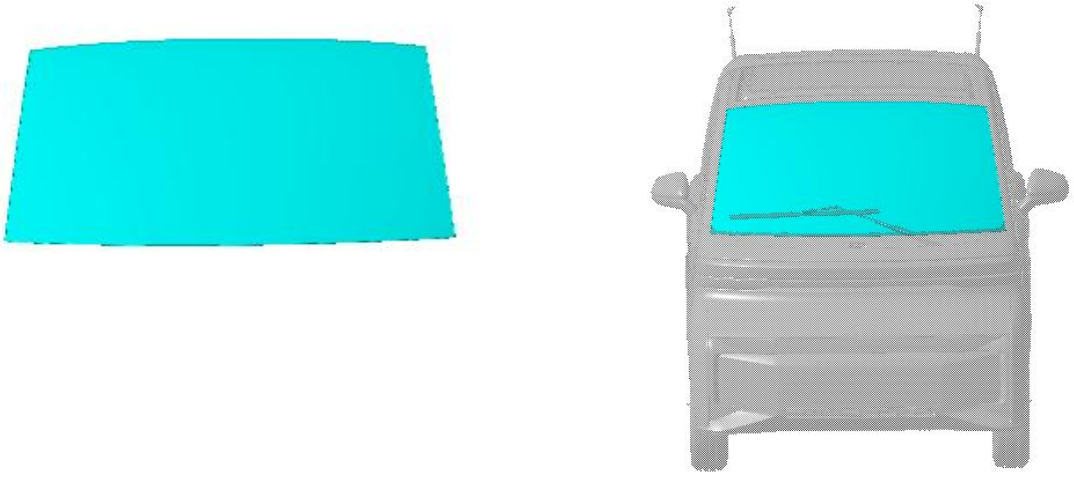
4.Remove the bracket of the A-column decorative panel on the right side

Installation: Install in the reverse order of disassembly



6.20 Windscreen glass and sealing strips

6.20.1 Front windshield glass assembly component drawing

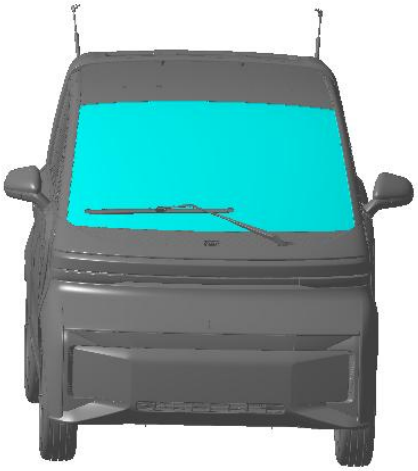


Disassembly and installation

1. Remove the front wiper arm.
Reference: Disassembly and assembly of the wiper arm before.

2. Remove the front wiper water channel assembly.
"Reference: Disassembly and Assembly of the wiper water channel Assembly before".

3.Remove the decorative panels on the A-pillars on both sides of the inner side enclosure. "Refer to the disassembly and assembly of the decorative panel on the A-pillar".



4.Remove the rearview mirror inside the car from the inside of the fron t windshield.

5.Use tape to stick the windshield together with the vehicle body and make positioning marks.

6.Use a precision cutter to cut the side and top of the glass adhesive in the direction of the arrow in the picture.

7.Use a precision cutter to cut the adhesive at the bottom of the winds hield.

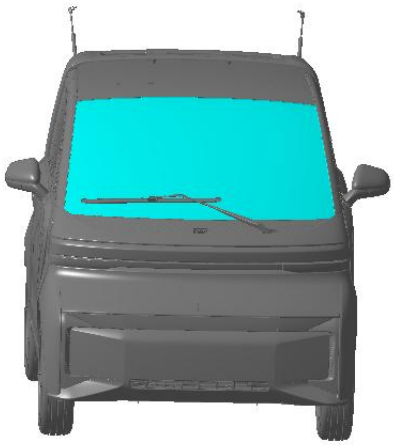
8.With the help of an assistant, lift the front windshield off the vehicle.

Note: If you want to reuse the original windshield, use a multi-purpose knife or a razor blade to remove all the carb amate glue from the surface of the windshield, but keep a thin film

Installation: Install in the reverse order of disassembly

Installation Precautions

- Before installation, check the appearance of the components for any damage, scratches or other defects that may affect usage and the overall appearance of the vehicle.
- Use a cloth dipped in alcohol to wipe the areas on the body sheet metal and glass that need to be bonded to prevent dust from affecting the bonding effect.
- Evenly apply the special primer for glass glue to the areas on the body sheet metal and glass that need to be bonded with glass glue.
- Install the front windshield decorative strips and the interior rearview mirrors separately onto the glass, and check whether the decorative strips are firmly bonded and whether the interior rearview mirrors are properly installed.
- Apply the glass glue evenly without any openings. The width of the bottom of the glass glue should be 6 to 8mm and the height 12 to 18mm.
- When installing the glass onto the vehicle body, first align the two positioning clips at the top with the holes inserted into the sheet metal. Then, carefully stick the glass onto the vehicle body. After the glass is stuck, adjust the gap between the left and right boundaries of the glass and the side panel facade. The gap should be uniform, with a difference of no more than 1mm between the left and right gaps. Finally, forcefully tap the part where the glass adhesive is applied to ensure that the glass adhesive is fully bonded to the sheet metal.

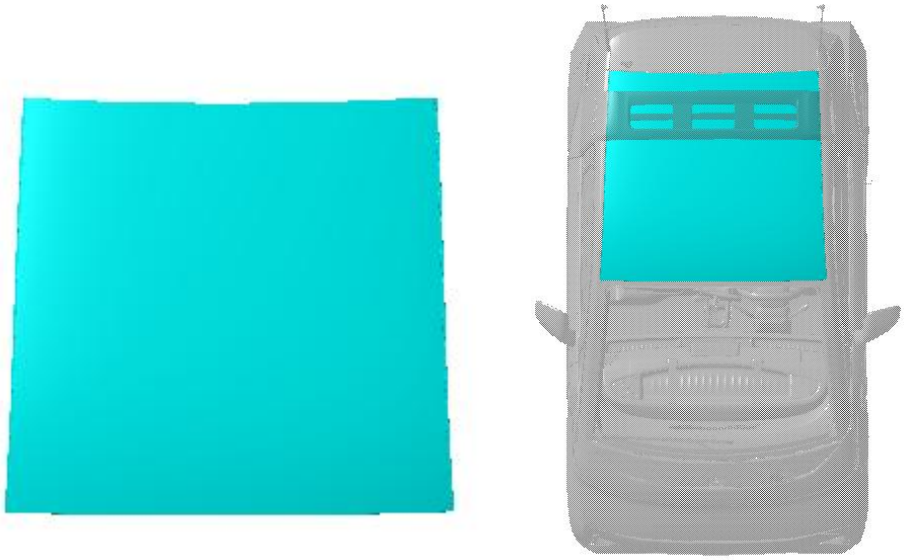


- Use tape to stick the windshield onto the car body to reduce movement until the glass glue has cured.
- Remove any excess silicone from the car body.
- Wait for 1 hour to allow the sealant to solidify
- Conduct a water tightness test on the windshield with gentle warm water.

Note:

- Do not directly spray the freshly applied glass glue with high-pressure water flow.
- Check if the windshield is leaking.
- If leakage is found, apply more silicone sealant to the leakage point with a plastic scraper.
- After the glass sealant has solidified, recheck the front windshield for any leakage.
- Remove the protective tape and shielding from the windshield area.

6.20.2 Top glass assembly component diagram

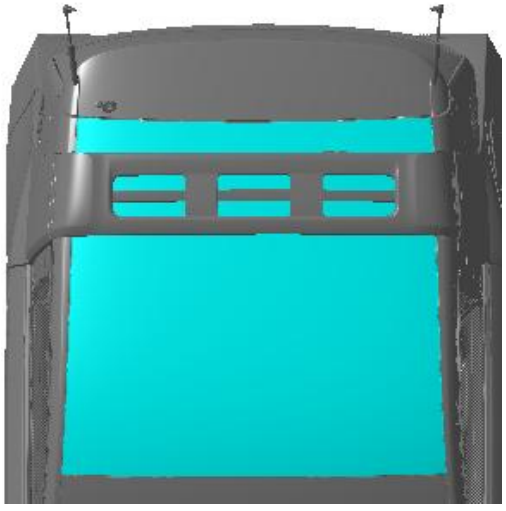


Disassembly and installation

1. Disassemble the exterior decorative panel assemblies of the A-pillars on both sides. Reference: Disassembly and Installation of the Side A-pillar decorative panel assembly
2. Disassemble the interior ceiling. Reference: Disassembly and installation of the interior ceiling
3. Remove the back door glass in the same way as remove the front windshield.

Installation: Install in the reverse order of disassembly

Installation Precautions



- Before installation, check the appearance of the components for any damage, scratches or other defects that may affect usage and the overall appearance of the vehicle.
- Use a cloth dipped in alcohol to wipe the areas on the body sheet metal and glass that need to be bonded to prevent dust from affecting the bonding effect.
- Evenly apply the special primer for glass glue to the areas on the body sheet metal and glass that need to be bonded with glass glue.
- Apply the glass glue evenly without any openings. The width of the bottom of the glass glue should be 6 to 8mm and the height 12 to 18mm.
- When installing the glass onto the vehicle body, first align the two positioning clips at the top with the holes inserted into the sheet metal. Then, carefully stick the glass onto the vehicle body. After the glass is stuck, adjust the gap between the left and right boundaries of the glass and the side panel facade. The gap should

be uniform, with a difference of no more than 1mm between the left and right gaps. Finally, forcefully tap the part where the glass adhesive is applied to ensure that the glass adhesive is fully bonded to the sheet metal.

- Use tape to stick the windshield onto the car body to reduce movement until the glass glue has cured.
- Remove any excess silicone from the car body.
- Wait for 1 hour to allow the sealant to solidify
- Conduct a water tightness test on the windshield with gentle warm water.

Note:

- Do not directly spray the freshly applied glass glue with high-pressure water flow.
- Check if the roof glass is leaking.
- If leakage is found, apply more silicone sealant to the leakage point with a plastic scraper.
- After the glass sealant has solidified, recheck the roof glass for any leakage.
- Remove the protective tape and shielding from the roof glass area.

6.20.3 Rear windshield glass assembly component drawing

Disassembly and installation

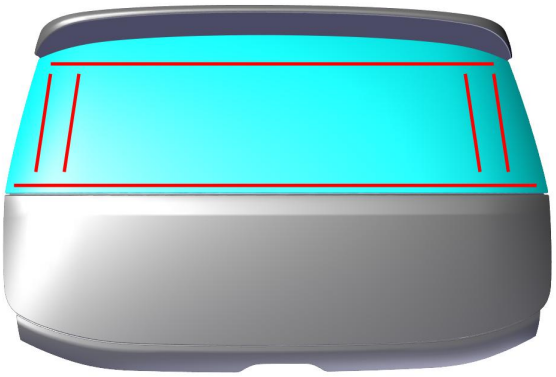
1. Defrosting and other wire harness connectors after disconnection.

2. Remove the spoiler."Reference Spoiler Disassembly and assembly

3. Remove the back door glass in the same way as remove the front windshield."Reference Front Windshield Disassembly and assembly"

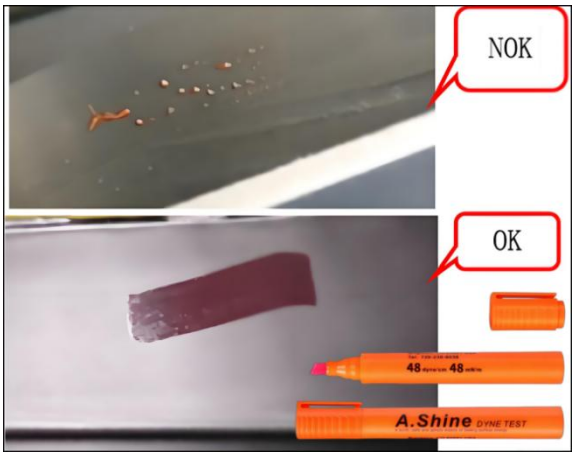
Installation:

1. Use a clean cloth dipped in glass cleaner to wipe the bonding area of the inner panel of the back door and let it dry.
Note: The cleaning agent must completely cover the bonding area of the glass glue, with an application width of no less than 25mm. After it is completely dry, plasma treatment should be carried out.



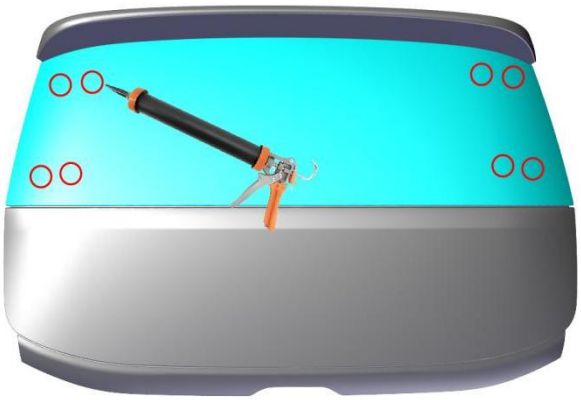
2. Use a handheld plasma device to perform plasma treatment on the bonding area of the inner panel of the back door
Note: Plasma gun distance: 15cm, speed :30mm/s, power :1200W..

3. Use a No. 48 Dyne pen to draw wavy lines on the bonding area for testing. If there is no shrinkage within 3 seconds of application, it is qualified. The primer and adhesive should be applied within 30 minutes after plasma treatment. (If the plasma-treated parts are not used within 30 minutes, they need to be retested with a Dyne pen. If they are qualified, they can continue to be used. If not, they need to be reprocessed before use.)
Note: Inspect 3 points in each of the upper and lower areas, 2 points in each of the left and right areas, and focus on inspecting the four corners. (Use a clean cloth dipped in glass cleaner to wipe the Dyne pen measurement marks on the glue application track.)

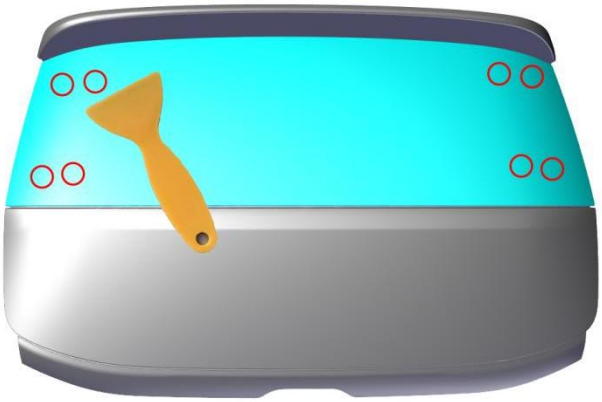


4. Use a glass primer brush to evenly apply the glass primer to the bonding area of the inner panel of the back door.
Note: The width of the primer should be greater than 25mm. After it is completely dry, apply the glass glue. The installation of the glass glue should be completed within 24 hours after application

5. Apply sealant at the junction of the inner and outer panels of the back door.



6. Use a scraper to smooth out the sealant and apply it evenly.



7. Wipe the bonding area of the rear windshield glass with a clean cloth dipped in glass cleaner and let it dry.

8. Use a glue gun to apply the glass glue to the area where the glass is to be glued.

9. After applying the adhesive, use a suction cup to transport the rear door glass assembly to the installation position on the vehicle body. Insert the positioning pins on both sides of the rear door glass into the positioning holes and tap the glass to ensure it adheres closely to the inner panel of the rear door.

Note: Apply the adhesive continuously, evenly and smoothly, fully covering the overlapping area between the inner and outer panels. The size of the adhesive type the width of the bottom edge is 8mm ± 1mm, and the height is 12mm ± 1mm. After continuous application of the glass adhesive and uniform application of the adhesive type, the appearance of the windscreen glass assembly is intact, without scratches or dirt.

Note:

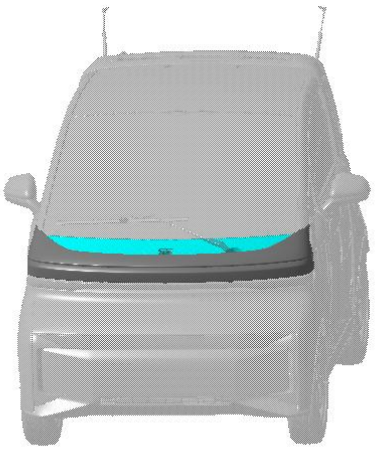
- After the installation of the back door glass is completed, wait for more than one hour for the sealant to solidify.
- After the rear door glass is installed, park the car on a flat ground for more than 4 hours. If the car needs to be run at this time, it should move slowly for 8 hours.
- When all the car doors and Windows are closed, it is not allowed to suddenly close the car doors.
- After the rear door glass is installed, do not subject the vehicle to excessive load within 2 to 3 days. (Such as driving on irregular and uneven roads.)".

Warning:

It takes approximately 24 hours for the maintenance material to fully cure. Before this, do not interfere with the part being repaired. If the silicone sealant does not cure fully, passengers who have not taken protective measures may be thrown out of the vehicle, resulting in personal injury.

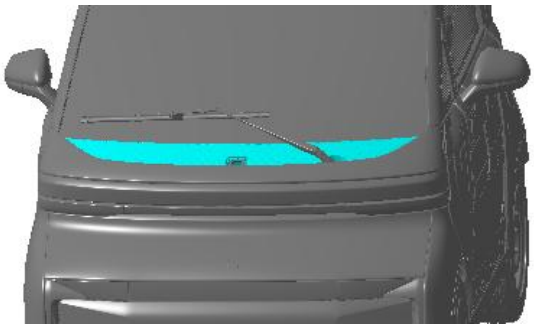
6.21 Front fender

6.21.1 Front fender water channel assembly component drawing

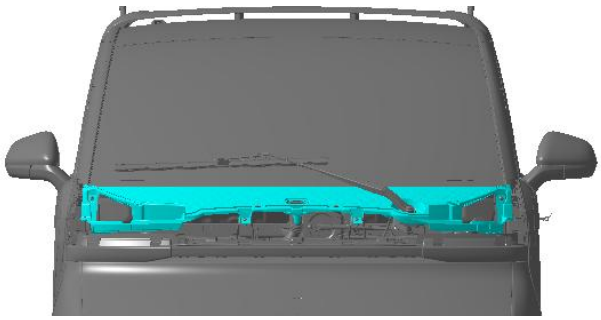


Disassembly and installation

1.To disassemble the front fender panel assembly, see: Disassembly and installation of the Front fender Panel Assembly



2.To disassemble the wiper arm assembly, see: Disassembly and installation of the Wiper arm Assembly

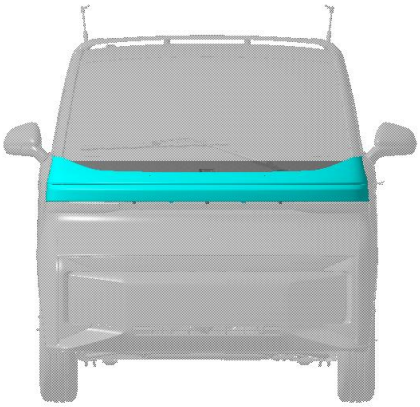


3.Remove the 8 fixing screws of the water channel assembly.

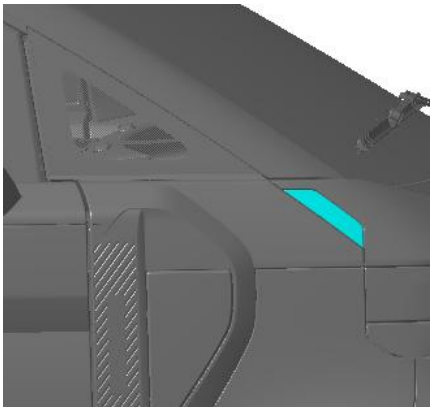
4.Disconnect the washing liquid conduit and remove the front drainage trough assembly

Installation: Install in the reverse order of disassembly

6.21.2. Front fender panel assembly component drawing



Disassembly andinstallation
1.Remove the decorative panels on both side fenders.



2.Remove the fixing screws on both sides of the front panel.

3.Remove the fixed clips in the middle of the front panel and the water channel.

4.Remove the front panel from both sides to make it come out of the slot.

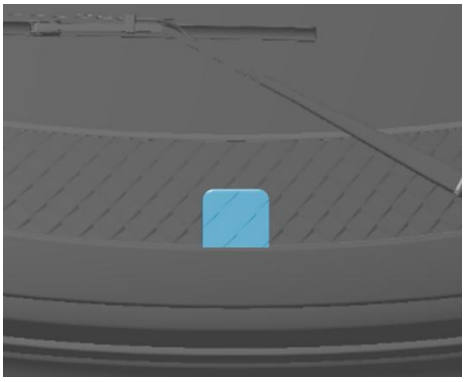
Installation: Install in the reverse order of disassembly

6.21.3 Diagram of the washing and filling cover plate component

Disassembly and installation
1.Press the position marked with an arrow on the washing and filling cover plate.

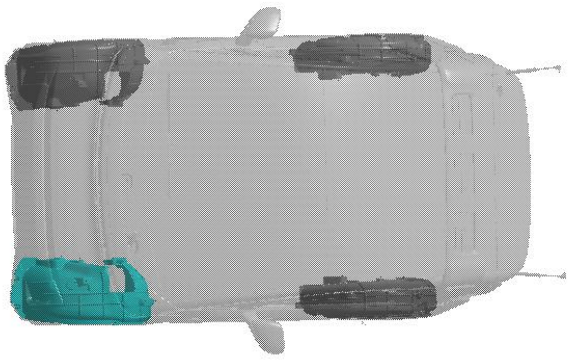
2. After the washing and filling cover plate lifts up, remove the cover plate.

Installation: Install in the reverse order of disassembly



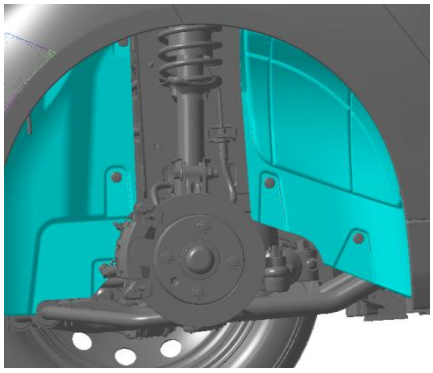
6.22 Wheel cover decorative parts

6.22.1 Left front wheel grille component drawing



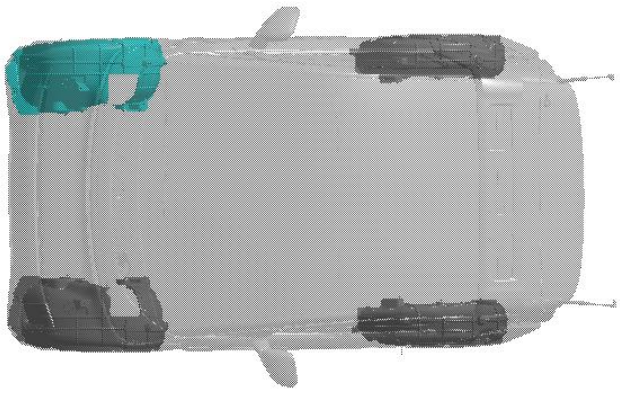
Disassembly and installation
1.Remove the left front wheel

2.Remove 2 hexagonal screws, 6 mother-and-child thread screws and 7 self-tapping screws, and take off the left front wheel cover.



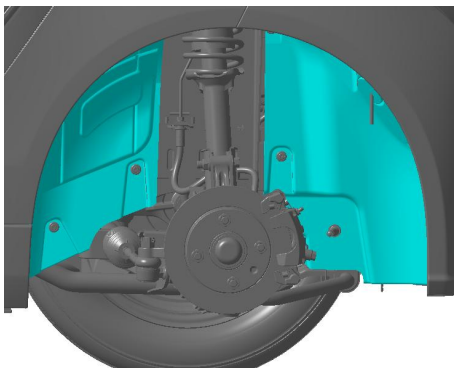
Installation: Install in the reverse order of disassembly

6.22.2 Right front wheel cover component drawing



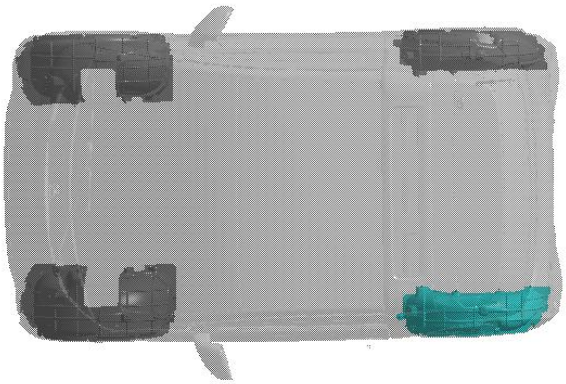
Disassembly and installation
1.Remove the right front wheel

2. Remove 2 hexagonal screws, 6 mother-and-child thread screws and 7 self-tapping screws, and then take off the right front wheel cover.



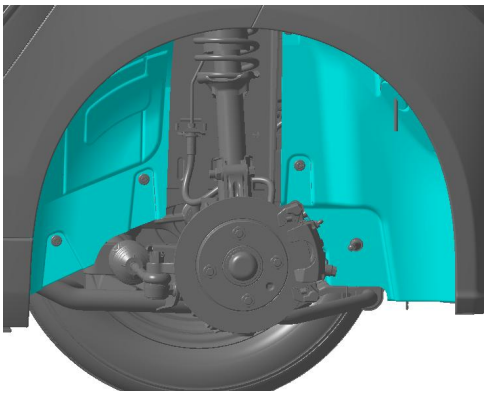
Installation: Install in the reverse order of disassembly

6.22.3 Left rear wheel cover component diagram



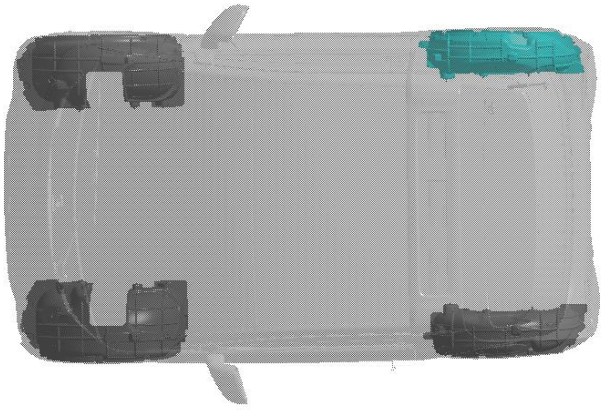
Disassembly and installation
1.Remove the left rear wheel

2. Remove 2 hexagonal screws, 6 letter buckle screws and 7 self-tapping screws, and take off the left rear wheel cover



Installation: Install in the reverse order of disassembly

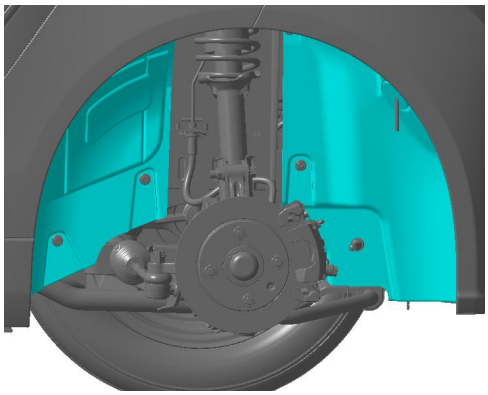
6.22.4 Right rear wheel cover component drawing



Disassembly and installation

1.Remove the right rear wheel

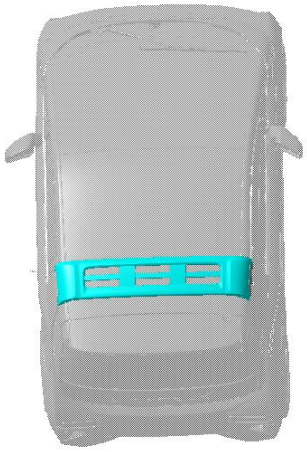
2. Remove 2 hexagonal screws, 6 letter buckle screws and 7 self tapping screws, and take off the right rear wheel cover



Installation: Install in the reverse order of disassembly

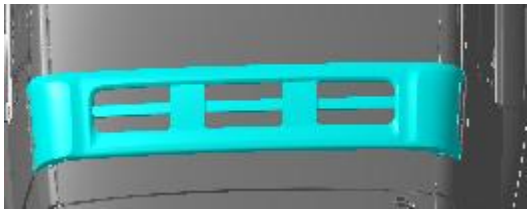
6.23 The outer protective surface of the top cover

6.23.1 Component drawing of the decorative panel assembly on the top cover



Disassembly and installation

1. Remove the cover plates on both sides of the top cover decorative panel. See: Disassembly and installation of the Left cover plate of the top cover decorative panel/Disassembly and installation of the Right cover Plate of the top cover decorative panel.

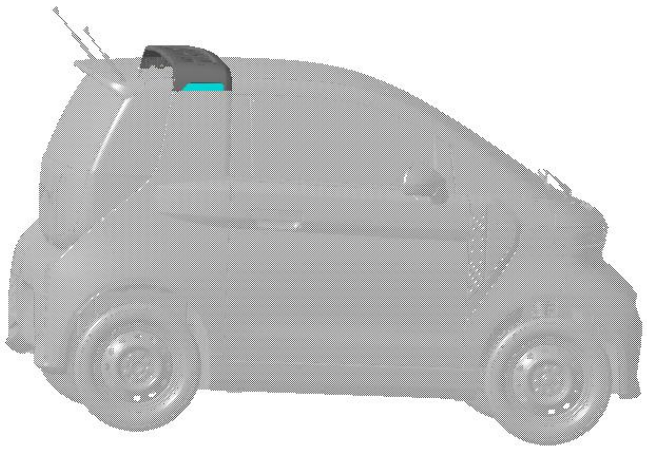


2. Remove four fixing screws on both sides of the decorative panel on the top cover.

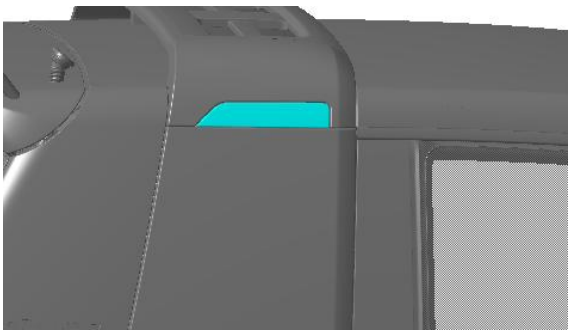
3. Remove the decorative panel assembly on the top cover.

Installation: Install in the reverse order of disassembly

6.23.2Component drawing of the left cover plate of the top cover decorative panel



Disassembly and installation

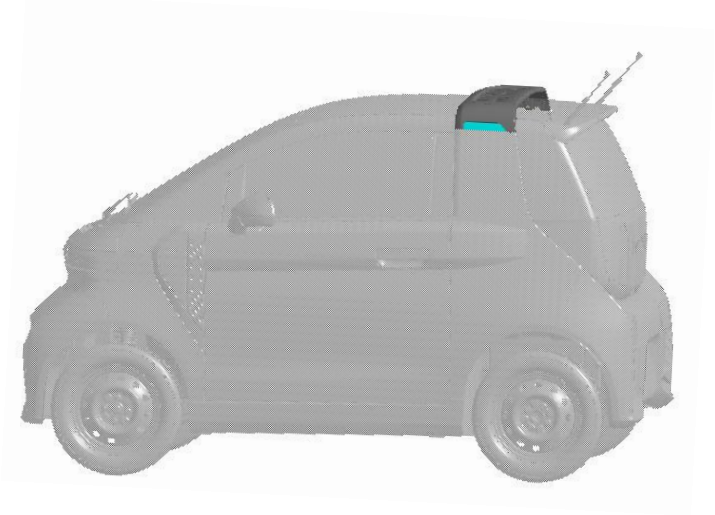


1. Pry along the gap of the cover plate to disengage the cover plate snap

2. Remove the left cover plate of the decorative panel on the top cover

Installation: Install in the reverse order of disassembly

6.23.3 Component drawing of the right cover plate of the top cover decorative panel

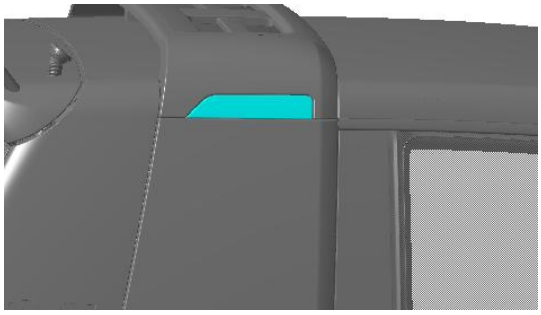


Disassembly and installation

1. Pry along the gap of the cover plate to disengage the cover plate snap

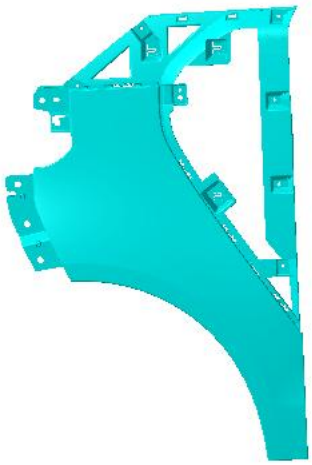
2. Remove the right cover plate of the decorative panel on the top cover

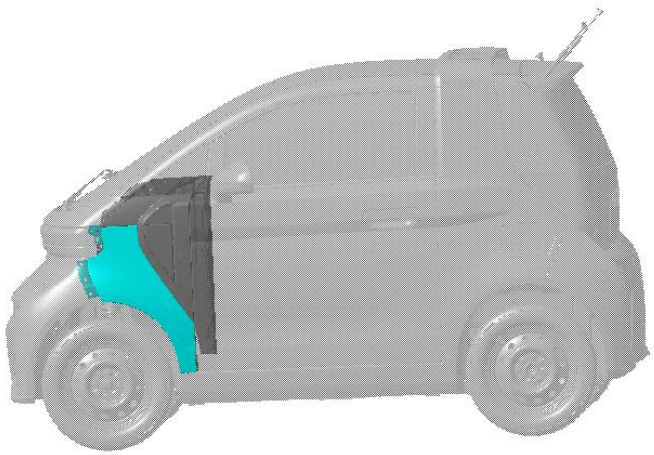
Installation: Install in the reverse order of disassembly



6.24 Front fender

6.24.1 Component diagram of the left wing sub-board body





Disassembly and installation

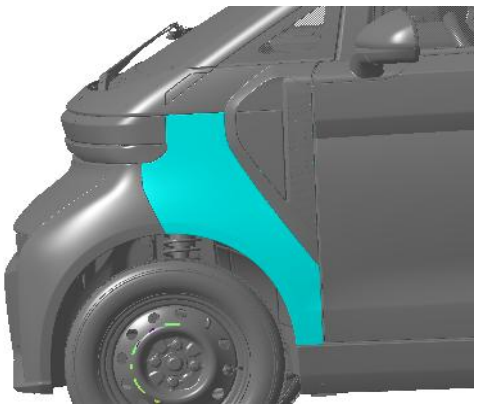
1. Disassemble the main decorative panel of the left wing sub-board. see: Disassembly and installation of the main decorative panel of the left wing sub-board.

2. Disassemble the front bumper assembly. see: disassembly and installation of the Front Bumper Assembly

3. Remove the screws that fix the front part of the main decorative panel of the left sub-board.

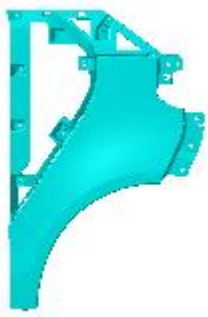
4. Remove the connecting screws between the main trim of the left sub-panel and the left front wheel guard

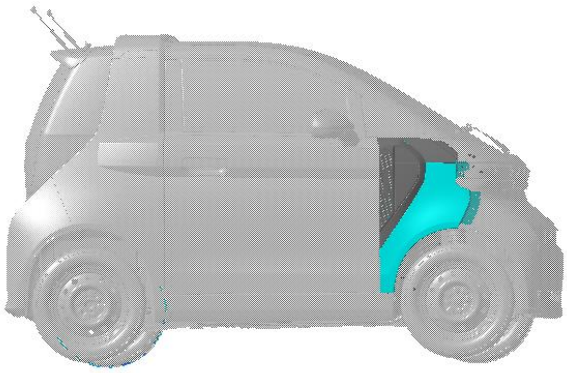
5. Open the left door and remove the screws that fix the rear part of the main trim of the left sub-panel.



Installation: Install in the reverse order of disassembly

6.24.2 Component diagram of the right wing sub-board body





Disassembly and installation

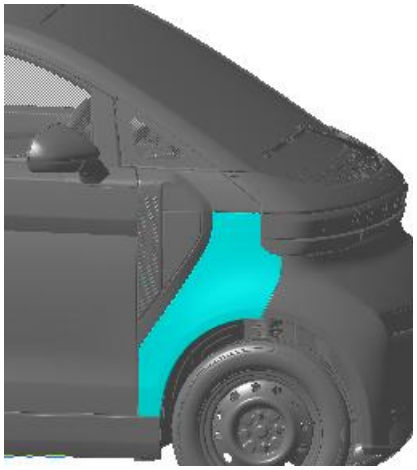
1. Disassemble the main decorative panel of the left wing sub-board. See: Disassembly and installation of the main decorative panel of the Left wing sub-board.

2. Disassemble the front bumper assembly. See: Disassembly and installation of the Front Bumper Assembly

3. Remove the screws that fix the front part of the main decorative panel of the left sub-board.

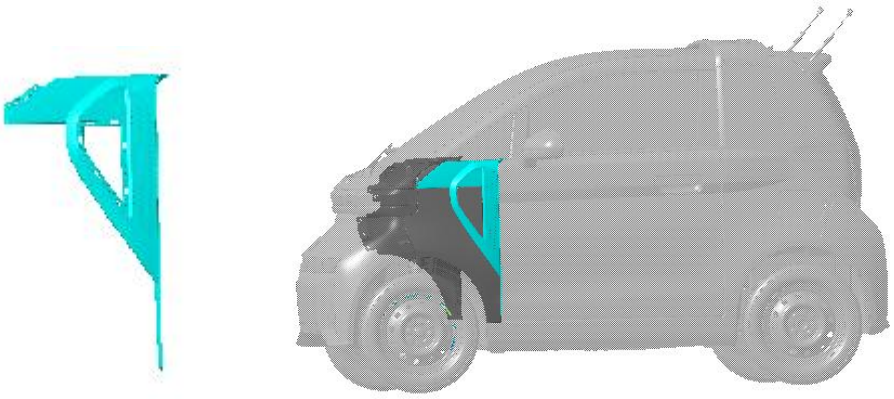
4. Remove the connecting screws between the main trim of the left sub-panel and the left front wheel guard

5. Open the left door and remove the screws that fix the rear part of the main trim of the left sub-panel.



Installation: Install in the reverse order of disassembly

6.24.3 Component drawing of the main decorative panel of the left sub-board



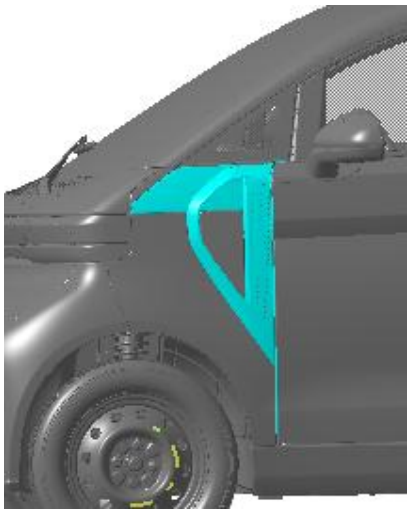
Disassembly and installation

1. Disassemble the decorative panel on the left wing sub-board. See: Disassembly and installation of the decorative panel on the left wing sub-board

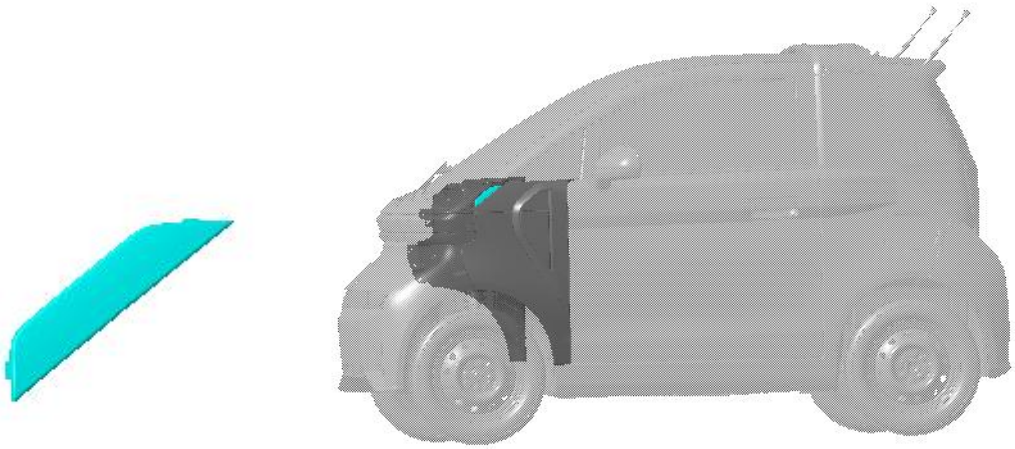
2. Disassemble the triangular cover plate of the left wing sub-plate. See: Disassembly and Installation of the triangular cover Plate of the Left wing sub-plate

3. Remove the main decorative panel of the left sub-board.

Installation: Install in the reverse order of disassembly



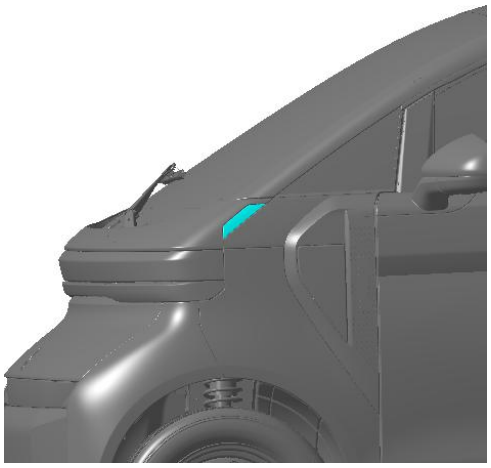
6.24.4 Component drawing of the decorative panel on the left wing sub-board



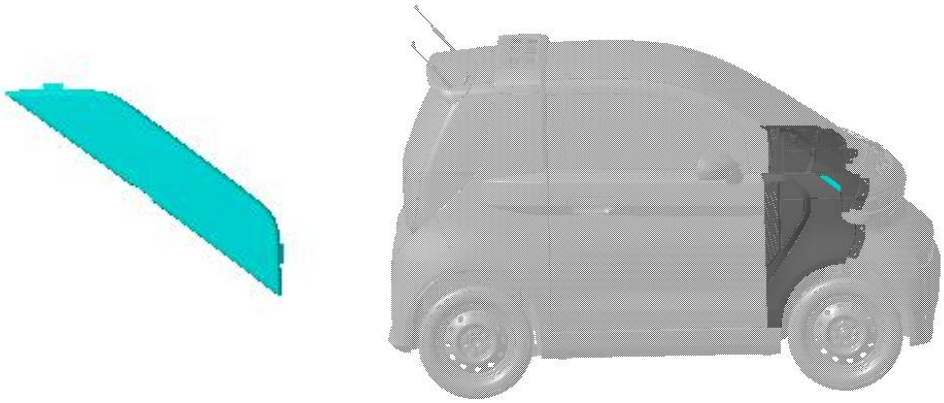
Disassembly and installation

Disassembly: Pry along the gap of the upper decorative plate of the fender to separate the upper decorative plate from the clamp, and then remove the upper decorative plate of the fender.

Installation: Install in the reverse order of disassembly



6.24.5Component drawing of the decorative panel on the right wing sub-board



Disassembly and installation

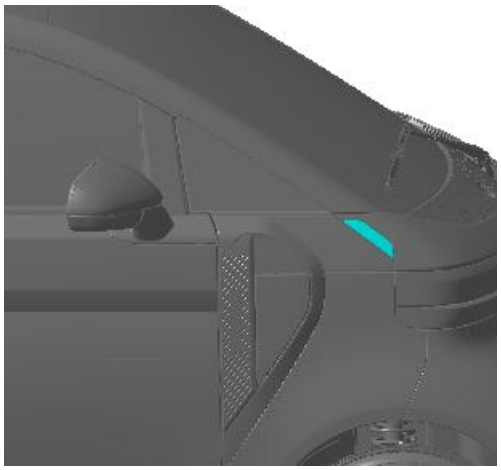
Disassembly:

Pry along the gap of the upper decorative plate of the fender to separate the upper decorative plate from the clamp.

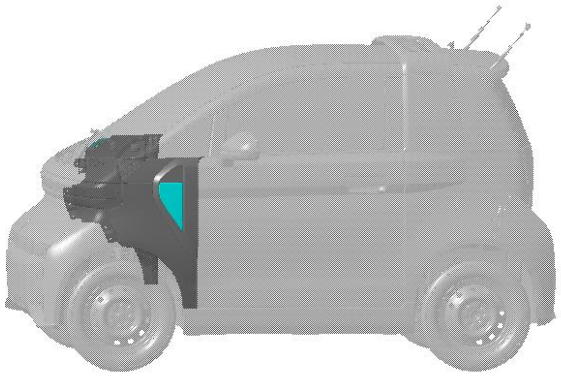
Remove the decorative plate on the fender.

Installation:

Install in the reverse order of disassembly.



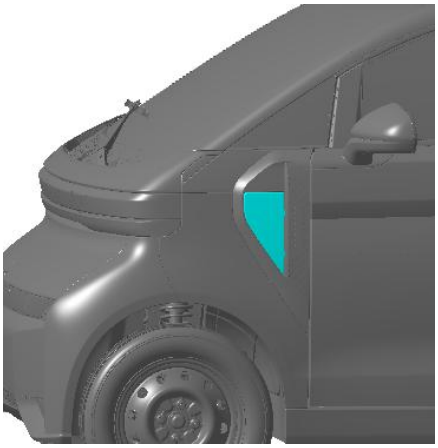
6.24.6 Component drawing of the left wing sub-plate triangular cover plate



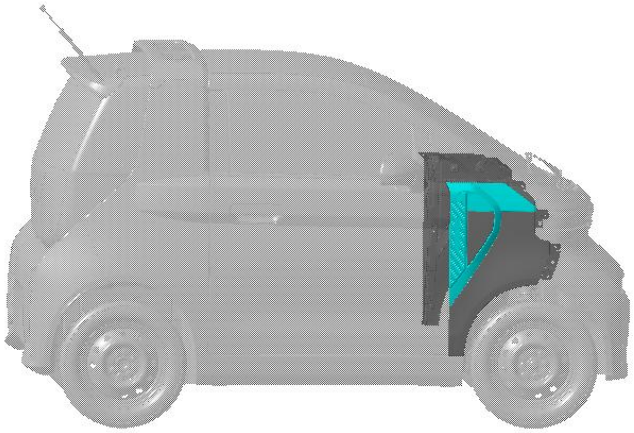
Disassembly and installation

Disassembly: Pry along the gap of the triangular cover plate of the fender to separate the cover plate from the clamp, and then remove the triangular cover plate of the fender.

Installation: Install in the reverse order of disassembly



6.24.7 Component drawing of the main decorative panel of the right wing sub-board

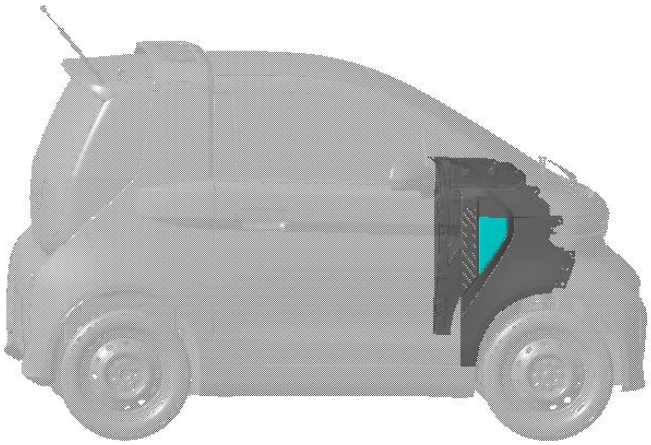


Disassembly and installation

1. Disassemble the decorative panel on the left wing sub-board.
See: Disassembly and installation of the decorative panel on the left wing sub-board
2. Disassemble the triangular cover plate of the left wing sub-plate
See: Disassembly and Installation of the triangular cover Plate of the Left wing sub-plate
3. Remove the main decorative panel of the left sub-board.

Installation: Install in the reverse order of disassembly

6.24.8 Component drawing of the right wing sub-plate triangular cover plate



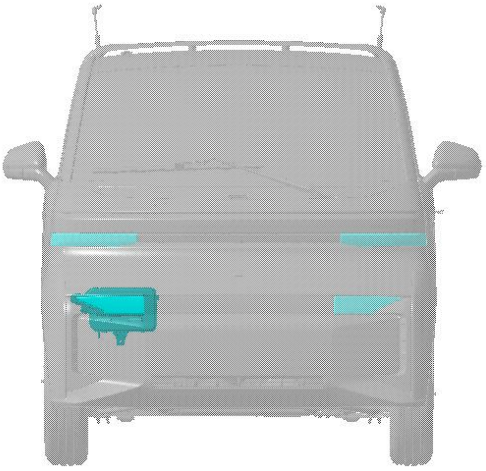
Disassembly and installation

Disassembly:
Pry along the gap of the triangular cover plate of the right wing plate to separate the cover plate from the clamp, and then remove the triangular cover plate of the wing plate.

Installation: Install in the reverse order of disassembly

6.25 Combined headlamp

6.25.1 Component diagram of the left front combined lamp assembly



Disassembly and installation
Disassembly

1. Disassemble the front bumper assembly. See: Disassembly and installation of the front bumper Assembly

2. Remove the fixing screws of the left front combination lamp

3. Disconnect the plug of the left front combination lamp connection harness and remove the combination lamp.

Installation: Install in the reverse order of disassembly

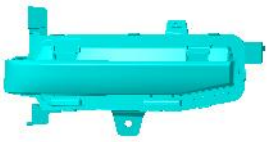
6.25.2 Component diagram of the right front combination lamp assembly

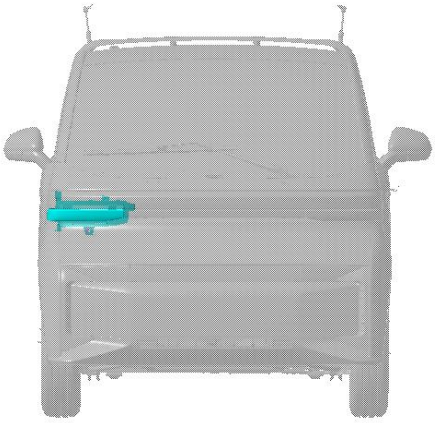
Disassembly and installation
Disassembly

1. Disassemble the front bumper assembly.
See: Disassembly and installation of the front bumper Assembly.
2. Remove the fixing screws of the right front combination lamp.
3. Disconnect the plug of the right front combination lamp connection harness and remove the combination lamp.

Installation: Install in the reverse order of disassembly.

6.25.3 Component diagram of the left front combined small lamp assembly





Disassembly and installation
Disassembly

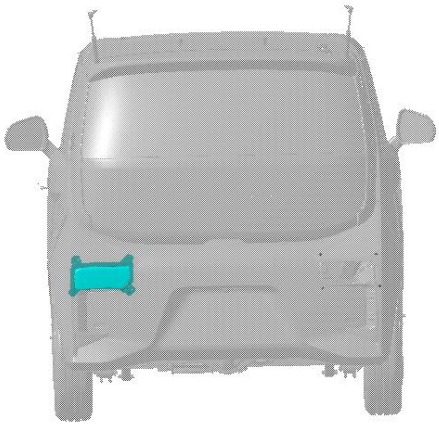
1. Disassemble the front bumper assembly. See: Disassembly and installation of the front bumper Assembly

2. Remove the fixing screws of the left front combination small lamp

3. Disconnect the plug of the left front combination small lamp connection harness and remove the combination small lamp.

Installation: Install in the reverse order of disassembly

6.25.4 Component diagram of the right front combined small lamp assembly



Disassembly and installation
Disassembly

1. Disassemble the front bumper assembly. See: Disassembly and installation of the front bumper Assembly

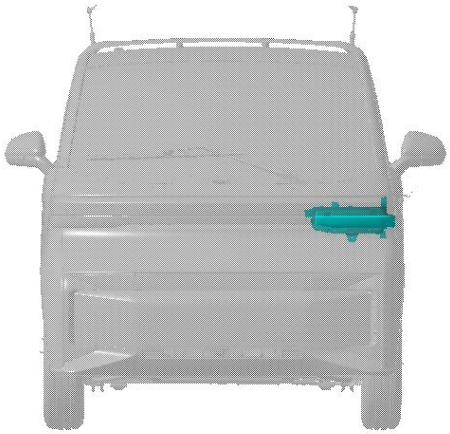
2. Remove the fixing screws of the right front combination small lamp

3. Disconnect the plug of the right front combination small lamp connection harness and remove the combination small lamp.

Installation: Install in the reverse order of disassembly

6.26 Combined rear lamp

6.26.1 Left rear combination lamp assembly component diagram



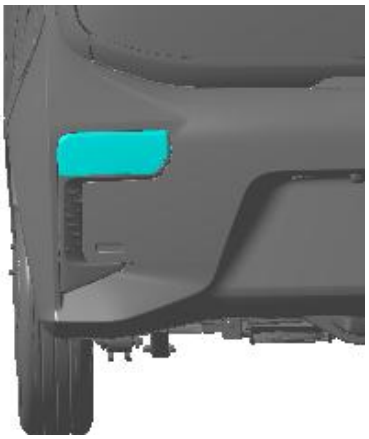
Disassembly and installation:

Disassembly

1. Remove the rear bumper

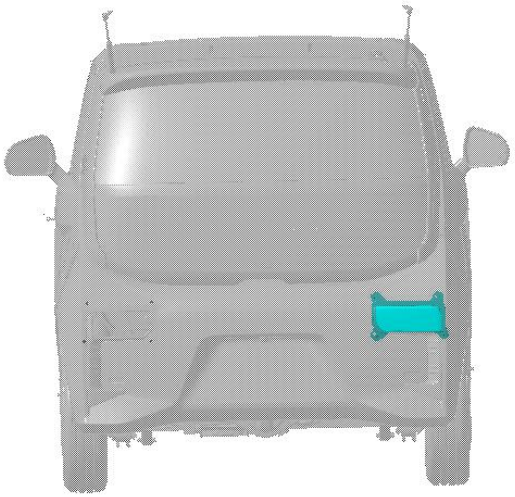
2. Disconnect the connector of the left rear combination lamp assembly

3. Remove the four connecting bolts of the left rear combination lamp assembly and take out the left rear combination lamp assembly.



Installation: Install in the reverse order of disassembly

6.26.2 Component diagram of the right rear combined lamp assembly



Disassembly and installation

Disassembly

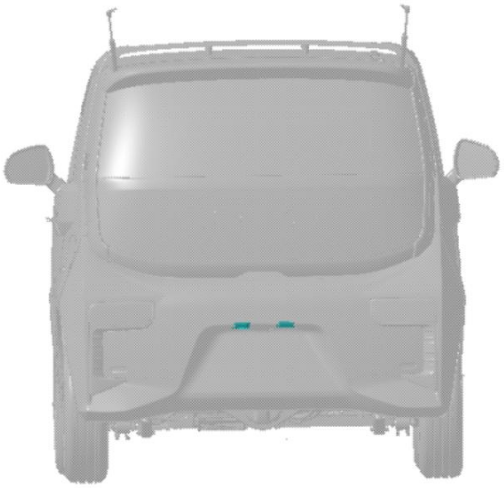
1. Remove the rear bumper

2. Disconnect the connector of the right rear combination lamp assembly

3. Remove the four connecting bolts of the right rear combination lamp assembly and take out the right rear combination lamp assembly.

Installation: Install in the reverse order of disassembly

6.26.3 License plate light assembly Component drawing



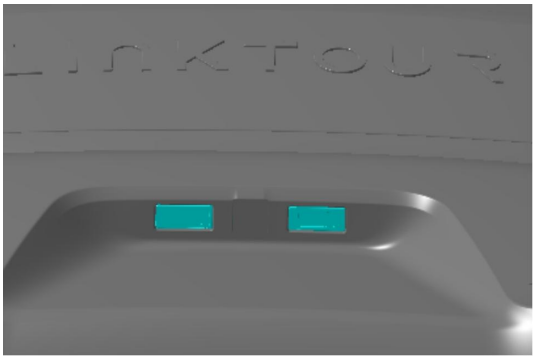
Disassembly and installation

Disassembly

1. Pry along the gap between the license plate light and the rear bar to make the license plate light come out of the clamp.

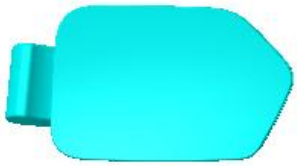
2. Disconnect the plug of the license plate light connection harness and remove the license plate light.

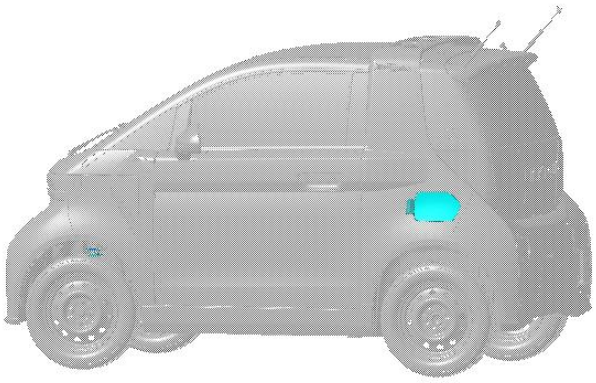
Installation: Install in the reverse order of disassembly



6.27 Charging port cover

6.27.1 Component drawing of the charging port cover plate





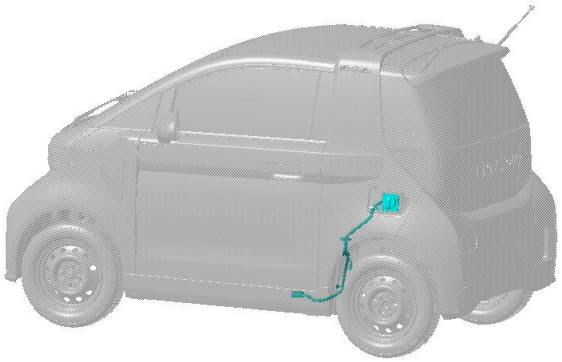
Disassembly and installation

Disassembly

1. Remove the hinge assembly of the charging port cover
2. Remove the cover plate of the charging port

Installation: Install in the reverse order of disassembly

6.27.2 Component drawing of the charging port cover hinge assembly



Disassembly and installation

Remove the hinge assembly of the charging port cover

Installation: Install in the reverse order of disassembly

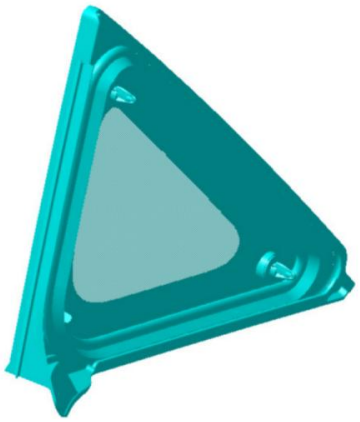
6.28 Car doors and Windows

6.28.1 left front triangular window glass component drawing

Disassembly and installation:

Disassembly

1. Disassemble the upper guard plate assembly of the left A-pillar inside the side enclosure. See: Disassembly and Installation of the upper guard plate Assembly of the left A-pillar inside the side enclosure
2. Disassemble the left A-column cover plate assembly. See: Disassembly and Installation of the Left A-column cover Plate Assembly
3. Use a steel wire or an equivalent tool to separate the left front triangular window glass and remove it



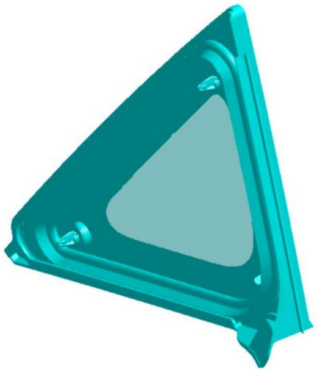
Installation

1. Apply the special glass sealant
2. Install in the reverse order of disassembly

6.28.2 Component drawing of the right front triangular window glass

Disassembly and installation:

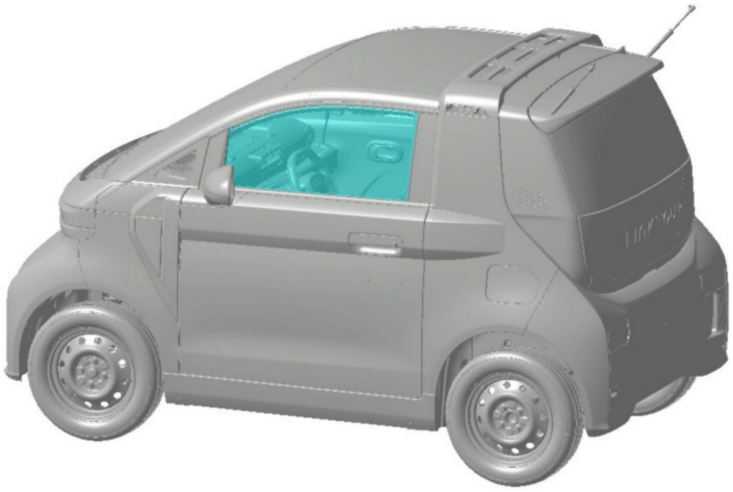
1. Disassemble the upper guard plate assembly of the right A-pillar inside the side enclosure. See: Disassembly and Installation of the upper guard plate Assembly of the right A-pillar inside the side enclosure
2. Disassemble the right A-column cover plate assembly. See: Disassembly and Installation of the Right A-column cover Plate Assembly
3. Use a steel wire or an equivalent tool to separate the left front triangular window glass and remove the right front triangular window glass



Installation

1. Apply the special glass sealant
2. Install in the reverse order of disassembly

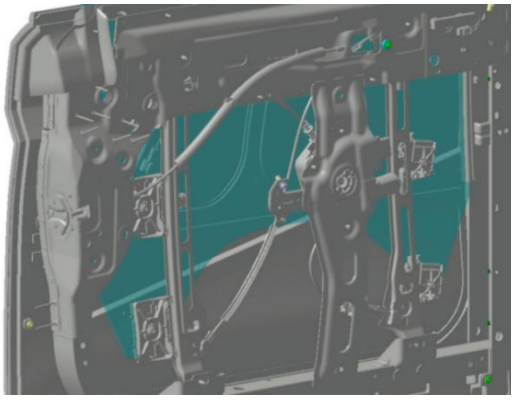
6.28.3 Component diagram of the left door glass assembly



Disassembly and installation

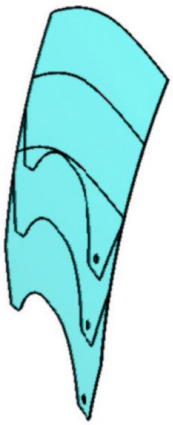
Disassembly

1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly
2. Remove the waterproof film assembly of the left door. See: Disassembly and installation of the waterproof film Assembly for the Left door
3. Remove the left front guide rail interior panel assembly.



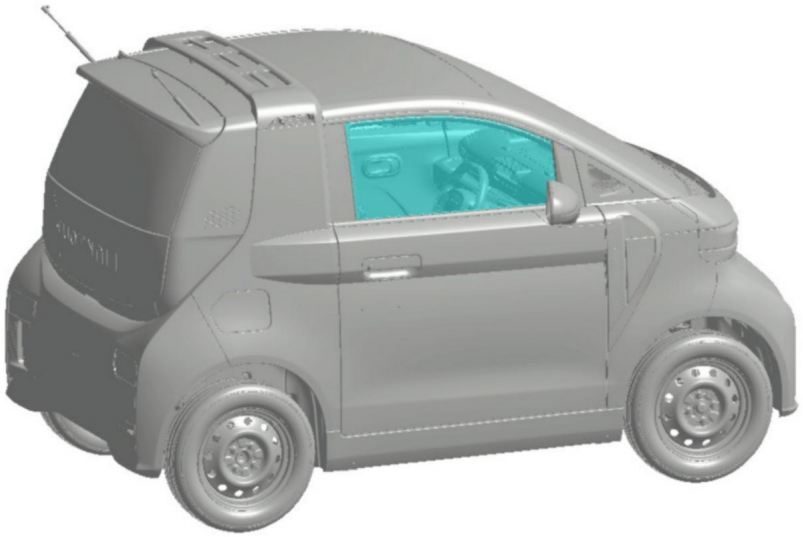
4. Remove the left front guide rail assembly.
5. Remove one fixing bolt between the left side door glass and the glass lifter
6. Loosen one fixing bolt between the left door glass and the glass lifter

7. Remove the glass assembly



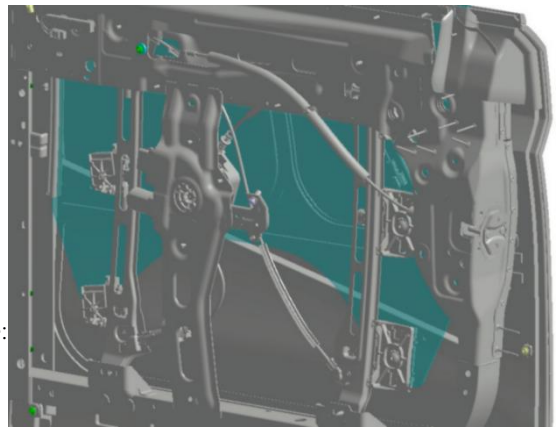
Installation
Install in the reverse order of disassembly

6.28.4 Component diagram of the right door glass assembly



Disassembly and installation

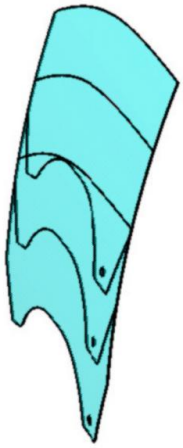
Disassembly



1. Remove the inner guard plate assembly of the right door. See: Disassembly and installation of the inner guard plate assembly of the right door

2. Remove the waterproof film assembly of the right door. See: Disassembly and installation of the Right Door Waterproof Membrane Assembly

3. Remove the right front guide rail interior panel assembly.



4. Remove the right front door guide rail assembly.

5. Remove one fixing bolt between the right side door glass and the glass lifter

6. Loosen one fixing bolt between the right door glass and the glass lifter

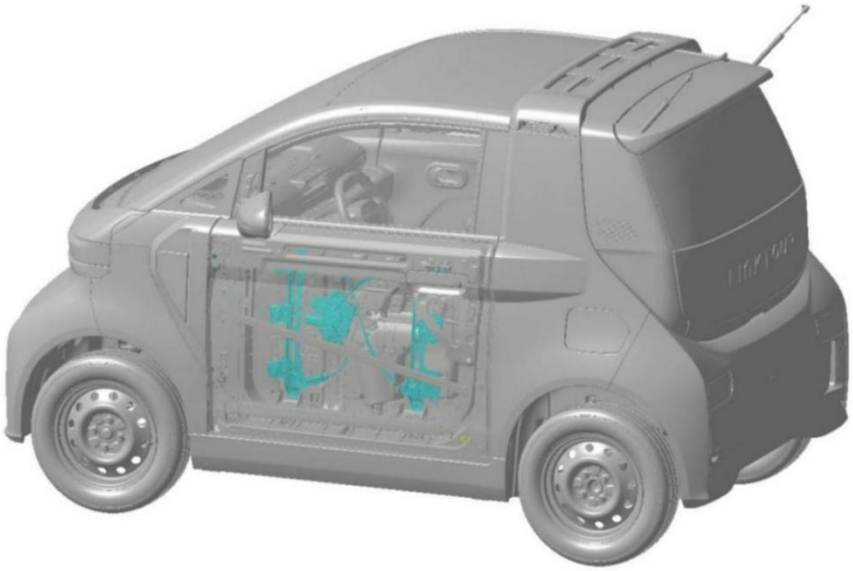
7. Remove the glass assembly

Installation

Install in the reverse order of disassembl

6.29 Door glass lifting

6.29.1 Component diagram of the left door lift assembly

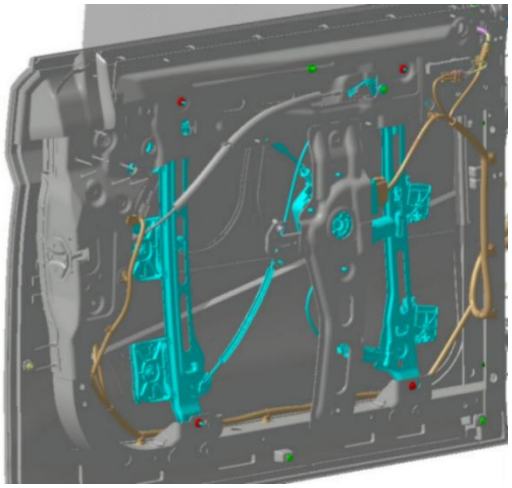


Disassembly and installation

Disassembly

1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly.

2. Remove the waterproof film assembly of the left door. See: Disassembly and installation of the waterproof film assembly for the Left door.



3. Remove the left front guide rail interior panel assembly.

4. Remove the left front guide rail assembly.

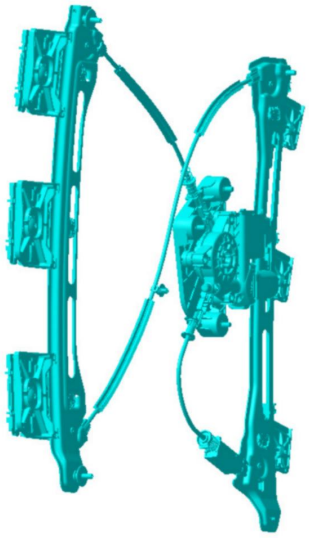
5. Remove one fixing bolt between the left side door glass and the glass lifter.

6. Loosen one fixing bolt between the left door glass and the glass lifter.

7. Remove the glass assembly.

8 Remove the four fixing nuts of the left door window lifter and take out the left door window lifter.

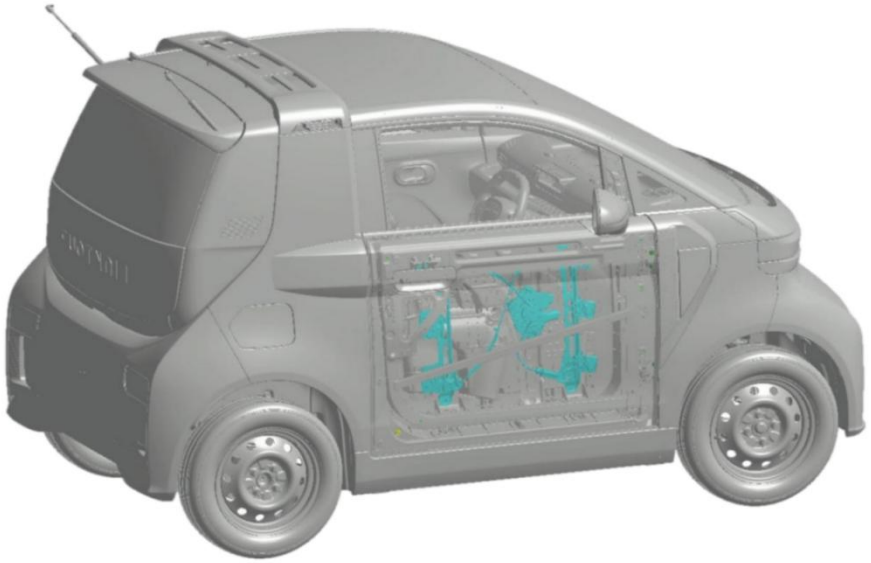
9. Remove the three motor fixing screws



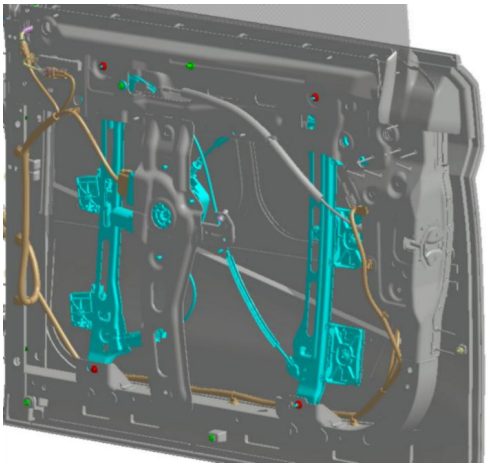
10. Remove the glass lifter on the left door.

Installation
Install in the reverse order of disassembly

6.29.2 Component diagram of the right door lift assembly



Disassembly and installation
Disassembly



1. Remove the inner guard plate assembly of the right door. See: Disassembly and installation of the inner guard plate assembly of the right door

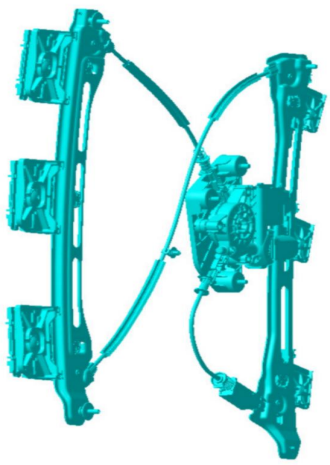
2. Remove the waterproof film assembly of the right door. See: Disassembly and installation of the Right Door Waterproof Membrane Assembly

3. Remove the right front guide rail interior panel assembly

4. Remove the right front door guide rail assembly.

5. Remove one fixing bolt between the right side door glass and the glass lifter

6. Loosen one fixing bolt between the right door glass and the glass lifter



7. Remove the glass assembly

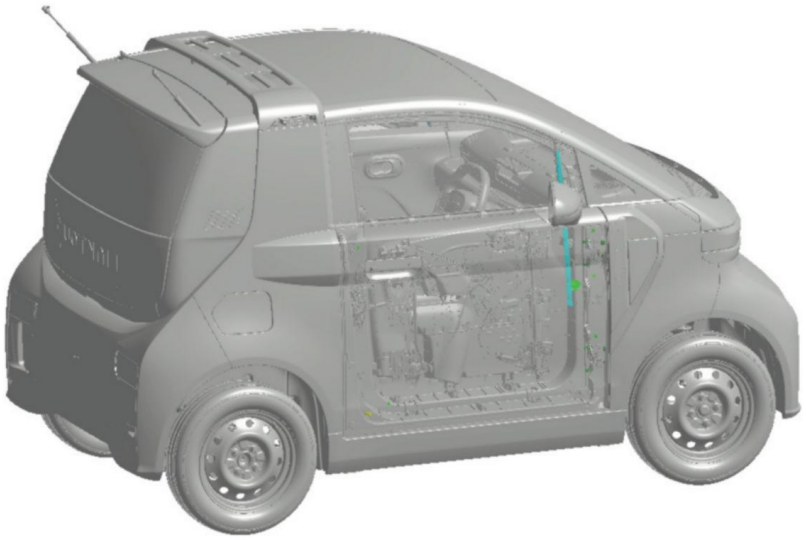
8. Remove the four fixing nuts of the right door window lifter and take out the right door window lifter

9.Remove the three motor fixing screws

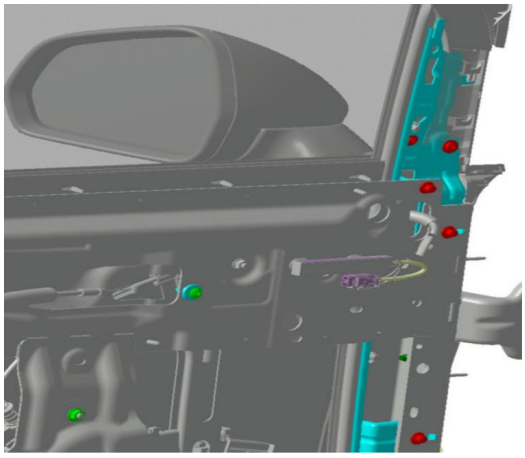
10.Remove the right door glass lifter.

Installation
Install in the reverse order of disassembly

6.29.3 Component diagram of the left front door guide rail assembly



Disassembly and installation

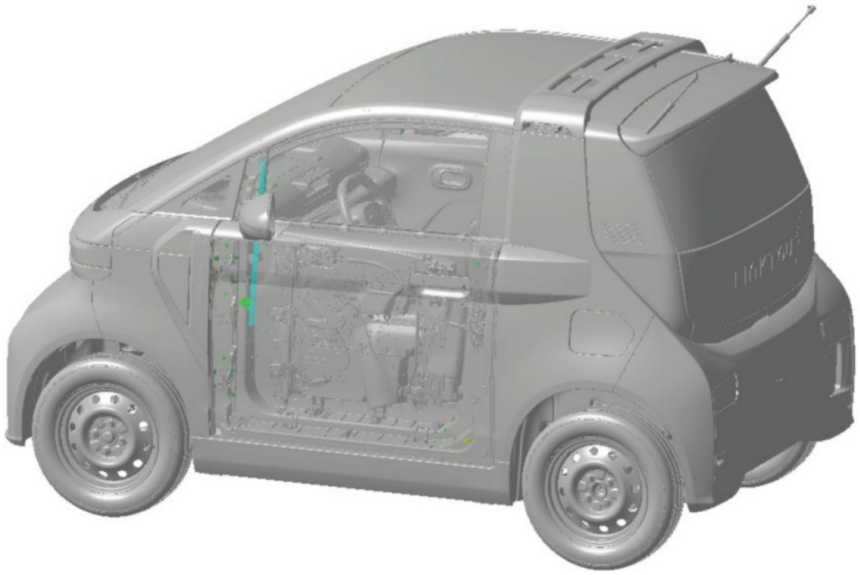


1. Remove the inner guard plate assembly of the right door. See: Disassembly and installation of the inner guard plate assembly of the right door
2. Remove the waterproof film assembly of the right door. See: Disassembly and installation of the Right Door waterproof Membrane Assembly
3. Remove the right front guide rail interior panel assembly
4. Remove the right side door glass. See: Disassembly and installation of the Right Door glass
5. Remove the five fixing bolts of the right front door guide rail and take out the right front door guide rail

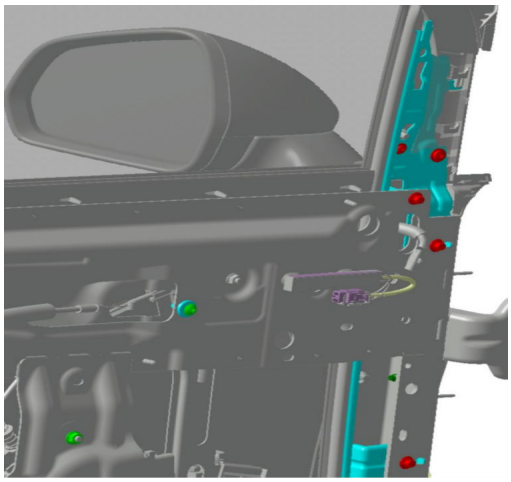
Installation

Install in the reverse order of disassembly

6.29.4 Component diagram of the left front door guide rail assembly



Disassembly and installation



1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly

2. Remove the waterproof film assembly of the left door. See: Disassembly and installation of the waterproof film assembly for the Left door

3. Remove the left front guide rail interior panel assembly

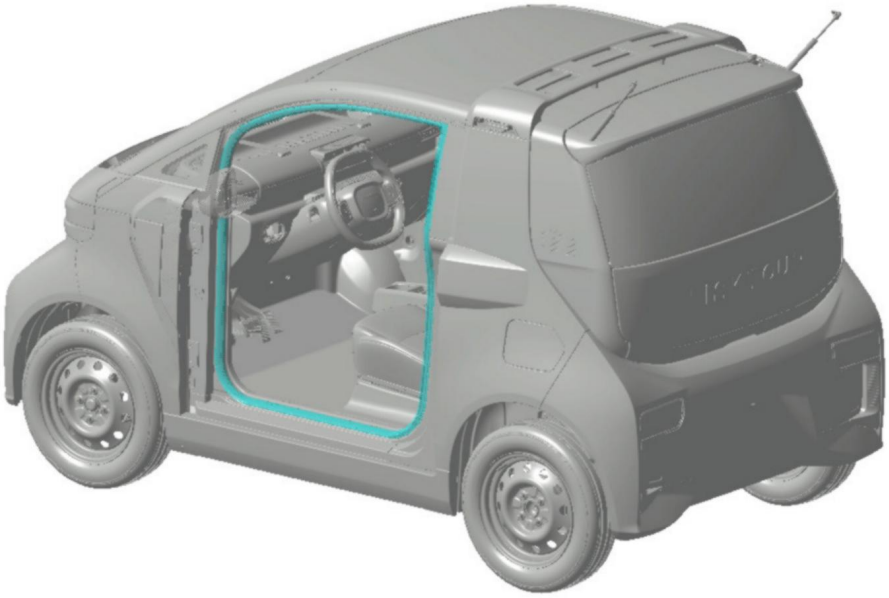
4. Remove the left side door glass. See: Disassembly and installation of the Left Door glass

5. Remove the five fixing bolts of the left front door guide rail and take out the left front door guide rail

Installation
Install in the reverse order of disassembly

6.30 Door seal

6.30.1 A component diagram of the door opening sealing strip on the left side



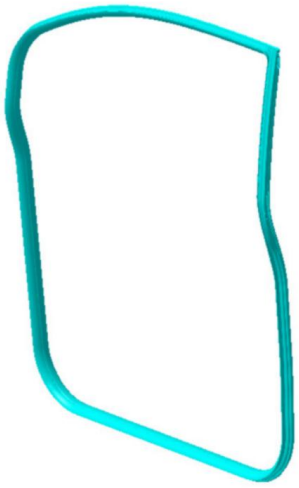
Disassembly and installation

Disassembly

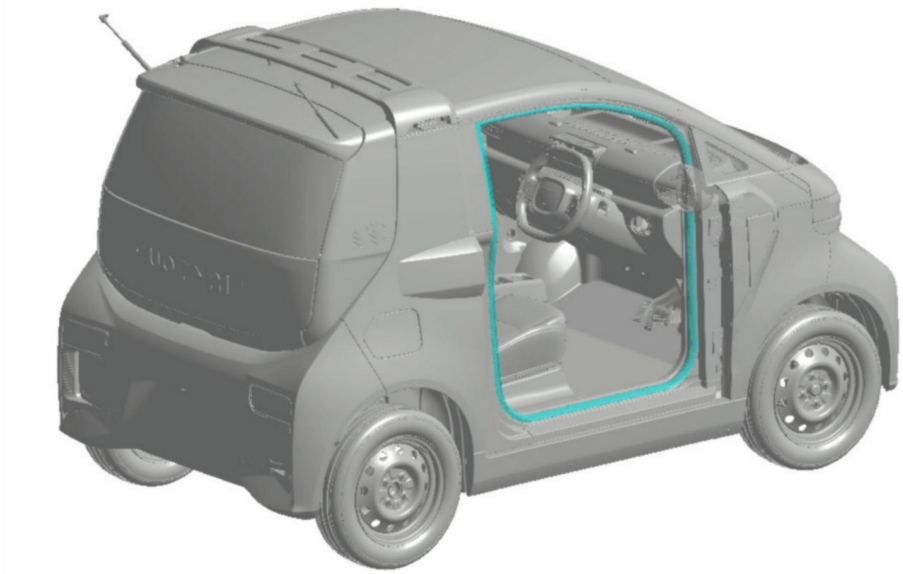
Remove the sealing strip of the left side door opening.

Installation

Install in the reverse order of disassembly



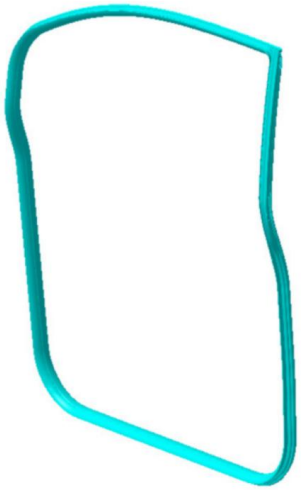
6.30.2 Component diagram of the sealing strip for the right door opening



Disassembly and installation

Disassembly

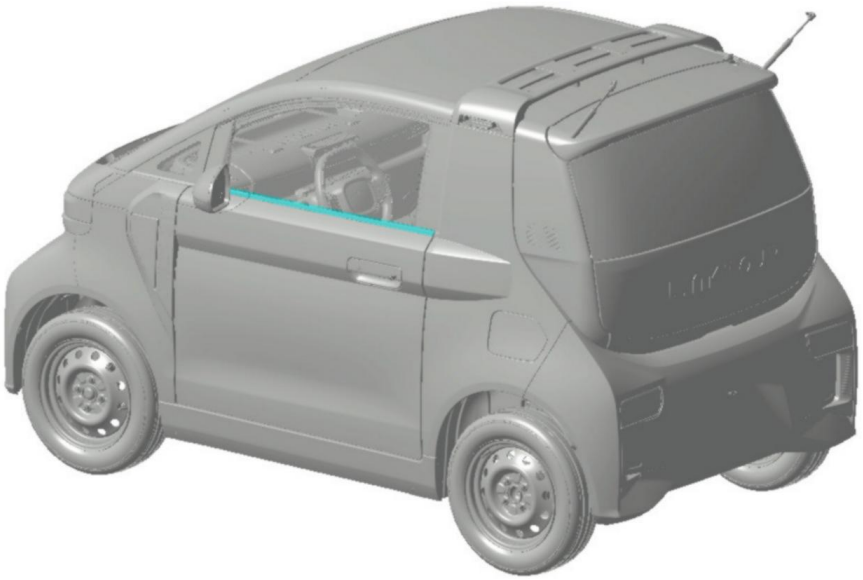
Remove the sealing strip of the left side door opening.



Installation

Install in the reverse order of disassembly

6.30.3 Component diagram of the water barrier strip outside the left door



Disassembly and installation

Disassembly

1. Lower the left car window glass.

2. Remove the water barrier assembly outside the left door.

Installation

Install in the reverse order of disassembly

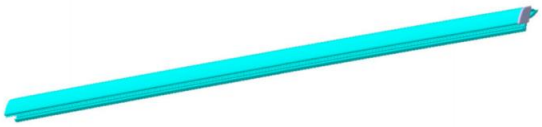
6.30.4 Component diagram of the water barrier strip outside the right door

Disassembly and installation

Disassembly

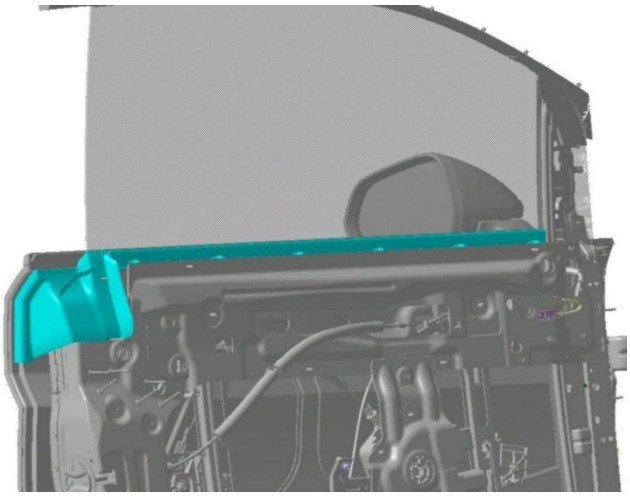
1.Lower the left car window glass.

2. Remove the water barrier assembly outside the left door



Installation: Install in the reverse order of disassembly

6.30.5 A component diagram of the water barrier strip inside the left door



Disassembly and installation Disassembly

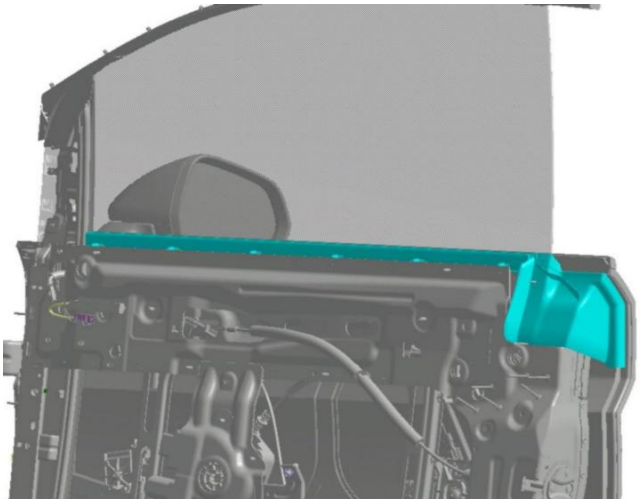
1.Lower the left rear window pane.

2. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly

3. Remove the water barrier assembly inside the left door.

Installation
Install in the reverse order of disassembly

6.30.6 Component diagram of the water barrier strip inside the right door



Disassembly and installation
Disassembly

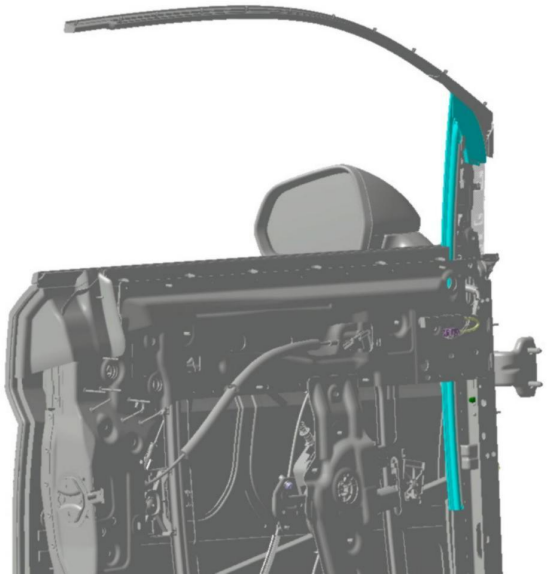
1.Lower the right rear window pane.

2. Remove the inner guard plate assembly of the right door. See: Disassembly and installation of the inner guard plate assembly of the right door

3. Remove the water barrier assembly inside the right door.

Installation
Install in the reverse order of disassembly

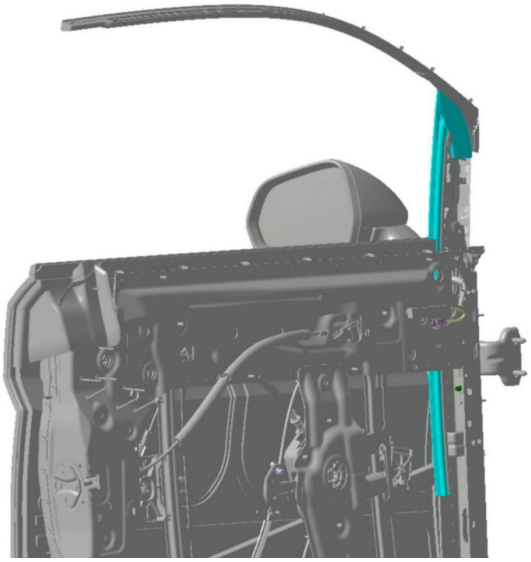
6.30.7 A diagram of the groove components in front of the left door



Disassembly and installation
Disassembly
1.Lower the left rear window pane.
2. Remove the inner guard plate assembly of the left door.
See: Disassembly and installation of the left door Inner guard Assembly
3. Remove the water barrier assembly inside the left door.

Installation
Install in the reverse order of disassembly

6.30.8 A diagram of the groove components in front of the right door



Disassembly and installation

Disassembly

1.Lower the left rear window pane.

2. Remove the inner guard plate assembly of the left door.

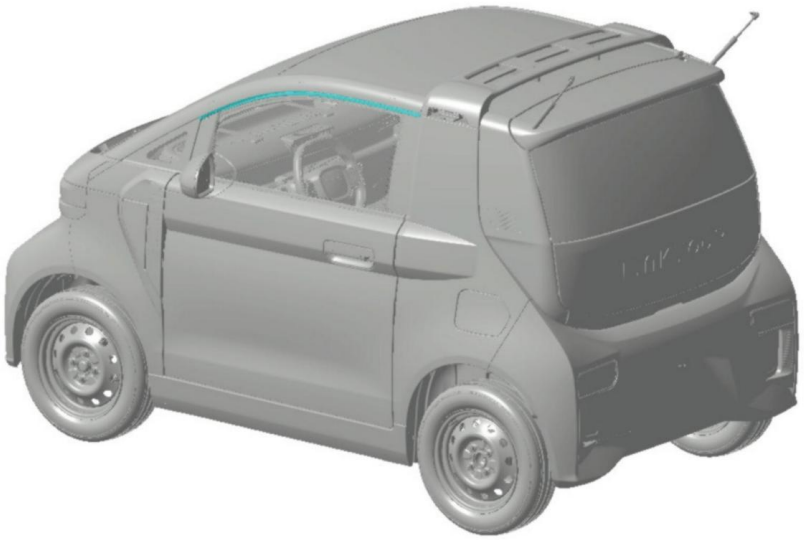
See: Disassembly and installation of the left door Inner guard Assembly

3. Remove the water barrier assembly inside the left door.

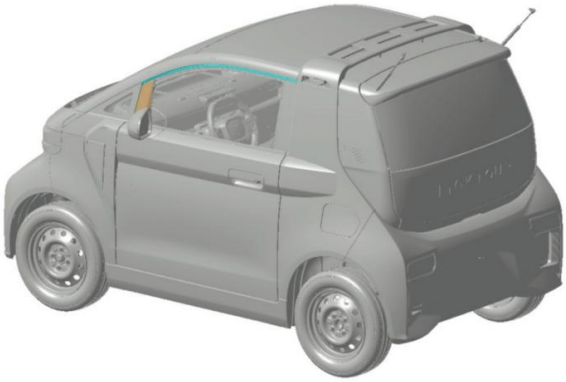
Installation

Install in the reverse order of disassembly

6.30.9 The component diagram of the sealing strip at the upper left end



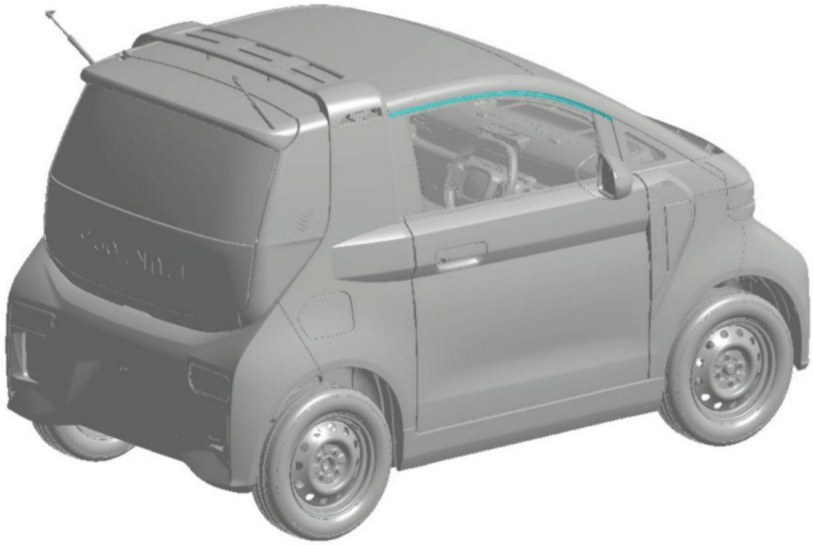
1.The sealing strip at the upper left end
Component drawing



2. Remove the sealing strip at the upper left end

Installation
Install in the reverse order of disassembly

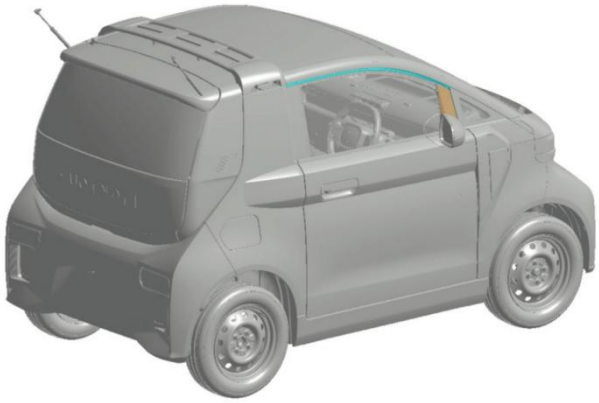
6.30.10 Component diagram of the sealing strip at the upper right end



Disassembly and installation

Disassembly

1.Remove the decorative plate of the right front rail

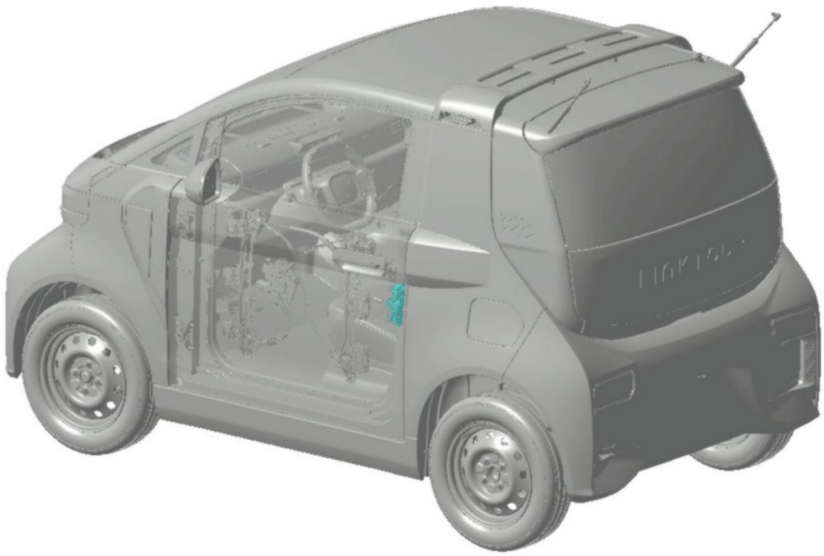


2. Remove the sealing strip at the upper right end

Installation
Install in the reverse order of disassembly

6.31 Car door lock and handle

6.31.1 The component diagram of the door lock assembly on the left

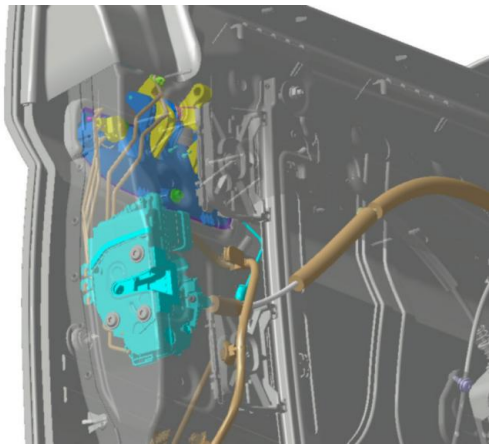


Disassembly and installation

Disassembly

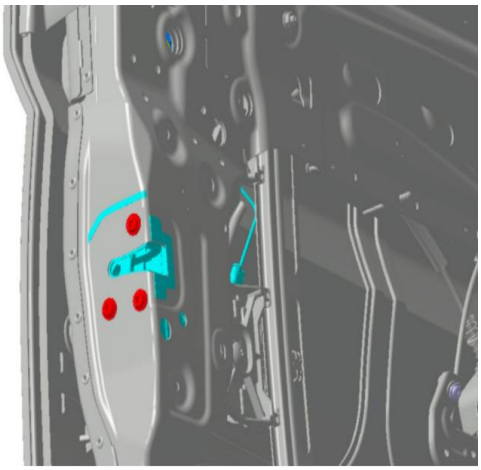
1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly

2. Remove the waterproof film assembly of the left door See: Disassembly and installation of the waterproof film Assembly for the Left door



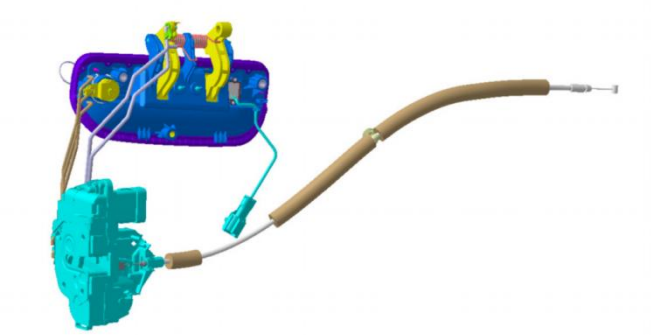
3. Remove the inner pull wire assembly of the left door, the outer push rod of the left door, the pull rod of the left door lock core, and the connection plug of the left door lock

4.Remove the three fixing bolts of the left door lock assembly and take out the left door lock assembly.

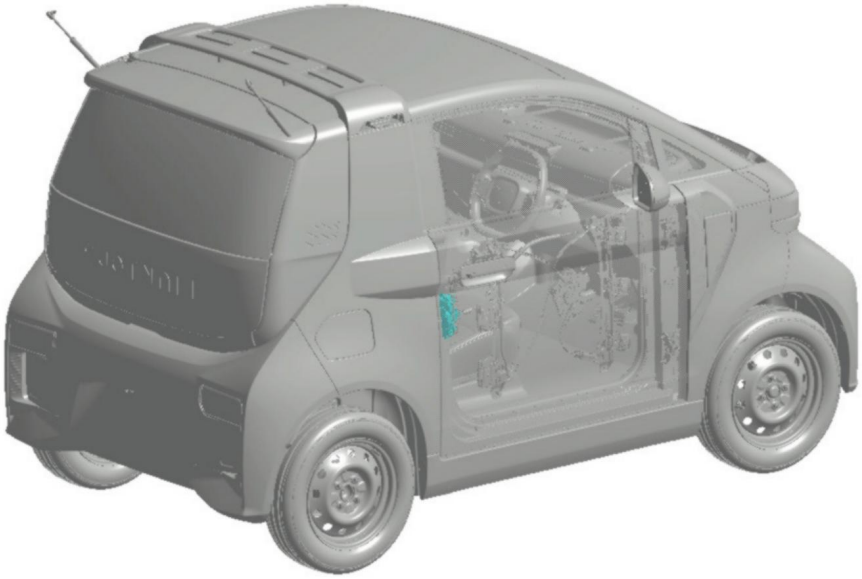


Installation

Install in the reverse order of disassembly



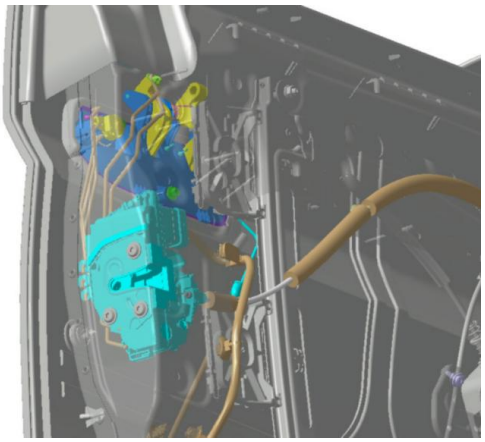
6.31.2 Component diagram of the door lock assembly on the right side



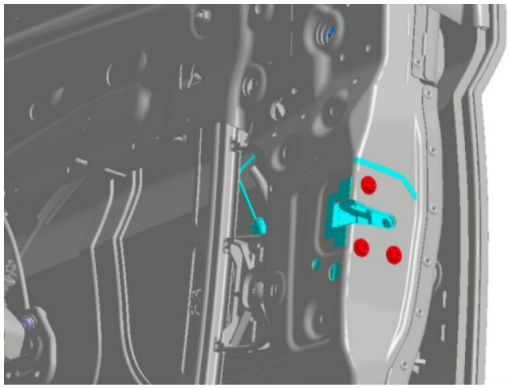
Disassembly and installation

Disassembly

1. Remove the inner guard plate assembly of the right door. See: Disassembly and installation of the inner guard plate assembly of the right door

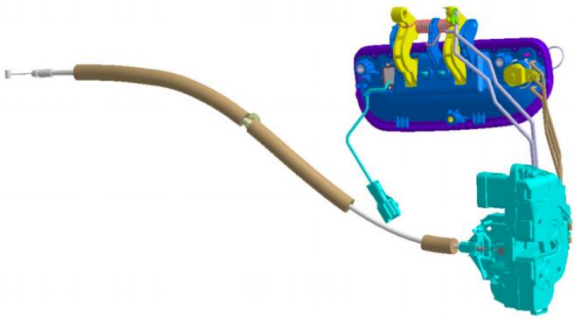


2. Remove the waterproof film assembly of the right door. See: Disassembly and installation of the Right Door Waterproof Membrane Assembly

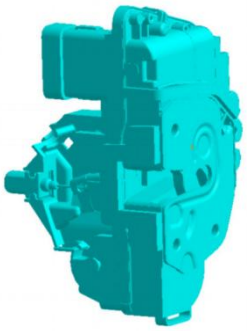


3. Remove the right door inner opening pull wire assembly, the right door outer opening push rod, the right door lock core pull rod, and the right door lock connection plug

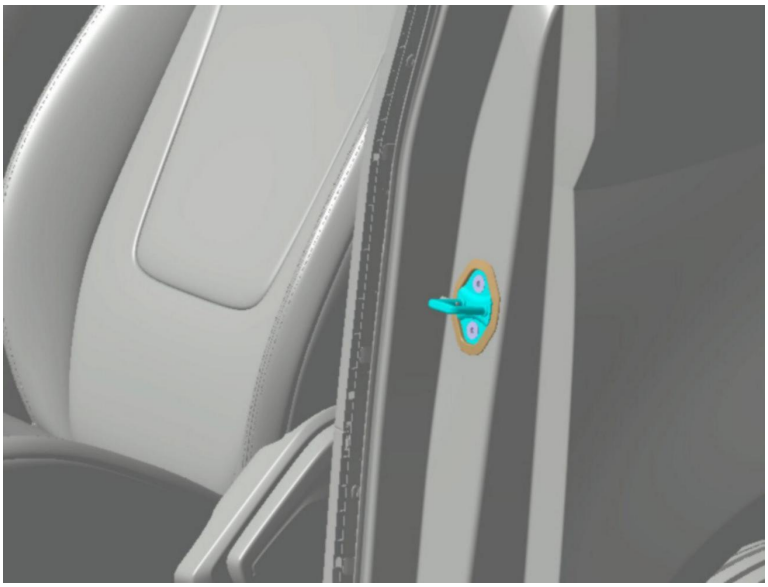
4. Remove the three fixing bolts of the right door lock assembly and take out the right door lock assembly



Installation
Install in the reverse order of disassembly



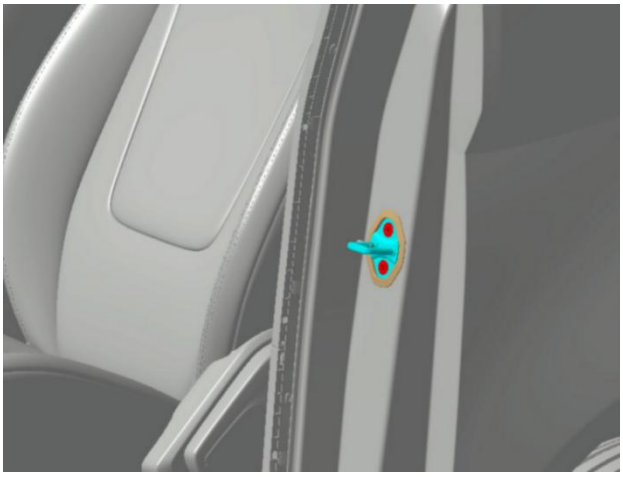
6.31.3 Side door lock component drawing



Disassembly and installation

Disassembly

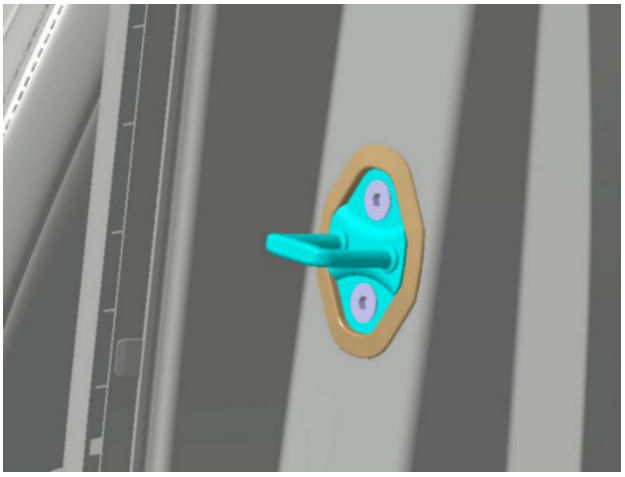
Remove the fastening screws of the side door lock and take off the side door lock.



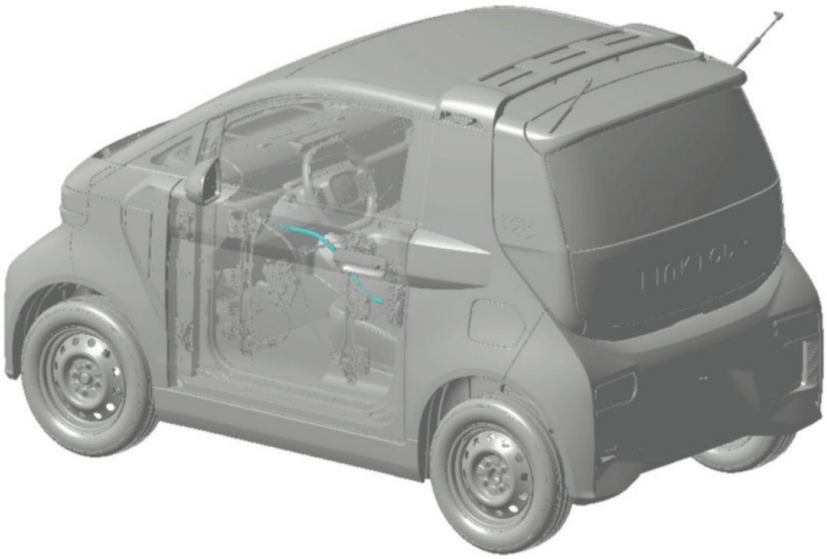
Installation

1. Install in the reverse order of disassembly

2. Adjust the installation position to ensure smooth opening and closing of the car door.



6.31.4 Component diagram of the inner pull wire assembly of the left door



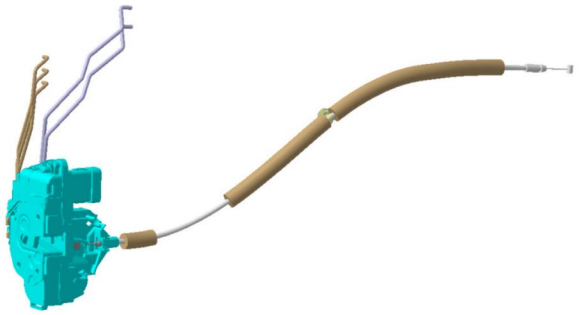
Disassembly and installation

Disassembly

1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly

2. Remove the waterproof film assembly of the left door. See: Disassembly and installation of the waterproof film assembly for the Left door

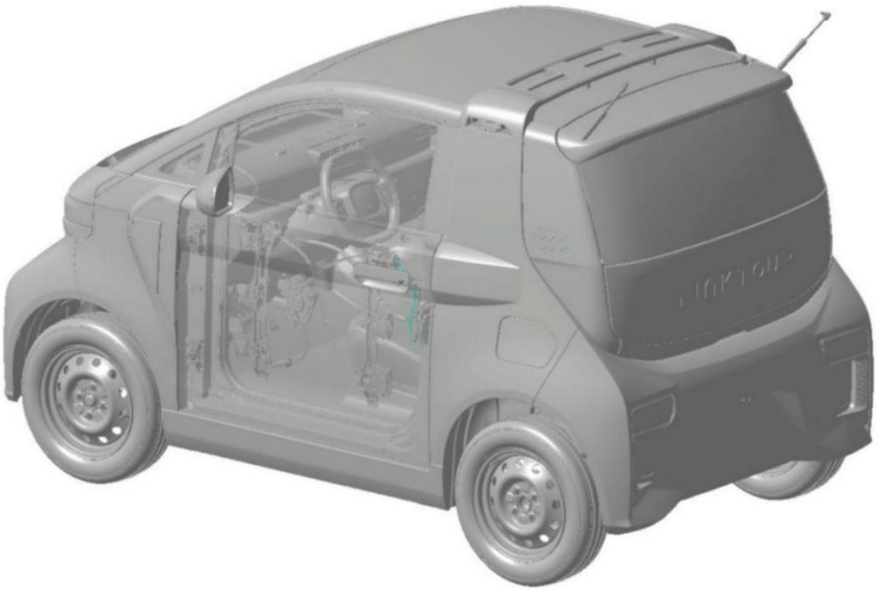
3. Remove the inner opening pull wire assembly of the left door



Installation

Install in the reverse order of disassembly

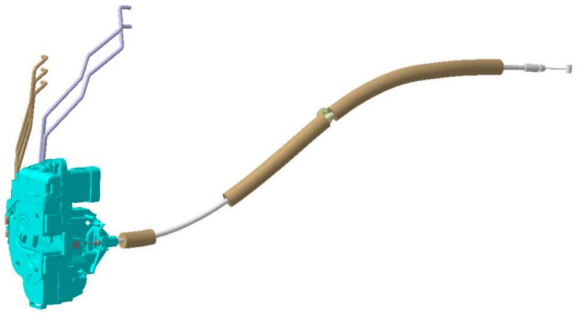
6.31.5 Push the push rod outside the left door Component drawing



Disassembly and installation Disassembly

1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly

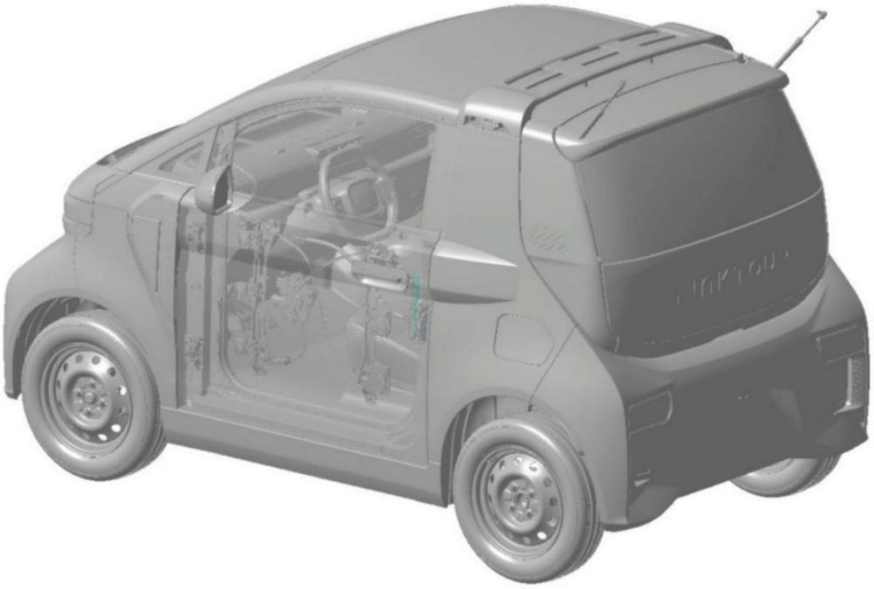
2. Remove the waterproof film assembly of the left door.
See: Disassembly and installation of the waterproof film Assembly for the Left door



3. Remove the push rod outside the left door

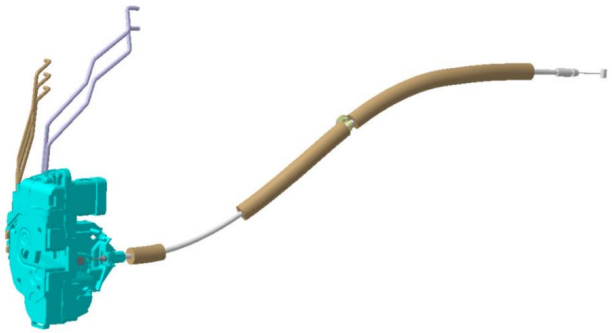
Installation
Install in the reverse order of disassembly

6.31.6 The component diagram of the door lock core pull rod on the left



Disassembly and installation
Disassembly

1.Remove the inner guard plate assembly of the left door.
See: Disassembly and installation of the left door Inner guard
Assembly

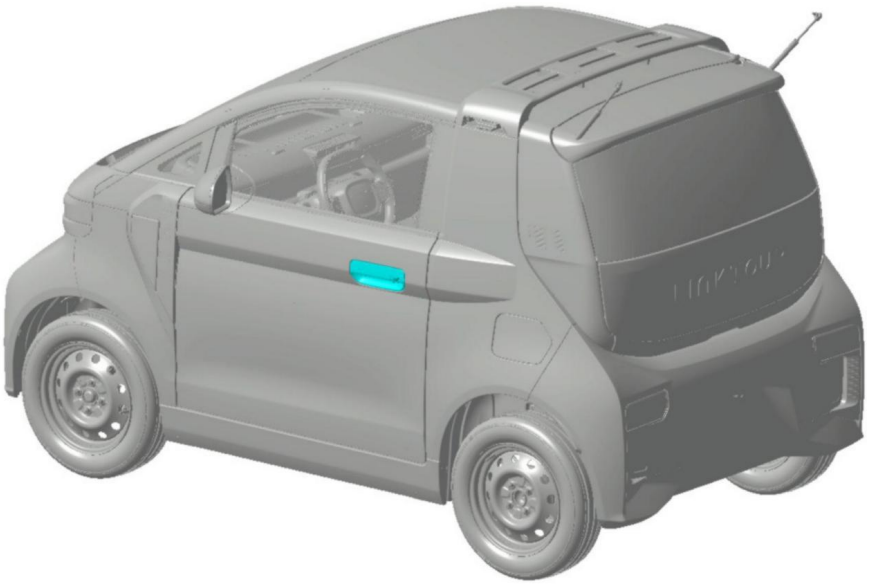


2.Remove the waterproof film assembly of the left door.
See: Disassembly and installation of the waterproof film
assembly for the Left door

3. Remove the pull rod of the left door lock core.

Installation
Install in the reverse order of disassembly

6. 31.7 The left door handle assembly



Disassembly and installation

Disassembly

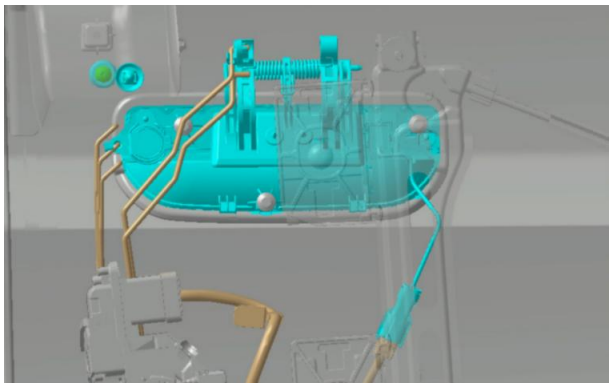
1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly

2. Remove the waterproof film assembly of the left door. See: Disassembly and installation of the waterproof film assembly for the Left door

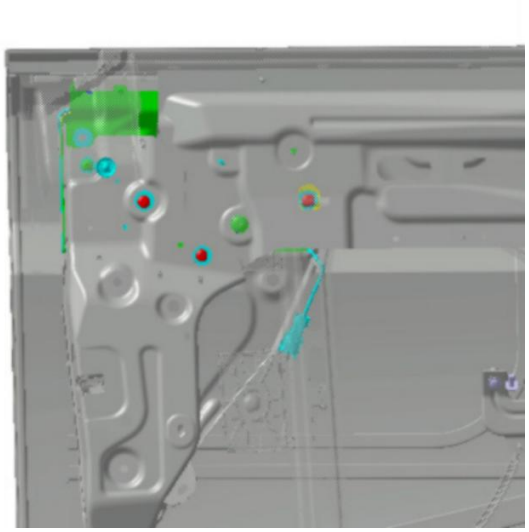
3. Remove the left front guide rail interior panel assembly

4. Remove the left side door glass. See: Disassembly and installation of the Left Door glass

5. Remove the left door opening push rod and the left door lock core pull rod.



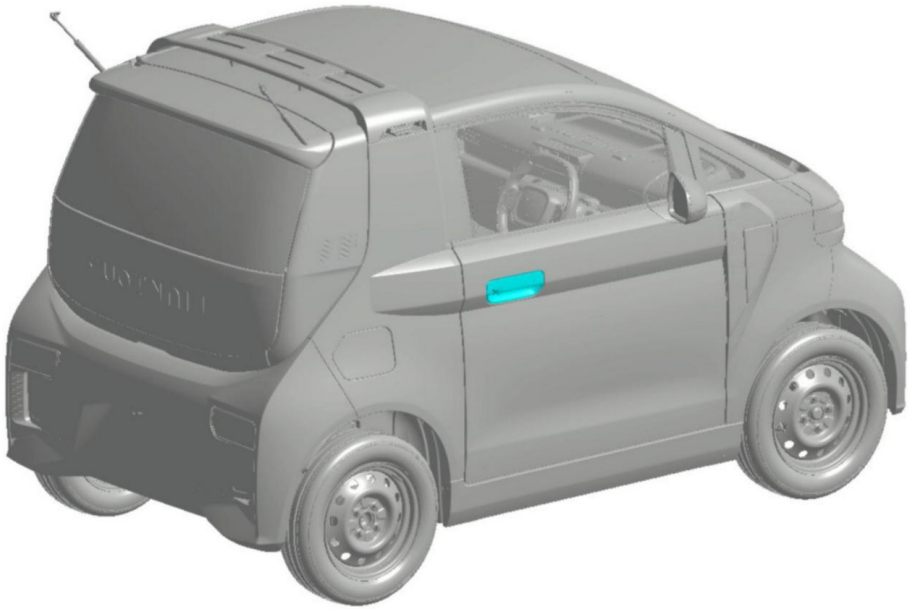
6. Remove the three fixing bolts of the left door handle assembly and take out the left door handle assembly



Installation

Install in the reverse order of disassembly

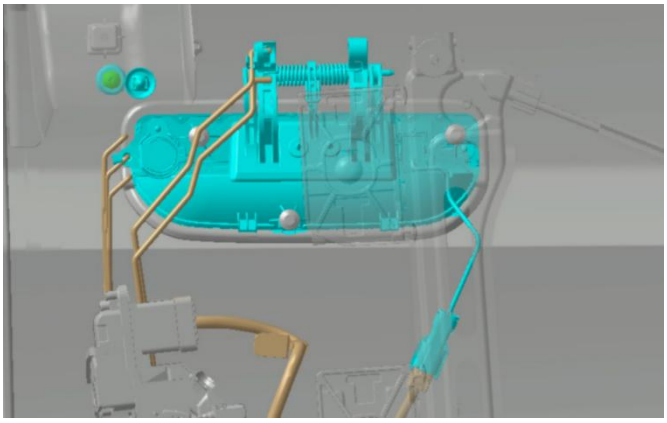
6.31.8 The handle assembly for the right door outside



Disassembly and installation

Disassembly

1. Remove the inner guard plate assembly of the left door. See: Disassembly and installation of the left door Inner guard Assembly

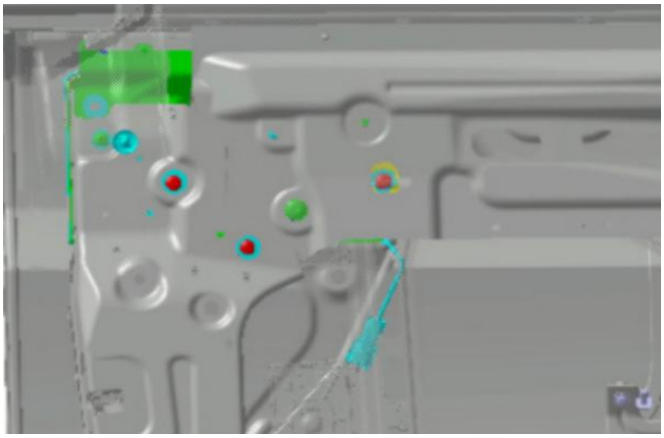


2. Remove the waterproof film assembly of the left door. See: Disassembly and installation of the waterproof film assembly for the Left door

3. Remove the left front guide rail interior panel assembly

4. Remove the left side door glass. See: Disassembly and installation of the Left Door glass

5. Remove the left door opening push rod and the left door lock core pull rod.



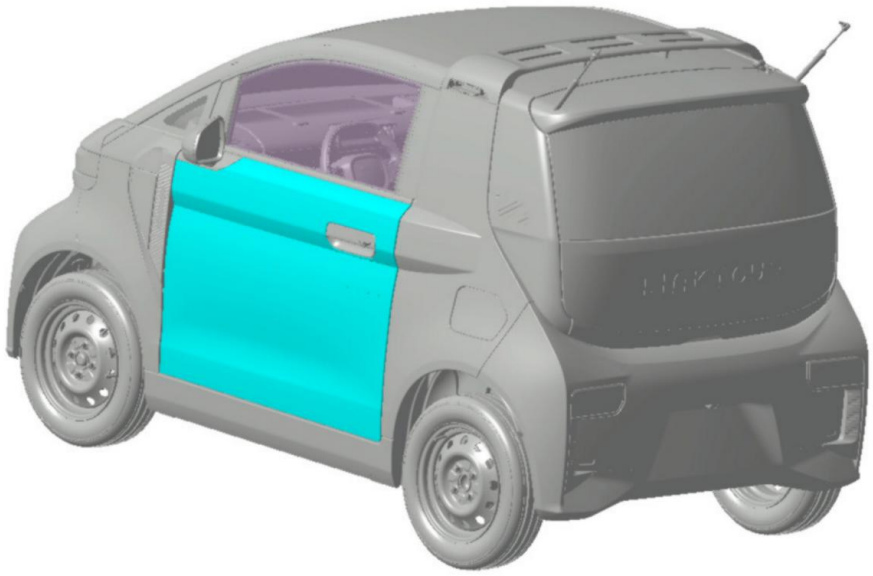
6. Remove the three fixing bolts of the left door handle assembly and take out the left door handle assembly

Installation

Install in the reverse order of disassembly

6.32 Door guard plate

6.32.1 Left door trim panel assembly



Disassembly and installation

Disassembly

1. Disassemble the interior panel of the left front door guide rail. See: Disassembly and Installation of the Interior Panel of the Left front Door Guide Rail

2. Disassemble the left door inner guard assembly. For details, see: Disassembly and Installation of the Left Door Inner Guard Assembly

3. Disassemble the left front door guide rail assembly. See: Disassembly and Installation of the Left front Door Guide Rail Assembly

4. Disassemble the left rearview mirror assembly. See: Disassembly and Installation of the Left Rearview Mirror Assembly

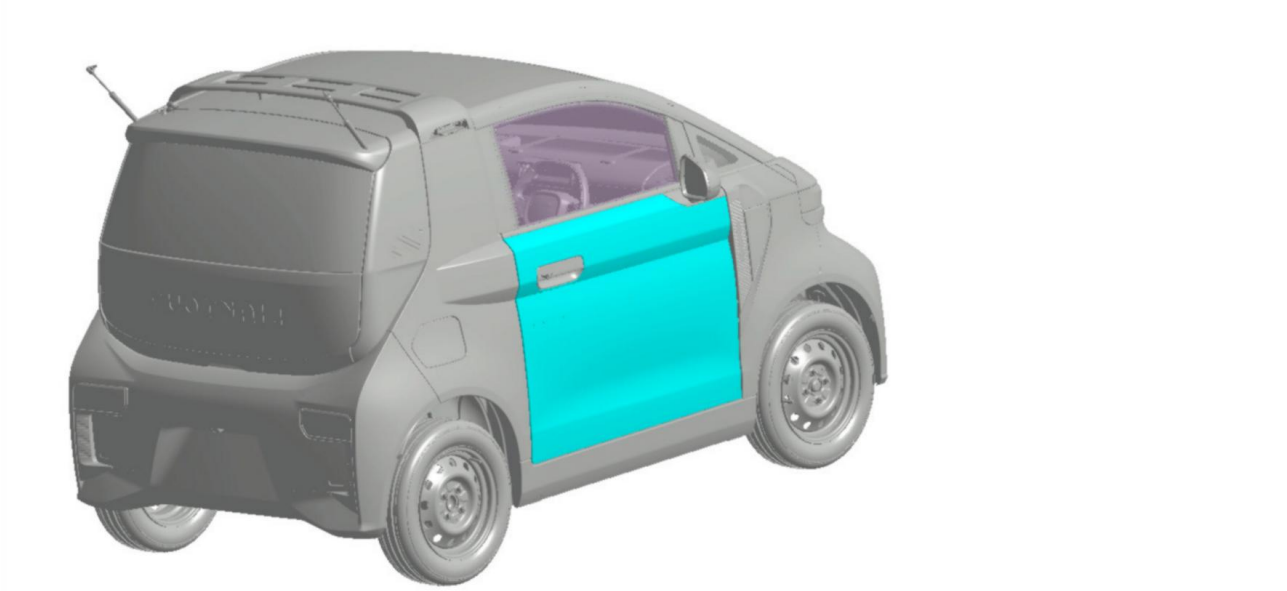
5. Remove the water barrier on the left car door. For details, see: Removal and Installation of the Water Barrier on the Left car Door

6. Disassemble the left door trim panel assembly

Installation

Install in the reverse order of disassembly

6.32.2 Component drawing of the right door trim panel assembly



Disassembly and installation

Disassembly

1. Disassemble the interior panel of the right front door guide rail. See: Disassembly and Installation of the Interior Panel of the Right front Door Guide Rail

2. Disassemble the inner guard plate assembly of the right door. For details, see: Disassembly and Installation of the Inner guard Plate Assembly of the right door

3. Disassemble the right front door guide rail assembly. See: Disassembly and Installation of the Right front Door Guide Rail Assembly

4. Disassemble the right rearview mirror assembly. See: Disassembly and Installation of the Right Rearview Mirror Assembly

5. Remove the water barrier on the right car door. For details, see: Removal and Installation of the Water Barrier on the Right car Door

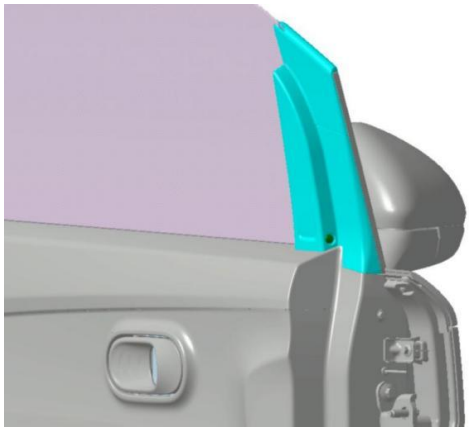
6. Disassemble the right door trim panel assembly

Installation

Install in the reverse order of disassembly

6.32.3 Component drawing of the left front door guide rail decorative plate

Disassembly and installation

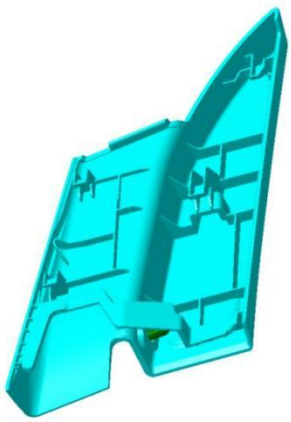


Disassembly

1.Remove one fixing screw of the left front door guide rail decorative plate.

2. Gently pry open the decorative panel of the left car door guide rail with a crowbar and take it out.

Installation
Install in the reverse order of disassembly

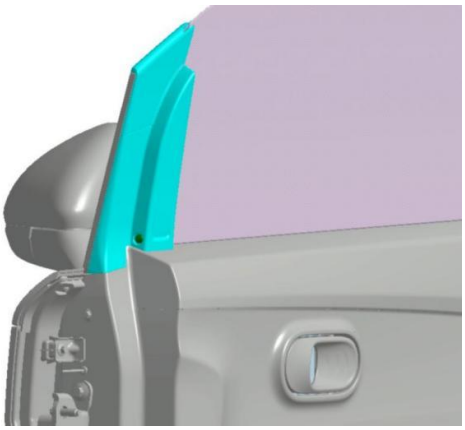


6.32.4 Component drawing of the right front door guide rail decorative plate

Disassembly and installation

Disassembly

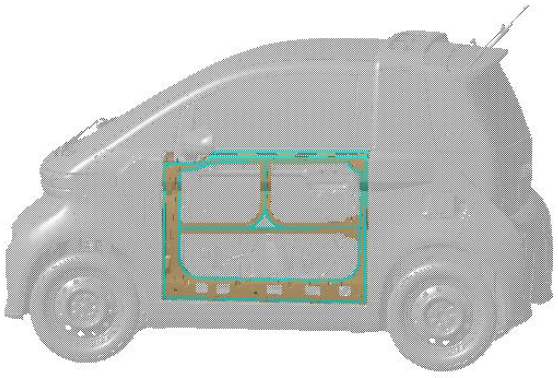
1. Remove one fixing screw of the right front door guide rail decorative plate.



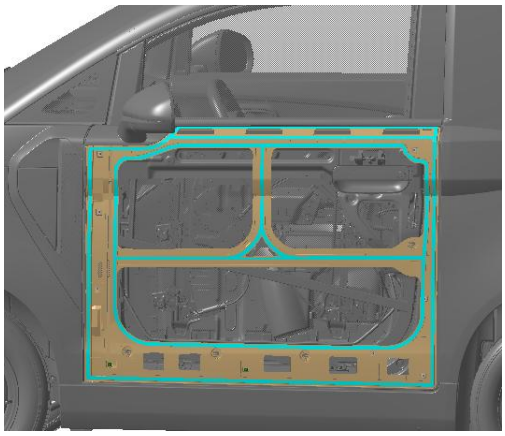
2. Use a crowbar to gently pry open the decorative plate of the right car door guide rail and take it out.

Installation
Install in the reverse order of disassembly

6.32.5 Waterproof sponge for the door panel of the vehicle Component drawing



Disassembly and installation



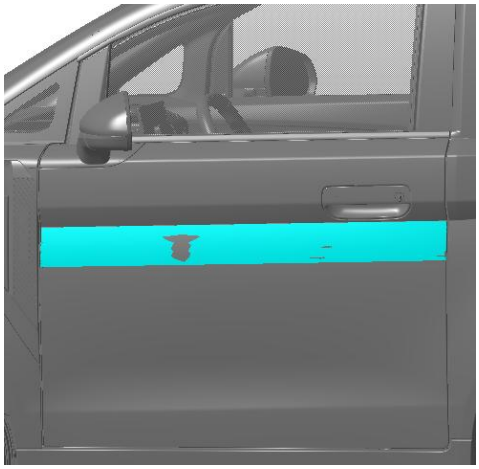
1. Disassemble the exterior door trim assembly. For details, see: Disassembly and installation of exterior Door Trim Assembly

2. Remove the waterproof sponge from the outer door panel of the vehicle

Installation
Install in the reverse order of disassembly

6.32.6 Decorative film on the left door panel Component drawing

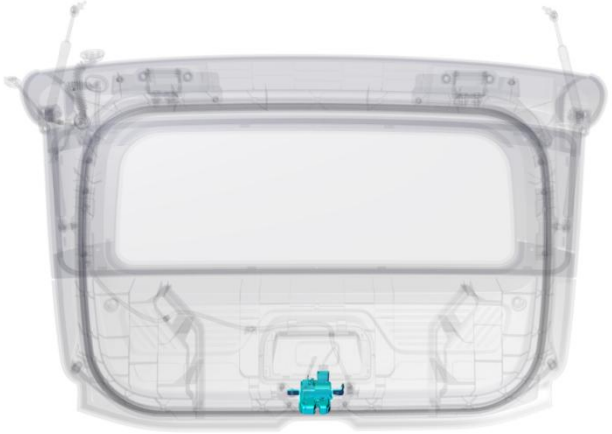
Disassembly and installation
Disassembly
Gently peel off the decorative film on the left door panel



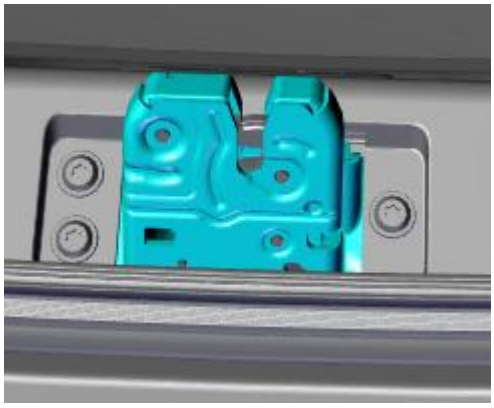
Installation
Install in the reverse order of disassembly

6.33 Back door lock

6.33.1 Back door lock component drawing



Disassembly and installation



1. Remove the back door lock body cover

2. Remove two screws that fix the back door lock

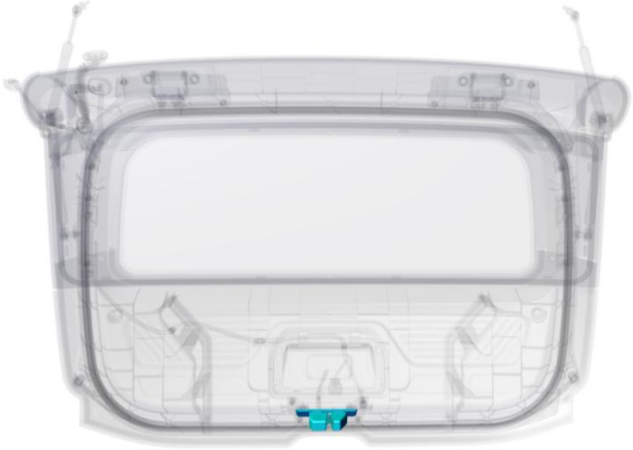
3. Disconnect the connection plug of the rear door lock wiring harness and remove the rear door lock.

Installation

Install in the reverse order of disassembly

6.33.2 The back door lock body cover

Component drawing



Disassembly and installation

Disassembly

Remove the back door lock body cover

Installation

Install in the reverse order of disassembly

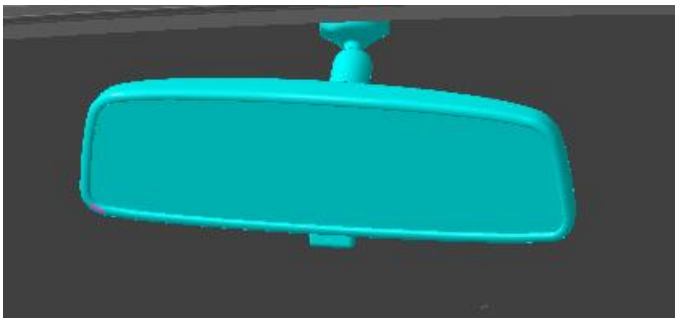
6.34 Rearview mirror

6.34.1 Interior rearview mirror component diagram

Disassembly and installation

Disassembly

1.Remove one fixing screw of the inner rearview mirror.

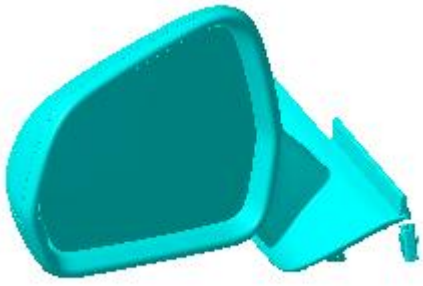


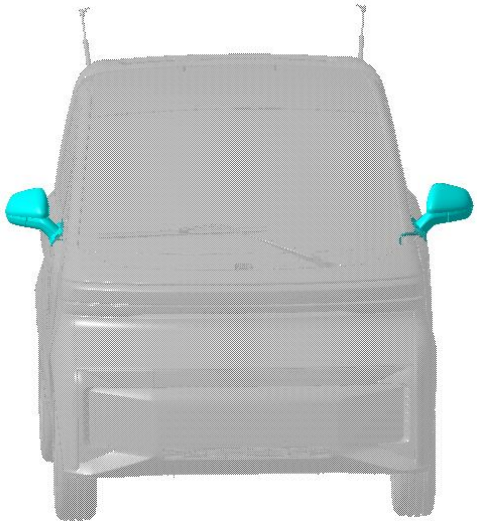
2.Lift the inner rearview mirror upwards and remove it from the fixed buckle

Installation

Install in the reverse order of disassembly

6.34.2 Electric exterior mirrors Component drawing

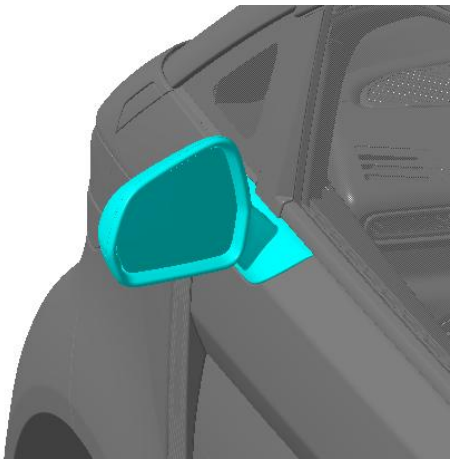




Disassembly and installation

Disassembly

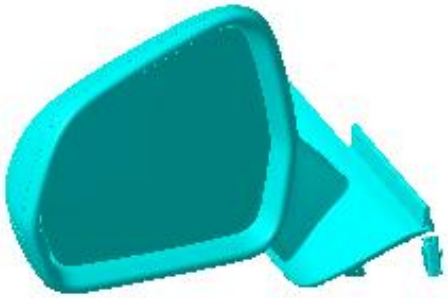
1. Remove the water barrier strip outside the side door.
2. Remove the water barrier strip inside the side door.
3. Remove the inner guard plate assembly of the side door. See Disassembly and installation of Left/Right Door Inner Guard Panel Assemblies
4. Remove the car door waterproof film assembly. See: Disassembly and installation of Door Waterproof Film Assembly
5. Disconnect the plug of the electric rearview mirror connection harness.
6. Remove the three fixing bolts of the electric rearview mirror assembly. Remove the rearview mirror assembly

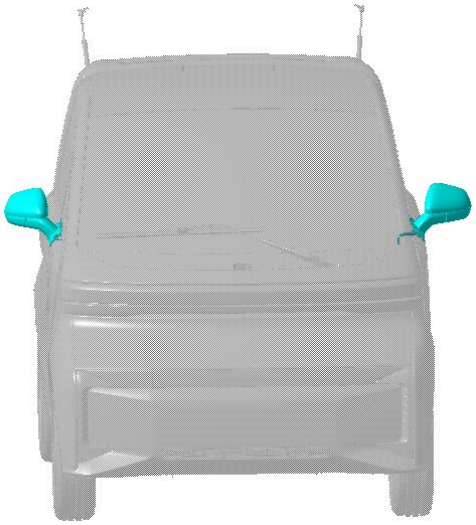


Installation

Install in the reverse order of disassembly

6.34.3 Manual exterior mirrors Component drawing



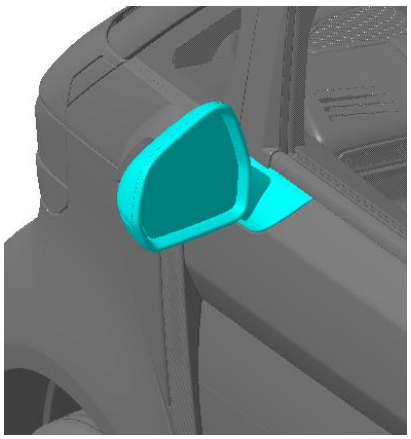


Disassembly and installation Disassembly

1. Remove the water barrier strip outside the side door.
2. Remove the water barrier strip inside the side door.
3. Remove the inner guard plate assembly of the side door. See: Disassembly and installation of Left/Right Door Inner Guard Panel Assemblies
4. Remove the car door waterproof film assembly. See: Disassembly and installation of Door Waterproof Film Assembly
5. Remove the three fixing bolts of the electric rearview mirror assembly. Remove the rearview mirror assembly

Installation

Install in the reverse order of disassembly



6.35 Rear door

6.35.1 Rear door gas spring - left component diagram

.

Disassembly and installation

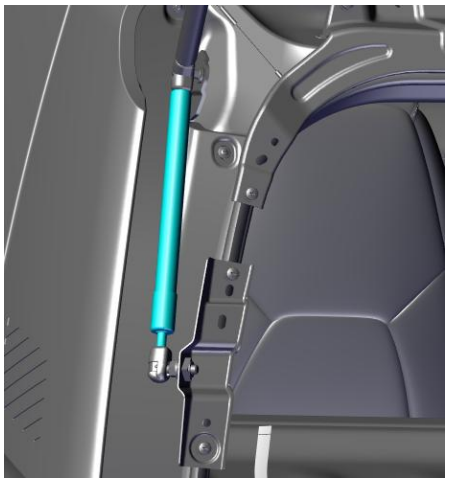
Disassembly

Pry open the lock clips at both ends of the gas spring respectively and remove the gas spring from the installation ball pin.

Installation

Install in the reverse order of disassembly

Note: When the rear door is supported by the seventeen gas springs, it is prone to fall and cause danger. Before disassembling, additional force should be used to support the rear door, for example, asking an assistant to support it.

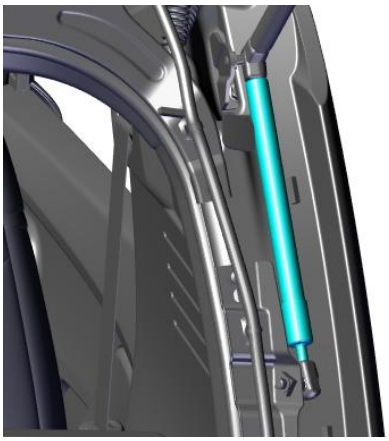


6.35.2 Rear door gas spring - right component diagram

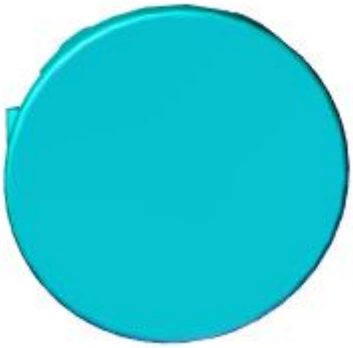
Disassembly and installation
Disassembly
Pry open the lock clips at both ends of the gas spring respectively, and remove the gas spring from the installation ball pin.

Installation
Install in the reverse order of disassembly

Note: When the rear door is supported by the seventeen gas springs, it is prone to fall and cause danger. Before disassembling, additional force should be used to support the rear door, for example, asking an assistant to support it.

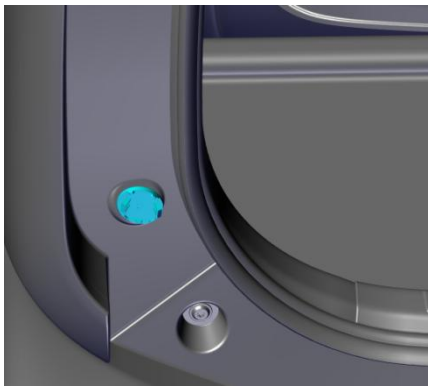


6.35.3 Rear door buffer block component diagram

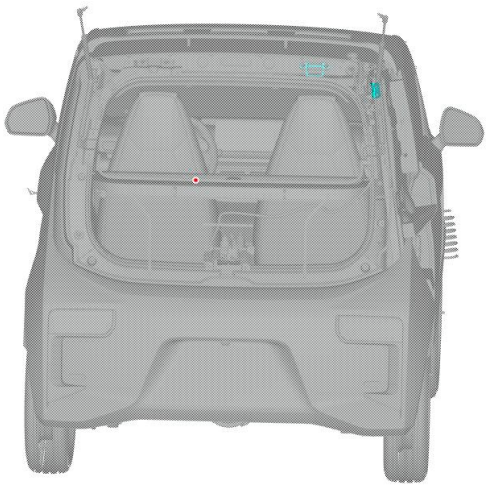


Disassembly and installation
Disassembly
Remove the buffer block of the rear door

Installation
Install in the reverse order of disassembly



6.35.4 Component diagram of the rear door gas spring bracket



Disassembly and installation

Disassembly

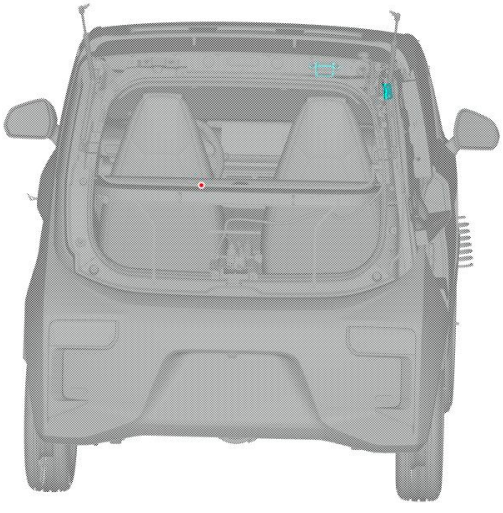
1. Disassemble the rear door gas spring. See: Disassembly and Installation of Rear Door Gas Spring
2. Disassemble the right side decorative panel assembly. See: Disassembly and Installation of the right side Decorative Panel Assembly
3. Remove the fixing screws of the bracket and take off the gas spring bracket.

Installation

Install in the reverse order of disassembly

Note: When the rear door is supported by the seventeen gas springs, it is prone to fall and cause danger. Before disassembling, additional force should be used to support the rear door, for example, asking an assistant to support it.

6.35.5 Rear door hinge component diagram



Disassembly and installation

Disassembly

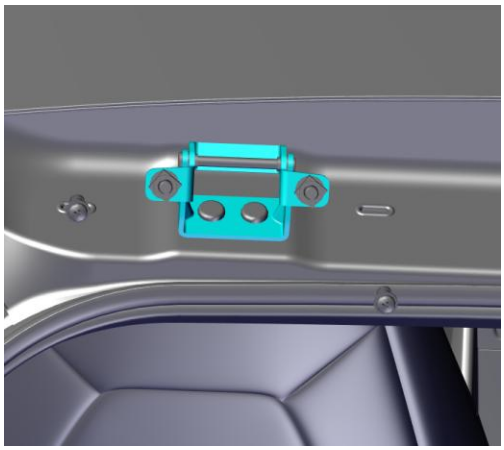
Support the rear door well, remove the four fixing screws of the hinge, and then take off the rear door hinge

Installation

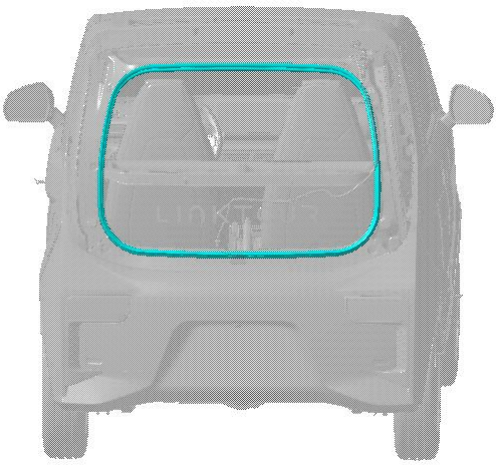
Install in the reverse order of disassembly

Note:

After the hinges of the rear door are removed, there is a lack of support points, posing a risk of deformation and collision. Additional support is required.



6.35.6 Component drawing of the sealing strip for the rear door opening



Disassembly and installation

Disassembly

Remove the sealing strip of the rear door opening

Installation

Install in the reverse order of disassembly

6.35.7 Component drawing of the rear wing upper trim panel assembly

Disassembly and installation

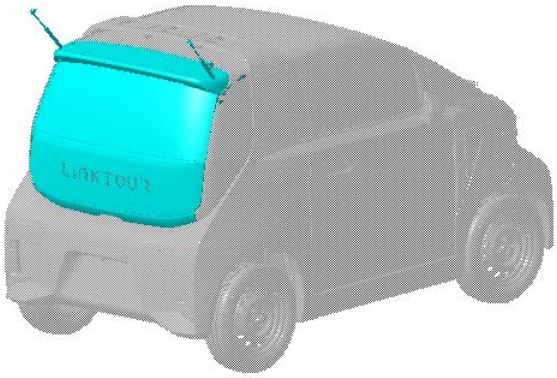
Disassembly

Disassemble the rear wing upper trim assembly

Installation

Install in the reverse order of disassembly

6.35.8 Component drawing of the rear door panel



Disassembly and installation

Disassembly

Remove the rear door panel

Installation
Install in the reverse order of disassembly

6.35.9 Maintenance cover component drawing

Disassembly and installation

Disassembly

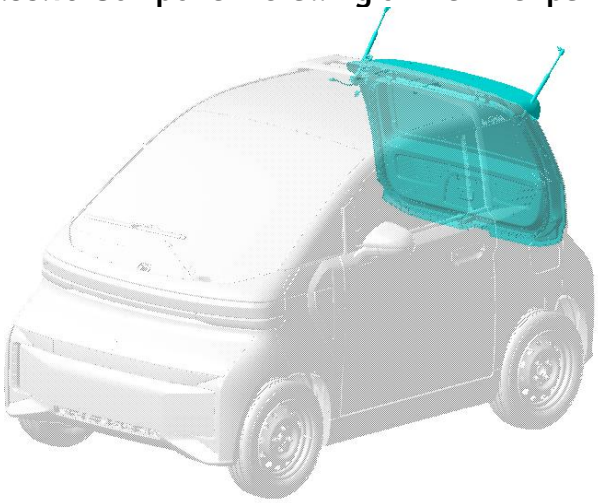
1.Press the two clips of the maintenance opening cover to disengage the cover plate from the inner panel of the rear door.

2. Remove the maintenance port cover.

Installation

Install in the reverse order of disassembly.

6.35.10 Component drawing of the inner panel of the back door



Disassembly and installation

Disassembly

Remove the inner panel of the back door

Installation

Install in the reverse order of disassembly

7. Vehicle Body Overview

7.1 Manual Instructions for Use

This sheet metal guidance manual is applicable to vehicle models: Alumi.

It is very important to fully master the contents of this manual for the correct maintenance and repair of a car.

To better optimize the structure of the vehicle body, meet the requirements of lightweight design, ensure the stability of the vehicle body, and guarantee the safety of passengers and drivers, Alumi, which features modern body characteristics, adopts an all-aluminum body structure and uses a variety of materials and multiple connection processes. These modern automotive manufacturing processes and connection technologies also pose challenges to the after-sales maintenance of vehicles. Mastering the latest knowledge and constantly receiving training in new maintenance methods and skills are crucial for enhancing the high-quality maintenance of vehicle bodies.

This manual provides the latest maintenance methods for body panels and structures, including cutting and welding operations, body repair methods, disassembly drawings and assembly drawings of body parts. The content of this manual includes charts and technical standards, as well as other information about the replacement of vehicle body panels, such as operation precautions, etc., but does not include information on spray painting maintenance operations.

This manual will be updated with relevant technical content in a timely manner as needed. For repair procedures and norms other than those for vehicle body component collision damage, please refer to the relevant repair manual. As the modification of the content in this manual may affect the maintenance and repair of the vehicle, you can obtain supplementary information about this version from the local general agent authorized by China Lintu Automobile Co., Ltd. to ensure that you can get the latest maintenance technical information in a timely manner.

This manual will be updated with relevant technical content in a timely manner as required by technology. The content of the manual will be improved through version revisions and supplements. China Linktour Automobile Co., Ltd. reserves the right to implement updates at any time without undertaking any obligations or receiving further notice. All rights to this manual belong to China Linktour Automobile Co., LTD. China Linktour Automobile Co., Ltd. reserves the right to modify the technical standards and contents of this manual without any obligation or prior notice. During the use of this manual, without written permission, no one may copy or use any part of this book in any way, such as technical information related to sheet metal parts, including photos, text copying, and other information storage behaviors.

7.1.1 Description of the scope of repair work

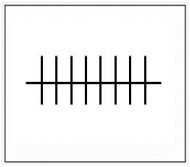
This manual introduces the operation methods for replacing welded panels or structural components when the vehicle is in the body-in-white state. The operation method instructions for disassembling and reinstalling equipment parts in the white body state, as well as for the installation, inspection, adjustment and final inspection of equipment parts after replacing welded panels or structures have been simplified.

All technicians engaged in Alumi automotive body maintenance must not only have a thorough understanding of the characteristics of aluminum materials, but also be well-versed in the maintenance techniques of aluminum alloy bodies, connection methods and forms, as well as the performance of adhesives and riveting tools. Before operation, please strictly follow the steps and precautions specified by the manufacturer! This manual cannot specifically describe all possible maintenance methods, nor can it explain the possible dangers of all possible methods. This manual does not cover detailed explanations of standard workshop procedures, safety guidelines, and maintenance operations. When anyone uses the recommended maintenance procedures or tools, they must ensure that personal safety or vehicle safety is not compromised. Please note that this manual specifically provides warnings and precautions for specific operation methods to prevent personal injury, vehicle damage or making the vehicle unsafe.

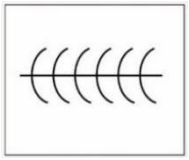
7.1.2 Marking and Symbol Explanation

This manual uses safety reminder symbols, welding and connection technology symbols, and tool and equipment usage symbols in its compilation. To facilitate the use of this manual by technicians, the following explanations are provided for the relevant symbols.

1. Symbols for welding and joining techniques



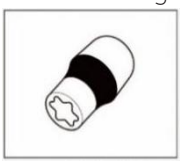
Connection gap



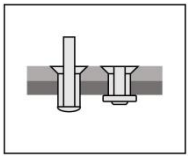
Continuous seam welding

Plug hole welding

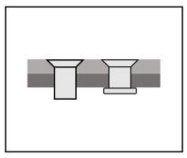
Resistance spot welding



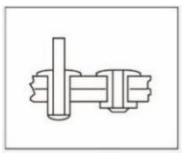
Remove the FDS self-tapping screw



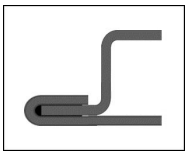
Countersunk head sealing core -pulling riveting



SPR riveting

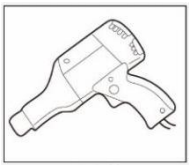


Core-pulling riveting

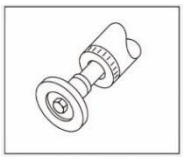


Rolled edge bite joint

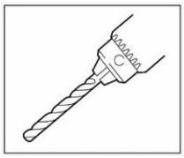
2. Tool and equipment symbols



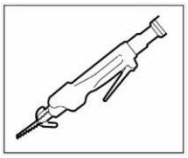
Heat it with a hot air gun



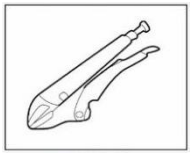
De-gumming grinding



Drill holes or remove solder joints



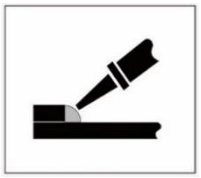
Cutting



Vise clamping

Grinding with a belt sander

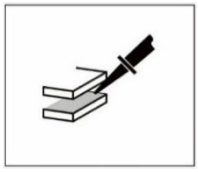
3. Vehicle body sealing and anti-corrosion symbols



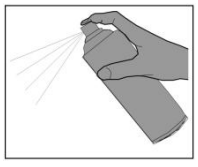
Apply the weld seam sealant

Spray cavity anti-corrosion wax

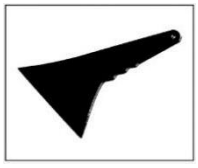
Spray epoxy primer



Apply structural adhesive



Spray zinc powder conductive primer



Apply aluminium powder by scraping

7.2 Work Precautions and Safety Tips

7.2.1 Safety Tips for Maintenance Workshop

7.2.1.1 Workshop Safety Warning

Repairing a vehicle body is a dangerous job. Without receiving training related to maintenance, it may lead to injury to the maintenance personel and property damage, and also affect the normal maintenance of the vehicle. The body repair methods recommended in this manual have been carefully formulated by the professional technicians of China Linktour Automobile Co., LTD. This is very useful for technicians who have not received professional technical training from China Linktour Automobile Co., Ltd. and will reduce the risks for both professionally trained and experienced technicians during the repair operation process. Meanwhile, China Linktour Automobile Co., Ltd. informs all staff engaged in Alumi body maintenance that they must abide by the relevant guidelines and rules on work safety, health protection, environmental protection, etc. designated by the local security inspection and regulatory authorities, and comply with the relevant local laws and regulations.

All dealer users should master the most basic safety protection measures. The "Warnings" and "Precautions" included in this manual will remind every technician to Pay attention to these possible dangers that may be encountered in their work. This is of great significance. It is essential to strictly adhere to the instructions of these "warnings" and "precautions" to reduce casualties, prevent improper maintenance from causing damage to the vehicle, and avoid potential safety hazards to the vehicle's users.

Before operation, please strictly follow the steps and precautions specified by the manufacturer. This manual cannot specifically describe all possible maintenance methods, nor can it explain the possible dangers involved in all possible methods. When anyone uses the recommended maintenance procedures or tools, they must ensure that personal safety or vehicle safety is not compromised. The procedures recommended and described in this manual are highly effective for maintenance work. Our company does not recommend any other maintenance procedures or tools to ensure the personal safety and vehicle safety of all maintenance personnel at our dealers. When maintenance personnel use programs and tools that our company does not recommend, they must ensure that their own safety and vehicle safety are not threatened in any way. In addition, the replaced parts must use original Alumi parts or parts that match the quality of the original Alumi replacement parts. When the quality of parts used by maintenance personnel is lower than that of Alumi's original factory replacement parts, it is essential to ensure that one's own safety and vehicle safety are not threatened in any way.

7.2.1.2 Workshop Safety signs

The information posted in the sheet metal workshop that can enhance the safety of workshop work is distributed throughout the workshop to ensure that the staff can see and understand it. Therefore, every staff member must be aware of the safety signs shown below.

1. Personal protective identification

Protective clothing must be worn	Protective gloves must be worn	Protective eyes must be worn	Work shoes must be worn

2.Workshop safety signs

Danger! High Voltage	Pay attention to safety	Do not touch	No smoking or fire

3.Workshop environmental signs

Customer no entry	No photography allowed	Fire escape	Safe passage

7.2.2 Precautions for Workshop Maintenance

During the process of automobile maintenance operations, maintenance personnel need to use various tools and equipment, come into contact with various toxic and harmful substances, and there are various potential risk factors. If no protective measures are taken, it may cause work-related injuries and occupational diseases. Therefore, when engaged in body repair work in the sheet metal workshop, please strictly abide by every safety regulation of the workshop and do a good job in protecting personnel, vehicles and the environment.

7.2.2.1 Protective equipment and safety precautions for maintenance workshop staff

1. Commonly used personal health protective equipment in sheet metal operations

Personal protection is the last line of defense to safeguard the safety of workers and prevent them from getting hurt. As an auxiliary preventive measure, protective equipment, when used correctly, can prevent or reduce the occurrence of work-related accidents, as well as prevent occupational diseases and occupational poisoning and other hazards. Common protective equipment includes goggles, protective face shields, welding face shields, dust masks, smoke release masks, solvent-resistant masks, protective earplugs, protective ear muffs, safety shoes, cotton gloves, solvent-resistant gloves, long-sleeved welding leather gloves, leather gloves, etc.。

In the sheet metal workshop, grinding dust is the most common hazardous substance. The following content lists work tips regarding aluminum dust.

2. Aluminum alloy ultra-fine particles

In terms of physics: Aluminium powder is flammable and explosive depending on the particle size and concentration.

In terms of chemistry: Aluminum dust and water can produce flammable/explosive hydrogen gas. Aluminum dust and iron oxide (rust) react and release heat (an exothermic REDOX reaction). Aluminum dust, iron oxide and a

strong ignition source in a mixed ratio of 1:3 May trigger an Alumi other my reaction. This kind of metal fire can reach a temperature as high as 2400℃ and cannot be extinguished with water. Aluminum dust is a harmful substance and must be professionally disposed of in accordance with local regulations.

3 .Personal Safety Protection Requirements for Sheet Metal Workshops

- To ensure the physical and mental health of staff during vehicle maintenance, the following rules must be strictly observed:
- Sheet metal technicians need to wear the prescribed protective equipment when entering the workshop, especially work clothes and work shoes.
- Before conducting maintenance, sheet metal technicians should carefully inspect the integrity of tools and equipment. Before using electrical equipment, they must check the power lines to ensure there are no short Circuits or leakage. Any problems found should be reported to the workshop management personnel in a timely manner.
- Sheet metal technicians should use the correct maintenance methods in their work. Before operating the equipment, they should read the safety regulations and operation methods of the equipment and strictly follow the regulations when using it
- Sheet metal technicians need to wear the correct specialized protective equipment when performing special operations such as welding and shaping.
- The working environment needs to be cleaned and organized in a timely manner, and the 6S standards of the workshop must be strictly followed.
- Sheet metal technicians should be clear about the storage location of fire extinguishers and be able to use them correctly.
- New employees must undergo before work training in advance before entering the workshop to work.
- Authorized personnel must learn about the locations of safety passages and safety doors in advance when entering the workshop to ensure safe evacuation in case of an emergency.
- Sheet metal technicians must maintain a good working environment when working in the workshop to ensure their work is safe and orderly. On the contrary, if one works in a dirty, messy and poor environment, there will always be uncertain dangers emerging.
- When performing operations such as hammering, drilling, grinding, or working around pressure air, liquids, springs and other energy storage components, goggles or face masks should be used to protect the eyes.
- When necessary, protective equipment such as leather gloves or safety shoes should be used. Handling hot or sharp parts can cause serious burns or cuts. Gloves should be worn before holding any object that seems likely to cause injury.
- Before using any equipment or tools, carefully read the relevant instructions for use and follow the relevant safety operation instructions.
- Smoking is strictly prohibited in the body repair and painting workshop. A large number of flammable materials in the workshop can cause fires in the body repair area. It is absolutely forbidden to strike matches or smoke in the painting area! Paint mist and smoke dust are as dangerous as a bomb ready to explode at any moment.

7.2.2.2 Safety Precautions for the Use of Tools in the Maintenance Workshop

1. Instructions for Using Manual Tools

There are many hand-held tools used in the auto repair workshop. Manual tools are an extension of people's bodies and can help complete tasks that cannot be accomplished by hand alone. This includes sheet metal hammers, various types of pliers, internal hexagonal wrenches, pipe wrenches, ratchets, wrench prying rods, and claw wrenches, etc. High-quality tools can effectively guarantee their quality and value. Every tool has its correct usage method. Read the manufacturer's manual and only use the tool in the work where it is applicable. Incorrect use of tools not only leads to accidents, but also causes tool wear or damage, increasing the possibility of tool slippage, breakage or breakage. The tools used in the sheet metal body workshop must be kept clean, rust-free, sharp, and safely and systematically placed in tool cabinets or toolboxes, and should be kept in their original state as much as possible. Damaged or broken tools must never be used.

2. Safety Precautions for the Use of tool carts

- For the correct use of tool carts, the following usage requirements should be observed:
- Keep the tool cart clean.
- When the tool cart is parked, it should be locked. When pushing the tool cart, the protective lock should be released to prevent the wheels from sliding on the ground.
- During the operation, the vehicle should follow the person. The tools used should be neatly arranged on the tools. The disassembled bolts and nuts can be classified and placed in the empty Spaces of the tool cart.

- The load-bearing capacity of the tool cart must not exceed 40 kilograms, and heavy parts and items must not be placed inside the tool cart.
- There is a list in the first drawer of the tool cart. Before and after each operation, the tools in the tool cart should be counted according to the list.
- When using the tool cart, after taking out the tools, the drawer must be closed to prevent the drawer from being opened too much and knocking over the tool cart.
- After the work is completed, all the tools used should be wiped and neatly arranged. The surface of the tool cart should be cleaned to check if there are any missing auto parts.

3. Safety Precautions for the Use of hand Tools

- It is essential to choose a wrench of the appropriate size for each bolt and nut. If the wrench is too large, it may slip off the bolt at high torque, causing hand injuries.
- Make sure that every tool is clean and free of grease and lubricating oil.
- After each use, please return the tool to its original place. If left in the vehicle, tools that fall off and collide with rotating parts such as the engine are very likely to fly out and cause injury.
- Make sure that the tip of the screwdriver is not worn. At high torque, the screwdriver may slip off the screw and cause injury.
- The taps used for tapping internal threads sometimes break. The broken part of the tap is extremely sharp and can easily cause injury.
- When using an open-end wrench, make sure the smallest edge of the wrench jaws points in the direction you want to rotate.
- When using an open-end wrench, pull it inward instead of pushing it outward.
- For frequently struck sheet metal tools, there should be no curled edges or mushroom heads at the striking end. Before use, please use a grinding wheel to smooth out any curled edges or mushroom heads produced. If this rule is violated, once the rolled edge or mushroom head metal breaks, the cracked part of the metal will be as sharp as a bullet fired from the chamber, which may cause accidental injury to maintenance personnel or people around.

4. Instructions for the Use of Electric Tools

- Electric tools refer to devices or tools driven by electricity. Commonly used electrical tools mainly include electric grinding equipment, electric sheet metal tools, electric saws, electric drills and other frequently used tools. When using electric tools, the following issues should be noted:
- Before using electric tools, the operator should carefully read the product manual or safety operation procedures, fully understand the performance of the tools and master the correct usage methods.
- Electric tools should be maintained frequently to ensure they are functioning properly and have good insulation. When moving electric tools, a leakage protection switch should be connected to prevent electric shock. Leakage tools must be repaired and qualified before they can be used. When replacing any parts or taking a break, the machine must be turned off. When in use, one should be fully concentrated and must not operate after drinking alcohol.
- When using electric rotating tools, it is strictly forbidden to wear thread gloves to prevent hand injuries caused by being drawn in by the rotating power.
- Do not use in a damp working environment to prevent electric shock.
- Electric tools should be frequently inspected for any damage to the wires, plugs or tools.

5. Instructions for Using Pneumatic Tools

Pneumatic maintenance equipment refers to the devices and tools that use the working air source in the workshop as the power source to drive work. Commonly used equipment and tools mainly include pneumatic saws, pneumatic pressure pliers, pneumatic grinding tools and equipment, pneumatic sheet metal tools, etc.

5.1 Safety Precautions for the Use of Pneumatic Equipment and Tools

- The working air pressure should not exceed the maximum working air pressure indicated on the equipment. If it frequently exceeds the normal air pressure, it will reduce the service life of pneumatic tools and even cause damage to pneumatic tools and equipment.
- When operating, it is advisable to wear protective gear such as goggles, earplugs and masks to ensure your own safety. Do not wear loose clothing, scarves, ties or jewelry when operating pneumatic tools and equipment to avoid being caught in moving or rotating parts and causing danger.
- When the pneumatic tool is connected to the high-pressure air source, do not press the trigger when it is not in use. During use, it is necessary to constantly check the condition of pneumatic tools or equipment. Loose spare parts can cause serious dangers. When replacing worn spare parts, dedicated spare parts should be

used and the operation should be carried out carefully to avoid damaging the tools or parts. Be sure that no impurities enter the equipment. At the same time, it should also be noted that some parts cannot be repaired. When changing tools or accessories, the pneumatic tools should be removed from the interface of the air source before operation.

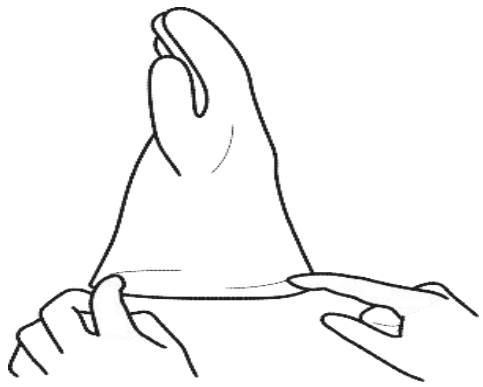
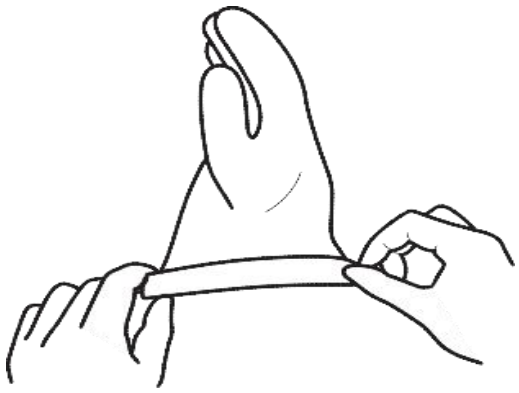
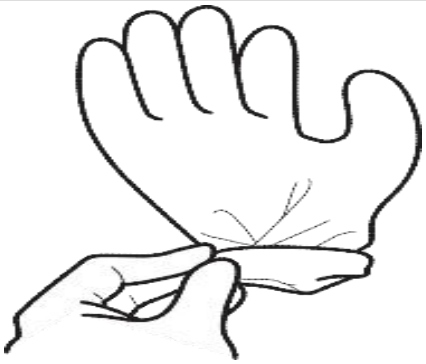
- To ensure work safety, never point pneumatic tools at yourself or others when using them. Joking around in the workplace is a precursor to an accident.
- Before use, check if there are any fragile or damaged parts in the air compressor pipe. If any of the above conditions are found, please replace it immediately to maintain safety. Tighten all the nuts and screws, and make sure all the equipment is in a safe condition. Proper lubrication is the responsibility of the tool user. Water vapor may condense in compressed air, which can easily cause rust. Without proper lubrication, the service life of pneumatic tools will be greatly shortened.

6. Instructions for Use of High-Voltage Resistant Tools

- Electrical safety equipment refers to socket wrenches or tools that are indispensable for protecting electrical workers during electrical operations. Electrical safety equipment can prevent electric shock accidents, arc burn accidents and falls from heights and other injuries. They have certain safety protection functions under various different conditions.
- Electrical safety equipment can be classified into two major categories: non-insulating safety equipment and insulating safety equipment. Non-insulating safety equipment is used to ensure the safety of electrical maintenance and generally does not have insulating properties, so it cannot come into direct contact with live parts. Insulating safety equipment is used to prevent workers from directly contacting live parts. According to its function, it can be divided into basic safety equipment and auxiliary safety equipment. Basic safety equipment refers to insulating safety equipment that can directly contact live parts and reliably withstand the working voltage of equipment for a long time. When using basic safety equipment, its voltage level must match that of the electrical equipment it comes into contact with. Therefore, all these equipment must undergo withstand voltage tests. Auxiliary safety equipment refers to tools used to further enhance the strength of basic safety equipment without directly contacting live equipment. Their insulation strength is insufficient to withstand the operating voltage of electrical equipment and generally must be used in conjunction with basic safety equipment. Auxiliary safety equipment applied to high-voltage devices can generally ensure safety. Therefore, some auxiliary safety tools, such as insulating gloves, can be used as basic safety equipment on high-voltage devices. Insulating boots can be used as basic safety equipment for protecting against step voltage.
- Alumi is a pure electric vehicle that uses a high-voltage power system. Before maintenance, isolation guardrails should be used. Their main purpose is to prevent equipment that has been out of power from suddenly being powered on or generating induced voltage, and to prevent workers from accidentally touching energized equipment and getting injured. To make the staff conspicuous, safety signs and the like should be placed on the roof of the vehicle. Although such appliances are not insulated, they are indispensable for preventing workers from getting electric shock or burns.

6.1 Use and management of high-voltage safety tools

- To ensure the safety of personnel and equipment and prevent the occurrence of safety responsibility accidents, the correct use of safety equipment is of vital importance. Before using safety equipment, a detailed inspection of the equipment must be carried out. The appearance inspection of the tools is only a part of several inspection items. In addition, check whether it has passed the test, whether the test period is within the validity period and whether it meets the requirements of safety equipment.
- Before use, check whether the VDE (1000V) insulated tools have an expiration date. Generally, high-voltage safety equipment undergoes peel tests, withstand voltage tests, and combustion tests before leaving the factory. Before use, the appearance inspection should be free of oil stains, moisture, looseness, cracks, exposed gold, fractures, and damage.
- Check the insulating gloves. Before use, conduct an appearance inspection to ensure there is no oil stain, moisture, water ingress, adhesion, cracks or air leakage. Insulating gloves should undergo a power frequency withstand voltage test every six months. Those that fail the test will be scrapped. The inspection method for insulating gloves is shown in the following figure.

	
Step 1: Place the gloves on your side	Step Two: Roll up the opening 2 or 3 times
	
Step 3: Fold the opening in half to seal it	Step Four: Confirm that there is no air leakage

- Insulating shoes are inspected. Their validity period is usually two years. Before leaving the factory, they will undergo electrical performance tests, folding endurance, wear resistance and tear resistance tests. Before use, a visual inspection should be conducted to ensure there is no oil stain, moisture, water ingress, external injuries, cracks, holes, burrs, broken bottom or top, etc. Insulating shoes undergo a power frequency withstand voltage test every six months. Those that fail the test will be scrapped.
- Check the insulating pad. Its validity period is usually two years. Before leaving the factory, mechanical tests, electrical tests, aging tests, anti-slip tests, flame block performance tests, low-temperature tests, puncture tests, etc. will be conducted. Before use, a visual inspection should be conducted to ensure there is no oil stain, moisture, holes, cuts, damages, metal powder adhesion, or thinning in thickness. The insulating pad shall undergo a power frequency withstand voltage test once a year. If it fails the test, it shall be scrapped.
- Check the safety helmet. The safety helmet (Class D) is valid for two and a half years. Before leaving the factory, it will undergo impact tests, puncture tests, electrical insulation tests, flame retardant tests, low-temperature resistance tests, etc. Before use, visually inspect the cap shell to ensure there are no cracks, depressions, fissures or severe wear. The components such as the headband, top lining, lower jaw band, and rear buckle (or headband buckle) should be intact. The buffer space between the head shell and the top lining should be 25 to 50mm. Safety helmets undergo a power frequency withstand voltage test once a year. Those that fail the test will be scrapped. Furthermore, once a safety helmet has been subjected to a strong impact, it can no longer effectively absorb external force and thus cannot be used any longer.
- Check if the goggles have an expiration date. Before leaving the factory, the tests include impact test, corrosion resistance test, high-temperature resistance test, low-temperature resistance test, wear resistance test and shakeout test. Before use, conduct a visual inspection to check if the lenses have any cracks or severe wear, if the Visual inspection band is not aged, and if the frame and temple are reliably connected. If the visual inspection is not qualified, the lens will be scrapped.
- Check whether the high-pressure protective cover has an expiration date. Factory Acceptance tests: mechanical tests, electrical tests, aging tests, anti-slip tests, flame block performance tests, low-temperature tests, etc. visual check: There should be no oil stains, moisture, water ingress, adhesion, cracks, metal powder attachments, and the lock and key should be in good working condition. The high-voltage protective cover shall undergo a power frequency withstand voltage test every six months. If it fails the test, it shall be scrapped.

- Check whether the safety isolation barriers and poles have an expiration date. It is a tool used to set up a safe operation area, isolate dangerous areas, and prevent workers from crossing the safe operation area or mistakenly entering dangerous areas. The visual inspection shows no weld opening or fracture, and the mechanical locking device of the isolation rod is in good condition.
- Check if the signboard has an expiration date. The appearance of the posted and hung signboards should be clean, flat and firm. For mobile signboards placed around the shells of electrical components, metal conductive materials must not be used.

6.2 Precautions for the Use of high-voltage safety equipment

- Users of high-voltage safety equipment should be familiar with the usage methods of such equipment; otherwise, they are not allowed to use it.
- Before using high-voltage safety equipment, a visual inspection should be conducted to ensure there are no cracks, exposed gold, scratches, burrs, holes, breaks, damages, aging, looseness, oil stains, moisture or water ingress. And the inspection certificate of conformity should be within its validity period. And be rechecked by the guardian.
- Use high-voltage resistant safety equipment whose insulation strength is sufficient to withstand the operating voltage of electrical equipment.
- When using a voltage detector, it is necessary to confirm in advance that the voltage detector is in good condition on a known energized device.
- Use safety equipment for specific purposes only. It is strictly prohibited to use safety equipment as other tools (for non-electrical operations), to overload tools and equipment, to use tools and equipment incorrectly, or to use tools and equipment roughly.
- High-voltage safety equipment should be inspected regularly.
- High-voltage safety equipment should be properly stored and placed in accordance with regulations after use.

6.3 Storage of high-pressure-resistant safety equipment

- Insulating safety tools and personal protective equipment should be stored in a dry and well-ventilated insulating safety tool room (cabinet) with a temperature ranging from -5 ℃ to 35℃ and a relative humidity of 50% to 80%.
- VDE insulated tools must be stored independently and must not be mixed with other items. Avoid contact with sharp metal objects to prevent insulation damage.
- Insulating gloves should be stored in a closed cabinet and kept separately from other tools and instruments.
- Insulating boots should be placed in the cabinet and must not be used as a substitute for rain boots. They are only allowed to be used at the operation site.
- All high-voltage safety equipment must not be used as substitutes for other tools.

6.4 Scrapping of high-voltage safety equipment

Safety tools and equipment that meet any of the following conditions shall be scrapped:

- Safety tools and equipment that fail to meet national or industry standards after testing or inspection.
- Safety tools and equipment that have exceeded their valid service life and cannot meet the effective protective function indicators.
- Scrapped high-voltage safety tools and equipment should be cleared in a timely manner. They must not be stored together with qualified high-voltage safety tools and equipment, nor should scrapped high-voltage safety tools and equipment be used.

7.2.2.3 Maintenance workshop equipment usage and processes, as well as related safety matters

1. Body alignment platform

The body alignment platform is the foundation for body fixation and maintenance. The body alignment platform is equipped with a clamping device, commonly known as a mold. There are assembly holes and reference points corresponding to those on the car floor on the worktable. The mold is matched and installed according to the mold assembly drawing to restore the car to the original factory-specified value.

2.Measuring tools

To enhance the efficiency of maintenance and measurement, the universal measuring gauge that is matched with the correction platform can be installed at the appropriate position and height under the vehicle in accordance with the specifications. This eliminates the need for repeated measurements during the straightening process and enables simultaneous monitoring of all control points. It can also continuously provide information and data related to the movement and position of metal plates and components during the tensile correction process.

The 3D scanning laser measurement system is a newer and more advanced system that can simultaneously measure the three-dimensional dimensions of the car floor, such as height, width and length, and also has the ability to monitor the side dimensions. It can check the measurement points of important parts of the vehicle body, such as the values of the door hinges and the installation points of the front partition.

3.Precautions for the Use of the body alignment platform

- When operating a tower or lift, ensure that no other personnel are injured.
- When leaving the universal telescopic tower for inspection, do not keep the hydraulic cylinders on the universal telescopic tower under pressure.
- Ensure that the protective steel wire rope is always connected to the steel chain of the universal tower.
- When using a universal puller tower, do not stand behind it.
- Confirm that all chassis fixtures are in good working condition and ensure that the serrated jaws are installed correctly.
- Confirm that the clamping area of the fixture is clean and free of mixtures such as soil and joint sealant.
- Confirm that there is no leakage in the hydraulic cylinder and check whether the connection between the universal tower and the working platform is reliable.
- Inspect the steel chain used to ensure it is undamaged and capable of withstanding a tensile force of 10 tons.
- Confirm that the vehicle is correctly placed and fixed on the calibration platform and will not move up and down with the lift.
- The lift and its operation under load must be monitored by personnel.
- When confirming the operation, no one should approach the lift.
- During all maintenance and adjustment work, the lift must be effectively supported and protected at its lifted position to prevent accidental descent and the risk of being crushed.

4.MIG gas shielded welding

An arc welding method that uses a melting electrode, an external gas as the arc medium, and protects the metal droplet, the welding pool, and the high-temperature metal in the welding area. The arc welding method using inert gas (Ar or He) protection with solid core wire is called gas metal arc welding, abbreviated as MIG welding. The gas used in MIG gas shielded welding is 99.99% argon or helium. The welding wire used should be the same as or similar to the material to be welded. As aluminum welding wire is relatively soft, it is advisable to choose aluminum alloy welding wire with a diameter of 1.2mm. MIG welding uses a fusible wire as the electrode during the welding process, and the arc burning between the continuously fed wire and the work piece to be welded serves as the heat source to melt the wire and the base metal. During the welding process, the shielding gas - argon - is continuously delivered to the welding area through the nozzle of the welding torch, protecting the arc, the molten pool and the nearby base metal from the harmful effects of the surrounding air. The welding wire continuously melts and transitions into the weld pool in the form of droplets, where it fuses with the molten base metal and solidifies to form the weld metal.

Like TIG welding, MIG welding can almost weld all metals, especially suitable for welding materials such as aluminum and aluminum alloys, copper and copper alloys, and stainless steel. During the welding process, there is almost no oxidation burn loss, only a small amount of evaporation loss, and the metallurgical process is relatively simple. MIG welding can be connected in reverse direct current. When welding metals such as aluminum and magnesium, it has a good cathodic atomized effect, which can effectively remove the oxide film and improve the welding quality of the joint. When MIG welding aluminum and aluminum alloys, the sub-jet droplet transition method can be adopted to improve the quality of the welded joint. As argon is an inert gas that does not undergo chemical reactions with any substances, it is highly sensitive to oil stains, rust and other contaminants on the surface of the welding wire and base material, and is prone to porosity. Therefore, the welding wire and the work piece must be carefully cleaned before welding.

The melting point of aluminium alloy is between 550℃ and 660℃. The characteristic of aluminium plates is that when they are exposed to temperatures above 180℃, the strength of aluminium alloy begins to decline, and the decline is significant and rapid when it reaches 250℃. The surface of aluminium forms a dense oxide layer with high resistance (also known as an oxide film. The melting point of the oxide film is about 2130℃. Without the oxide film, it shows excellent electrical conductivity, which also means that it is more difficult and consumes more electricity than welding steel plates). Therefore, spot welding equipment is not used when welding aluminum alloys. Before welding aluminum plates, it is necessary to remove the oxide film on the surface and ensure that the welding is completed within 30 minutes. Commonly used welding methods include TIG welding (with tungsten as the electrode material, not a consumable electrode) and MIG welding (with a consumable electrode). The shielding gas is 99.99% pure argon or a mixture of argon and helium.

When repairing the aluminum plates of the vehicle body, it is necessary to Pay attention to the use of dedicated tools to prevent potential contact corrosion. The oxide layer should be treated with a stainless steel wire brush. Different connection processes should be adopted. When two aluminum plates or aluminum alloy plates are connected with other metal plates, they should be cleaned first and a flame coating should be applied. A two-component special epoxy adhesive (with insulating function) should be applied in the middle.

When welding aluminum alloys, heat-treatable aluminum alloys cannot use aluminum-silicon alloy welding wires to fill the weld seams; otherwise, the weld seams will discolor. The thermal conductivity of aluminium alloy is four times that of steel plate, so a large heat input must be adopted. However, the more heat is added, Intergranular corrosion will become more severe. The grain boundaries hinder the sliding between grains. When overheated, the grains will become coarser and the strength will decrease.

① At 150℃, its strength will decrease by 20%, leaving only 80% of its strength.
② At 200℃, its strength will decrease by 40%, leaving only 60% of its strength.
③ At 3.400℃, its strength will decrease by 90%, leaving only 10%.

At present, single-pulse and double-pulse welding are mostly used in welding. Single-pulse welding is mainly used for welding stainless steel and aluminum materials, while double-pulse welding is mainly used for welding aluminum materials. All the peaks of a single pulse are the same. A double pulse is equivalent to two single pulses with the same period but different phases superimposed on each other, that is, there may be two peaks in one period. By the same token, multiple pulses may have multiple peaks during welding. Generally, the weld seams of aluminum materials welded by single-pulse welding are prone to deformation. Double-pulse welding is likely to generate impact force between continuous welding cycles. During welding, the temperature of the arc can be adjusted in a timely manner, and relatively flat weld seams can be produced, with clearer fish-scale patterns.

The advantages of pulses: One pulse leads to one droplet, and there is almost no spatter during the welding process. The cooperative mode, also known as dual-pulse, mainly harmonizes pulses through low frequencies. It refers to a pulsed arc in which the welding current varies up and down in pulses around the average welding current value.

Using the pulse method during welding can reduce the black powder produced in the weld seam after welding. When welding aluminum plates, metal vapor is produced in high-temperature electric arcs. When the vapor loses its gas protection, it reacts with hydrogen in the air to form oxides such as Ar2O3 and black powder.

Using the pulse method during welding can reduce the black powder produced in the weld seam after welding.

Argon can stabilize droplet transition, but it is inferior to a mixture of argon and helium (30% argon +70% helium or 50% argon +50% helium) in terms of weld strength and preventing porosity. The higher the helium content, the higher the voltage of the arc will be. Argon does not decompose at high temperatures, does not undergo chemical reactions with metals, is 37% heavier than air, and is used for floating and dispersion. The thermal contraction effect of argon on the arc is small, and the voltage of argon arc combustion is relatively low. That is, even if the length of the argon arc changes, it will not significantly alter the voltage of the arc, ensuring the stability of welding and making it suitable for manual welding.

Intermittent welding is prone to produce oxide inclusions. To prevent penetration, a backing plate should be used for welding at the lower part.

Aluminum plates have a strong ability to reflect light and heat, and there is no color change when they transform from solid to liquid.

When welding thin plates, preheating is not required. However, large pieces and thicker aluminum plates need to be preheated, with a preheating temperature of 100℃ to 200℃. When welding, the work piece to be welded should be used as the cathode. This is mainly because the cathode has the function of breaking metal particles and is prone to destroying the oxide film formed on its surface.

The method of welding aluminum alloys using MIG gas shielded welding is similar to that of welding alloy steels using MAG gas shielded welding. For details, please refer to the instructions for MAG gas shielded welding.

When welding, the following points should be noted to ensure the final maintenance quality:

1. When performing welding operations on an electric vehicle, it is essential to remove the power battery. Even if the maintenance switch has been removed, it must still be removed. During a vehicle collision, the power battery may have a problem of poor sealing, and the released gas can cause potential dangers such as fire and explosion!

2.After removing the power battery, please wait for 5 to 10 minutes to ensure that the high-voltage electrical system is completely discharged.

3. Compared with steel plate welding, its thickness range is quite limited. Therefore, during the welding process, the welding parameters must be correctly set and precisely adjusted.

4 .When inserting the welding wire into the wire feeding mechanism, the burrs at the end of the wire should be removed with emery paper, and the wire should be passed through the welding torch by hand.

5 .The tension on the driving roller of the welding wire must be adjusted to be lower than that when welding with steel welding wire. Hold the welding wire tightly at the tip and adjust the tension. When the welding torch switch is turned on, allow the welding wire at the drive roller to slip. If the tension of the drive roller is too large, the welding wire may get stuck. If the tension is insufficient, the speed of the welding wire will be inconsistent.

6 .The wire feeding speed is usually higher than that during the welding of steel plates.

7. The gap between the electrode and the base material should be the same as that when welding the steel plate, but the Angle of the welding torch must be at a right Angle to the surface of the work piece.

8 .By using the left welding method, compared with steel plate welding, tilt the welding torch in the opposite direction of its movement, so that it exceeds the right Angle position (5 to 15 degrees).

9. The arc sound during the welding of aluminum alloys should be a soft and continuous humming sound, similar to that during the welding of steel plates. The welding speed is much faster than that of steel plate welding, and because aluminum wire contains manganese, a small amount of soot will appear along the MIG weld bead.

10. Spatter is prone to adhere to the nozzle and contact tip of the welding torch, thereby obstructing the normal protective airflow and causing welding defects. At this point, the nozzle of the welding torch should be removed, thoroughly cleaned, and then coated with a bonding inhibitor.

11 .The wear rate of the nozzle and tip of the welding torch is faster than that during the welding of steel plates.

12. The small pieces of aluminum alloy splashed by MIG welding can reach a considerable distance, so not only the welder himself needs protection, but also protective measures must be provided for the people around him.

13 .When performing aluminum welding, in addition to doing a good job in protecting the vehicle body in accordance with the operation specifications, before repairing the vehicle body, relevant materials should be checked and the repair operation should be carried out strictly in accordance with the manufacturer's requirements. Welding must not be done on parts that should not be welded.

14.fourteen Before welding, the welding area should be cleaned with paraffin or grease remover. For parts with a coating on the surface, a grinding wheel equipped with an 80-grit grinding wheel (or a special wire brush) should be used to remove the surrounding coating, exposing the metal surface and thus ensuring the welding quality.

15. Adjust the voltage and wire feeding speed according to the welding machine's user manual. However, the values provided in the manual are usually only approximate. Maintenance technicians should make corresponding adjustments based on their own experience and actual conditions.

16. When welding aluminum plates, aluminum welding wire and 100% argon gas should be used. The gas flow rate should be increased by 50% compared to welding steel vehicle bodies. The welding torch and the welding area should be nearly perpendicular, and the forward welding method (left welding method) should be adopted.

17. Welding aluminum plates will produce more spatter. Anti-spatter agents should be applied to the ends of the nozzles and conductive copper nozzles.

18 Care should be taken not to damage the inner lining of the Teflon cable.

19. Before conducting welding maintenance operations, appropriate preventive measures should be taken for the electronic control modules on the vehicle to prevent the heat and vibration generated by welding from damaging these modules. Electronic modules or Circuits must not come into contact with grounding wires or welding wires.

20. Please remove the battery before conducting welding operations near it.

21 Do not weld on the components of an air conditioning system that contains coolant. Similarly, if there is a risk of the air conditioning system getting hot, welding is not allowed either.

22 .Connect the grounding of the aluminum welding machine directly to the component to be welded. Make sure there are no electrical insulating components between the grounding and the solder joint.

23 Nearby vehicle parts and nearby vehicles must take measures to prevent flying sparks and heat.

24. Before welding aluminum alloy materials, the surface oxide film should be removed with a stainless steel wire brush and the welding should be completed as soon as possible to prevent the regeneration of the oxide film from affecting the welding.

25. When repairing a steel-aluminum hybrid body, if it is necessary to remove the connecting wires of the steel-aluminum body, do not forget to reinstall them after the repair.

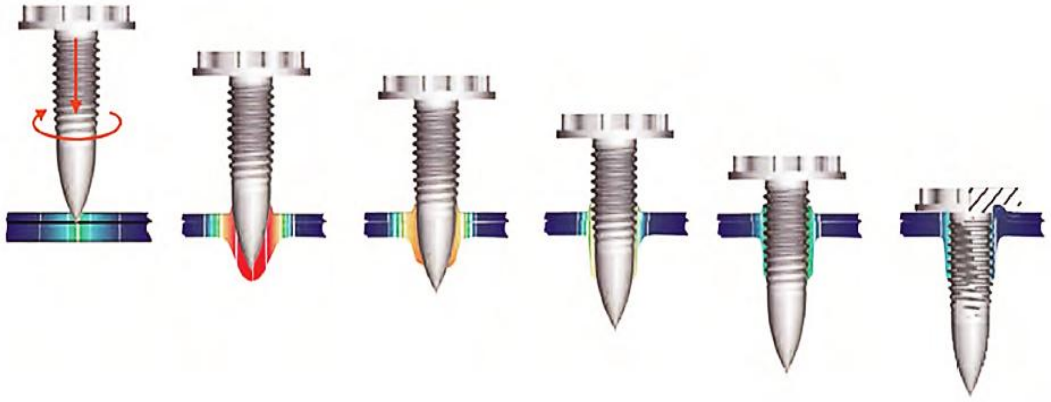
5.Riveting

（1）Riveting process

Most of the components of an aluminum body are joined together by bonding or a combination of bonding and riveting. Therefore, when replacing aluminum plate parts, it is necessary to strictly follow the technical requirements of the manufacturer, select the original components or assemblies provided by the factory, and correctly choose the cutting position and connection method. The component connections of aluminum body mainly include FDS hot melt self-tapping riveting, RSW aluminum alloy spot welding, CMT cold metal transition arc welding, SPR self-punching riveting, structural adhesive, laser welding, and high-strength core-pulling riveting process types.

（2）FDS hot-melt self-tapping riveting

FDS, also known as hot melt self-tapping, is a cold forming process in which sheet metal is thermally deformed by high-speed rotation and then tapped and riveted. The principle is indeed to heat high-strength steel, aluminum alloy and other metals to a molten state through high-speed rotation and then insert screws into the sheet metal. In the riveting process, it is divided into six stages: positioning and preheating, hot melt penetration, penetration forming, thread forming, screw screwing in, and screw tightening. As FDS is a self-tapping screw, when it is screwed onto the body panel, it has certain requirements for the flatness of the plane. Currently, it is mainly used for the connection between planes.



During the FDS riveting process, when the material strength is greater than 600MPa, prefabricated holes should be made in the upper plate. If the strength is less than 350MPa, no prefabricated holes are needed. The maximum total thickness is 2mm. When the pressure is between 350 and 600MPa, the total thickness of the holes that do not require prefabrication is 1.5mm. When the total thickness is greater than 600MPa, it should be less than 1.0mm to avoid the need for prefabricated holes. However, the connection of body structural components is usually more than two layers. After the riveting process is completed, there is approximately a 2-5mm protrusion at the nail head part, and the length of the nail leg is close to 10mm. To prevent the protruding tail from affecting the sound mode of the cavity, the tail part of the FDS nail is usually cut off. FDS riveting requires a large enough cavity, and nails in different directions should also be careful to prevent mutual interference that may affect the connection quality.

(3) After-sales disassembly method of FDS hot-melt self-tapping screws:

- During after-sales maintenance, FDS hot-melt self-tapping screws can be removed using FDS-specific sleeves. Before installing new parts, the installation holes for FDS hot-melt self-tapping screws should be prefabricated first. Generally, the drilling diameter of the outer panel should be about 1mm larger than the old FDS hot-melt self-tapping screw hole diameter left by the original factory on the reserved panel. The drilling diameter of the outer panel is 6mm, and that of the inner panel is 5mm. If the FDS hot-melt self-tapping screw holes of the old body parts are used, there is no need to make installation holes again. If the thickness of the inner layer plate exceeds 2mm, the diameter of the borehole is 5.5mm.
- FDS hot-melt self-tapping riveting after-sales process flow:
- After the installation holes are prefabricated, use a ring belt grinding machine to grind the mating surface between the new parts and the retained parts of the vehicle body, and remove burrs.
- Use an air gun to blow away the dust from grinding, and then dip a degrease cloth in a special cleaner for sheet metal to wipe the exposed metal surface clean.

- ❖ Position the new sheet metal parts with the vehicle body, check if the new and old parts match, and then stick masking tape at the adhesive joint to deal with any leakage of the adhesive. After the dimensions and fit clearances are inspected and found to be qualified, remove the preinstallation components and proceed to the next operation procedure.
- ❖ After the degrease agent has dried, use the flame coating kit to heat and roast the bonding surface. Then, apply the flame coating to the bonding surface of the ground plate to form an invisible thin coating 20 to 40nm thick, thereby enhancing the surface adhesion of the plate. When operating, a dedicated flamethrower and matching fuel must be used. At the same time, a highly oxidized outer flame must be used to roast the joint surface of the plate, with a stay time of at least 3 seconds per square centimeter.
- ❖ Apply the primer (coupling agent). To improve surface activity and enhance adhesion, after flame coating roasting of all bonding surfaces with flame coating, apply the coupling primer with a brush while the aluminum plate is still hot.
- ❖ Put the structural adhesive into the glue gun. Before connecting the mixing nozzle, squeeze out 2cm of the adhesive in the hose and discard it. Then install the mixing nozzle, open the front sealing cover of the hose, and push the glue gun in a "Z" shape to ensure that both components of the adhesive are discharged. Connect the automatic mixing nozzle to the structural adhesive head. Squeeze out 5 to 10cm of the adhesive and check if it is thoroughly mixed. (Apply 5 to 10cm of the adhesive onto a tissue or similar item and discard it later.) According to this adhesive strip, the curing process can also be inspected.
- ❖ Apply adhesive to both surfaces of the sheet metal parts that need to be bonded and brush it evenly with a brush to cover all exposed metal surfaces.
- ❖ Apply an additional layer of structural adhesive to the surface of one of the sheet metal parts, ensuring that the amount of adhesive used is sufficient to cover all the bonding areas.
- ❖ Accurately position the new sheet metal parts on the vehicle body components and clamp and fix them. Apply the extruded glue evenly with a brush and it can be used as a seal.
- ❖ Install the FDS dedicated sleeve onto the head of the pneumatic screwdriver, install the FDS hot-melt self-tapping screws, and drill the screws into the prefabricated installation holes on the board surface in a scattered manner according to the riveting sequence. Finally, tighten all the FDS screws in the riveting sequence. Note: The torque for tightening the FDS hot-melt self-tapping screw is 7 n.m.
- ❖ After completing the adhesive riveting operation, remove the excess glue with a glue remover. Clean the excess glue and then remove the masking tape that has been adhered.
- ❖ After the bonding is completed, the vehicle must not be moved. The bonded components can be cured at room temperature (curing time: 36 hours at 25℃), or the curing can be accelerated by heating. After curing, remove the fixing tape and proceed to the next process.

Note::

The bonding process must be carried out immediately after applying the adhesive to ensure high-quality and safe bonding. Otherwise, the already applied adhesive must be removed and the operation standards for surface preconditioning and application of structural adhesive must be repeated!

(4) SPR Self-piercing riveting

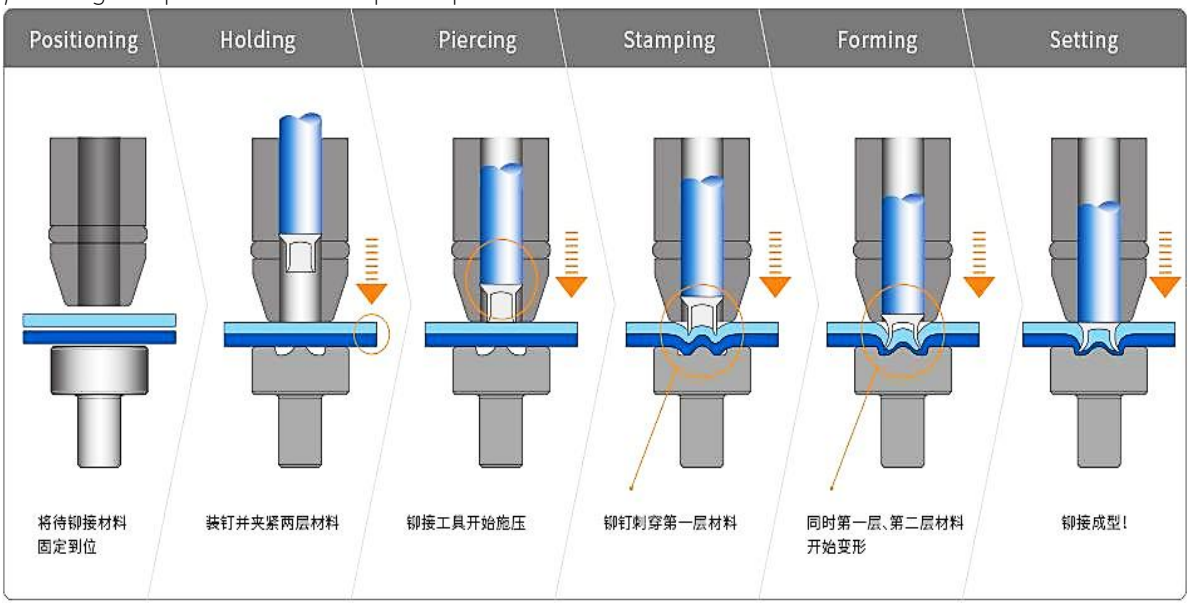
The SPR self-piercing riveting process adopts a cold metal connection method and is one of the key connection technologies in the manufacturing of modern steel-aluminum hybrid bodies and aluminum alloy bodies. This process can be used for the connection between automotive chassis parts, automotive body panels, car seats, etc. The SPR process overcomes the shortcomings of the traditional riveting process, such as poor appearance, low efficiency and complex process, achieving the completion of punching and riveting in one go, and the connection process does not damage the coating of the sheet. The SPR self-piercing riveting process features high tensile and shear strength, and has the advantages of high strength, suitable for appearance quality inspection, no need for drilling and one-time forming, good water resistance and air tightness, the ability to

connect metal and non-metal materials and combine multiple layers of materials, the ability to connect materials of different thicknesses and strengths, and no thermal effect in mechanical connection.

In the SPR process, the upper and lower plates undergo plastic deformation along the downward pressure direction of the punch under the action of the rivets and the punch punch, and the degree of plastic deformation is relatively large around the plates in contact with the rivets. Perpendicular to the downward pressure direction of the punch, the overall shear strength of the joint will be significantly better than the peel strength. The mechanical characteristics of the SPR process determine the riveting quality, which is related to factors such as rivets, molds, plates, and stamping equipment, affecting the performance of the riveted joint. According to the shape of the rivets, the SPR self-punching riveting process can be divided into: rivet-free self-punching riveting, solid rivet self-punching riveting, and semi-hollow rivet self-punching riveting. In the connection of automotive bodies, both the static strength and fatigue strength of the connection and the light-weighting of the body need to be taken into account. Therefore, the semi-hollow rivet self-punching riveting process is mostly adopted and applied to the assembly of thin body plates.

The SPR process can divide the riveting process into six stages: fixation, clamping, pressure application, sprinting, expansion, and punching riveting:

1) Fixing stage: Secure the material to be riveted in place.
2) Clamping stage: The blank holder presses down on the sheet metal to be riveted. Meanwhile, the rivets are also crush out vertically downward against the sheet metal under the drive of the punch.
3) Pressure application stage: The riveting tool begins to apply pressure.
4) Sprint stage: The punch moves downward, pushing the rivets to force them to Pierce through the upper sheet metal. At the same time, the rivets also drive the lower sheet metal to undergo plastic deformation into the die.
5) Expansion stage: As the riveting process proceeds, the rivet legs gradually open up, and the lower sheet metal undergoes plastic deformation and gradually fills the die. Under the combined action of the punch and the die punch, the rivet leg expands outward and is embedded in the lower plate, thus forming a mechanical interlocking structure between the rivet and the sheet metal.
6) Riveting completion: When the punch presses the rivet down until the rivet head is in close contact and level



with the upper surface of the upper sheet metal, it can be considered that the riveting is completed. At this point, the blank holder releases the blank holder force, and the punch returns to the initial position, marking the end of the riveting process.

（5）SPR rivet riveting after-sales process flow:

- After the installation holes are prefabricated, use a ring belt grinding machine to grind the mating surface between the new parts and the retained parts of the vehicle body, and remove burrs.
- Use an air gun to blow away the dust from grinding, and then use a degreasing cloth dipped in a special cleaner for sheet metal to wipe the exposed metal surface clean.
- Position the new sheet metal parts with the vehicle body and check if the new and old parts match. After the dimensions and fit clearances are inspected and found to be qualified, remove the pre-install components and proceed to the next operation procedure.

- ❖ After the degreasing agent has dried, use the flame coating kit to heat and roast the bonding surface, and then carry out the flame coating operation on the bonding surface of the ground plate to form an invisible thin coating 20 to 40nm thick, thereby creating greater surface adhesion on the plate surface. When operating, a dedicated flamethrower and matching fuel must be used. At the same time, a highly oxidized outer flame must be used to roast the joint surface of the plate, with a stay time of at least 3 seconds per square centimeter.
- ❖ Apply the primer (coupling agent). To improve surface activity and enhance adhesion, after flame coating roasting of all bonding surfaces with flame coating, apply the coupling primer with a brush while the aluminum plate is still hot.
- ❖ Put the structural adhesive into the glue gun. Before connecting the mixing nozzle, squeeze out 2cm of the adhesive in the hose and discard it. Then install the mixing nozzle, open the front sealing cover of the hose, and push the glue gun in a "Z" shape to ensure that both components of the adhesive are discharged. Connect the automatic mixing nozzle to the structural adhesive head. Squeeze out 5 to 10cm of the adhesive and check if it is thoroughly mixed. (Apply 5 to 10cm of the adhesive onto a tissue or similar item and discard it later.) According to this adhesive strip, the curing process can also be inspected.
- ❖ Apply adhesive to both surfaces of the sheet metal parts that need to be bonded and brush it evenly with a brush to cover all exposed metal surfaces.
- ❖ Apply an additional layer of structural adhesive to the surface of one of the sheet metal parts, ensuring that the amount of adhesive used is sufficient to cover all the bonding areas.
- ❖ Accurately position the new sheet metal parts on the vehicle body components and clamp and fix them. Apply the extruded glue evenly with a brush and it can be used as a seal.
- ❖ Install the pneumatic or electric riveting pliers on the riveting head, install the SPR rivets, and rivet the SPR rivets in a skip riveting manner. Note: The rivets selected must be of the same type as those specified by the original factory and must not be too long or too short. When riveting, the riveting head of the riveting pliers must be vertically aligned with the SPR rivet and the mating surface. It must not be skewed to prevent the riveting head of the riveting pliers from being crushed!!
- ❖ After the adhesive riveting operation is completed, the excess adhesive that has overflowed should be removed with a glue remover, and the excess adhesive that has overflowed should be cleaned.
- ❖ After the bonding is completed, the vehicle must not be moved. The bonded components can be cured at room temperature (curing time: 36 hours at 25℃), or the curing can be accelerated by heating. After curing, remove the fixing tape and proceed to the next process.

Note:

The bonding process must be carried out immediately after applying the adhesive to ensure high-quality and safe bonding. Otherwise, the already applied adhesive must be removed and the operation standards for surface preconditioning and application of structural adhesive must be repeated!

（6）High-intensity core-pulling riveting

Blind rivets are rivets used for single-sided riveting and are riveted with a special riveting gun. When riveting, the core of the rivet is pulled by a special riveting gun, causing the rivet to expand and achieve the riveting effect. This type of rivet is particularly suitable for riveting occasions where SPR or solid blind rivets are not convenient to use, and is widely used in the connection of steel-aluminum hybrid car bodies and aluminum alloy car bodies. Among them, the open-end flat round head blind rivets are the most widely used. The countersunk head blind rivets are suitable for riveting occasions where the surface needs to be smooth, while the closed type blind rivets are suitable for riveting occasions that require higher loads and certain sealing performance.

The riveting method of blind rivets: Insert the blind rivets from one side of the sheet metal. The chuck of the riveting gun is placed over the core of the blind rivets and the core of the rivets is held in place by pulling force. Then, riveting is carried out with the riveting gun. Under the pressure on the core of the rivets, the softer rivet head will be forced to expand outward, thus making the material bond more closely. The pulling force is repeated until the core of the rivets is pulled apart.The blind rivets used for after-sales service must be the compliant high-strength steel blind rivets required by the manufacturer. The specifications and riveting fastening thicknesses are listed in the following table.

When maintaining, please select according to the total thickness of the riveted object to prevent the riveting quality from deteriorating due to incorrect use.

Serial number	Blind rivets model	Riveting thickness (mm)	Illustration
1	S43640002	3.5 ~ 6.5	
2	S43640003	2.8 ~ 4.6	
3	S43640004	5.5 ~ 8.5	
4	S43640005	1.5 ~ 3.5	

The installation of blind rivets requires abstract, with the diameter of the holes being 0.1mm to 0.2mm larger than that of the rivets. For instance, the diameter of the blind rivets is 6.5mm, and the diameter of the drilled holes is 6.6 to 6.7mm. The burrs at the drilled holes are removed, and then a high-tensile pneumatic riveting gun is used for riveting and fastening.

（7）.After-sales process flow of blind riveting:

- After the installation holes are prefabricated, use a ring belt grinding machine to grind the mating surface between the new parts and the retained parts of the vehicle body, and remove burrs.
- Use an air gun to blow away the dust from grinding, and then use a degreasing cloth dipped in a special cleaner for sheet metal to wipe the exposed metal surface clean.
- Position the new sheet metal parts with the vehicle body, check if the new and old parts match, and then stick masking tape at the adhesive joint to deal with any leakage of the adhesive. After the dimensions and fit clearances are inspected and found to be qualified, remove the pre-assembling components and proceed to the next operation procedure.
- After the degreasing agent dries, use the flame coating kit to heat and roast the bonding surface, and then carry out the flame coating operation on the bonding surface of the ground plate to form an invisible thin coating 20 to 40nm thick, thereby creating greater surface adhesion on the plate surface. When operating, a dedicated flamethrower and matching fuel must be used. At the same time, a highly oxidized outer flame must be used to roast the joint surface of the plate, with a stay time of at least 3 seconds per square centimeter.
- Apply the primer (coupling agent). To improve surface activity and enhance adhesion, after flame coating roasting of all bonding surfaces with flame coating, apply the coupling primer with a brush while the aluminum plate is still hot.
- Put the structural adhesive into the glue gun. Before connecting the mixing nozzle, squeeze out 2cm of the adhesive in the hose and discard it. Then install the mixing nozzle, open the front sealing cover of the hose, and push the glue gun in a "Z" shape to ensure that both components of the adhesive are discharged. Connect the automatic mixing nozzle to the structural adhesive head. Squeeze out 5 to 10cm of the adhesive and check if it is thoroughly mixed. (Apply 5 to 10cm of the adhesive onto a tissue or similar item and discard it later.) According to this adhesive strip, the curing process can also be inspected.
- Apply adhesive to both surfaces of the sheet metal parts that need to be bonded and brush it evenly with a brush to cover all exposed metal surfaces.
- Apply an additional layer of structural adhesive to the surface of one of the sheet metal parts, ensuring that the amount of adhesive used is sufficient to cover all the bonding areas.
- Accurately position the new sheet metal parts on the vehicle body components and clamp and fix them. Apply the extruded glue evenly with a brush and it can be used as a seal.
- Install high-strength blind rivets and rivet them in a skip riveting manner.
- After completing the adhesive riveting operation, use a glue remover to remove the excess glue that has overflowed. Clean the excess glue and then remove the masking tape that has been adhered.
- After the bonding is completed, the vehicle must not be moved. The bonded components can be cured at room temperature or by heating to accelerate the curing process (curing time: 36 hours at 25℃). After curing, remove the fixing tape and proceed to the next process.

Note：

The bonding process must be carried out immediately after applying the adhesive to ensure high-quality and safe bonding. Otherwise, the already applied adhesive must be removed and the operation standards for surface pre-treatment and application of structural adhesive must be repeated!

（8）Stamping riveting

1. Stamping riveting is a deformation technology connection process that creates a non-loose connection. In the manufacturing of automobiles, apart from large-scale production, small-scale trial production and prototype vehicle manufacturing are also carried out. In such cases, stamping riveting is usually required. In the after-sales maintenance of the original factory's stamping and riveting process, the riveting points or rivets that need to be replaced all need to be removed by punching with riveting tools (riveting pliers).

2. The operation process of stamping riveting is the same as that of SPR riveting. For details, please refer to the after-sales process flow of SPR riveting.

6. Description of anti-corrosion and sealing materials

（1）Common anti-corrosion and sealing materials are shown in the table below

Process	Adhesive	Part number	Function	Application points	Packaging
Panel assembly	Two-component high-strength structural adhesive	59122601	High-strength two-component adhesive, recommended to be used in conjunction with a two-component repair booster gun as an alternative to laser welding	Roof, A, B and C pillars, rear tailboard, etc	250ml two-component
	Zinc spray	59122604	The spot welding contact surface is treated with zinc spraying to prevent high temperatures from damaging the galvanized layer, increase the conductivity of the sheet metal, and prevent false welding	The contact surface of sheet metal parts for welding	400ml
Vehicle body sealing	Body joint sealant	59122597	It is used for sealing the welds of various vehicle bodies to prevent rust and leakage. Combined with professional rubber nozzles, it can be used to construct the original factory arc-shaped sealing strips	After the sheet metal parts are welded, the front and rear machine covers, door edges are sealed, etc	310ml
	Spray-type body joint sealant	59122600	It can be sealed on seams or applied by large-scale spraying to create a "fish-scale" seal and a surface with undulating particles. The spraying application requires the use of a multi-functional pneumatic spray gun and a professional nozzle for large-scale sealing of the vehicle body, brushing out a striped sealing shape	The skirt, rear tailboard, trunk and other rear longitudinal beams, as well as the rear shock absorber seat are sealed	300ml

Anti-corrosion and anti-rust	Sealing anti-rust adhesive	59122599	It can prevent rusting of the vehicle chassis, resist the impact of road stones, and has noise reduction function. It combines well with the original vehicle's under body coating, contains no asphalt, and meets the EU environmental protection standards	Chassis (Extensive repair)	1L
Glass installation	Fast-drying high modulus glass adhesive set	59122603	Bonding of glass and metal	Front and rear windshields	1 set
Attachment installation	Super instant adhesive	59122594	High strength, fast bonding, anti-vibration, moisture-resistant, less whitening, and good flexibility	Small-area bonding of materials such as metal, plastic and glass	20g
Maintenance accessories	Special cleaning agent for sheet metal	59122602	Environmentally friendly product, free of benzene, with strong oil and dirt removal capabilities	Surface cleaning of plastic and metal parts	1L

（2）Description of the anti-corrosion sealing process for the vehicle body

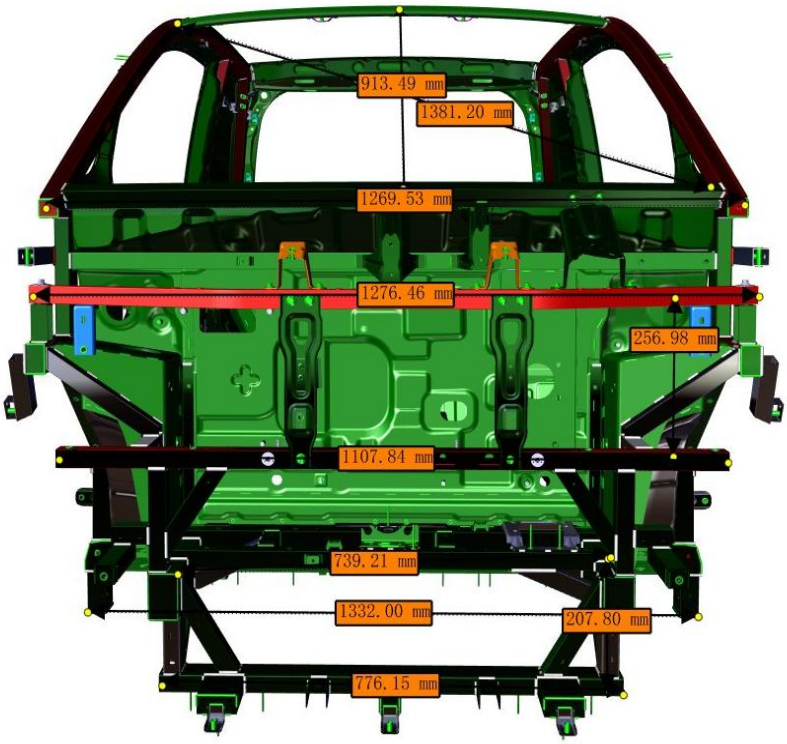
1. The anti-corrosion sealing process of the vehicle body is different from the vehicle body bonding process. The bonding process is a method of firmly connecting the same or different materials together by means of the adhesive force generated by the adhesive on the solid surface. The sealing process involves using joint sealant to form a sealing surface between the surfaces that interact with each other. If the body panels of a vehicle are corroded, it will directly affect the appearance, service life, comfort and safety performance of the vehicle. During the vehicle repair process, it needs to go through processes such as hammering, alignment, grinding, heating, and welding for restoration. If no anti-corrosion measures are taken during this process, it will lead to the failure of the original factory's anti-corrosion performance and cause corrosion problems.

2. The anti-corrosion treatment measures for vehicle body maintenance mainly include: epoxy primer on the surface of aluminum alloy plates, sealing the joints of all connection interfaces, applying anti-collision buffer glue or chassis armor against stone impact on the mudguards and the bottom of the vehicle body, and wax spraying in the cavities of vehicle body parts, etc. When repairing the vehicle body, only the original factory body repair components and repair materials approved by the original factory (such as sealants, paints, etc.) can be used. If fine cracks appear in the connection area of the vehicle body after maintenance, anti-rust protection must be carried out. Before carrying out rust prevention protection, the welding area should be ground flat.

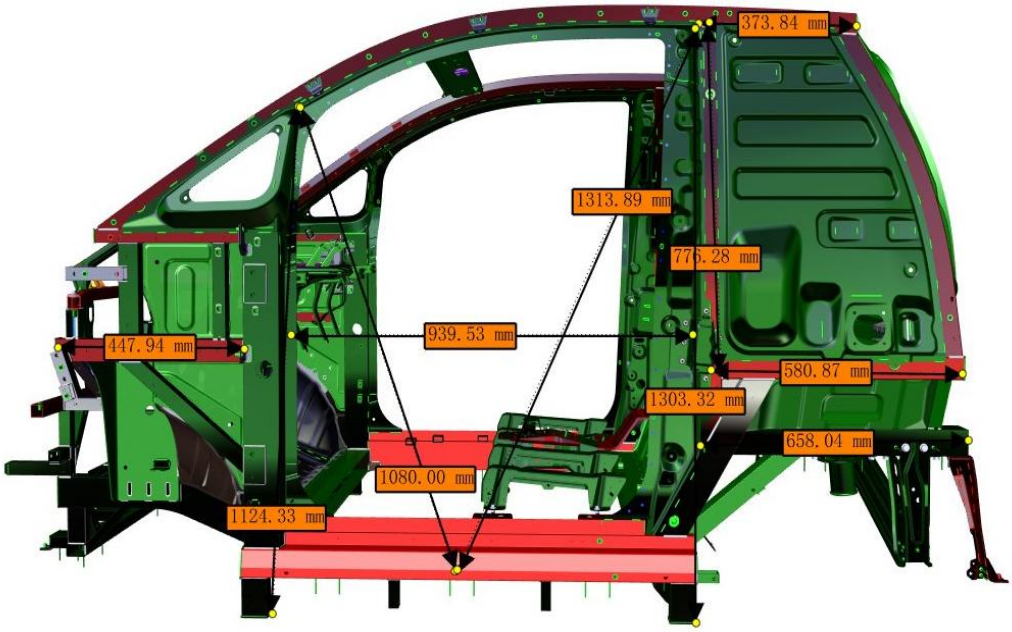
3. When repairing the vehicle body, all the mating surfaces of the vehicle body panels should be treated for anti-corrosion before connection. Proper sealing is crucial for the quality of the vehicle body after repair. While providing sealing, it also offers good anti-corrosion performance for the vehicle body, and can play a role in noise reduction, water leakage prevention, dust prevention and exhaust gas prevention from entering the vehicle. Usually, during the repair process, all damaged original vehicle sealants need to be restored.

7.3 Body Dimensions Description

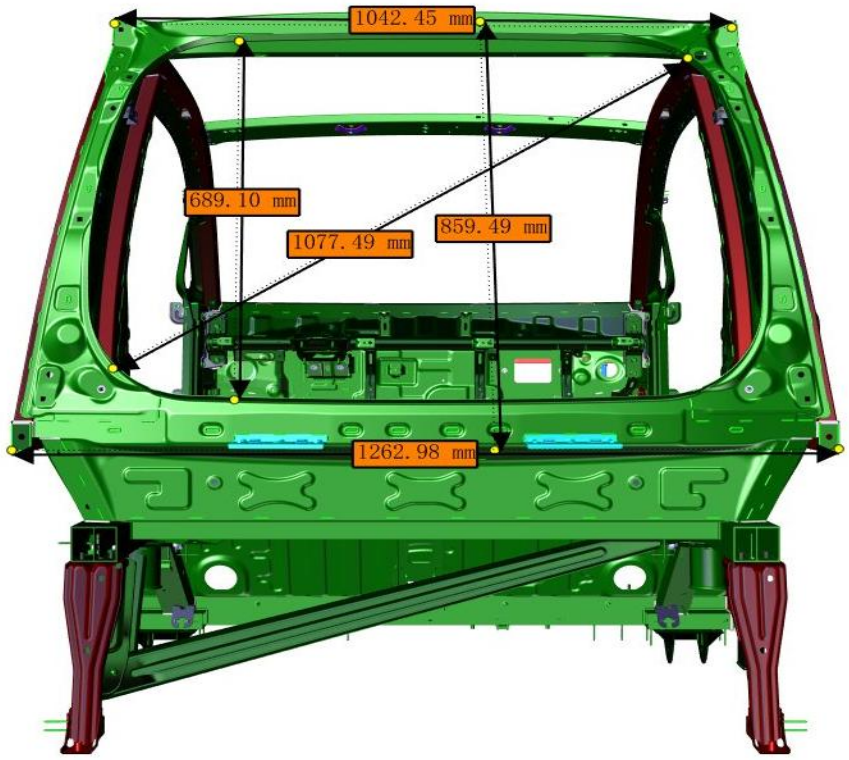
7.3.1 Front data of the vehicle body



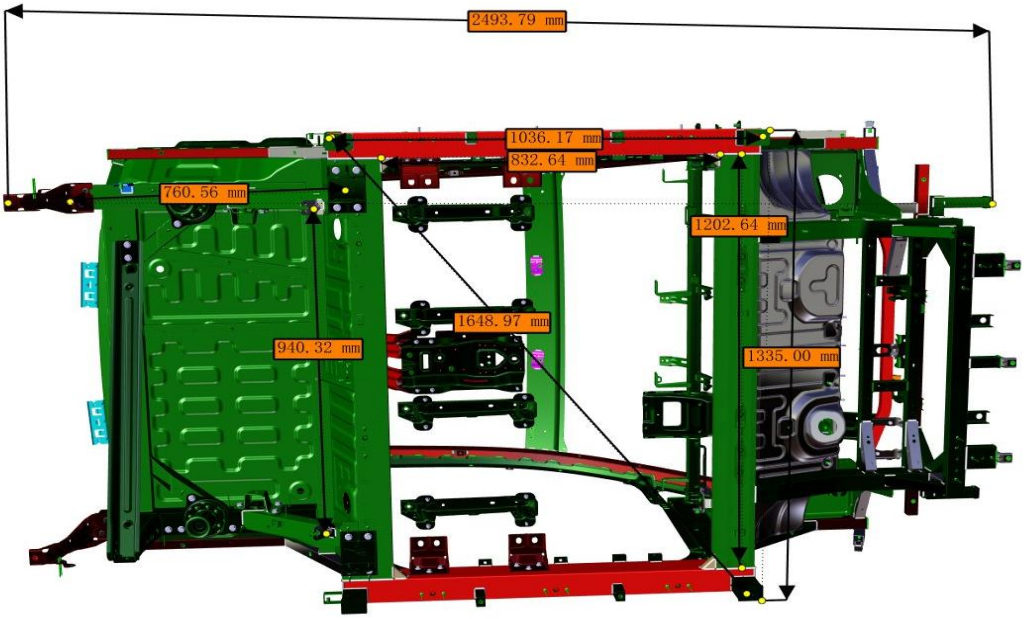
7.3.2 Data of the middle of the vehicle body



7.3.3 Rear vehicle data



7.3.4 Data on the bottom of the vehicle body

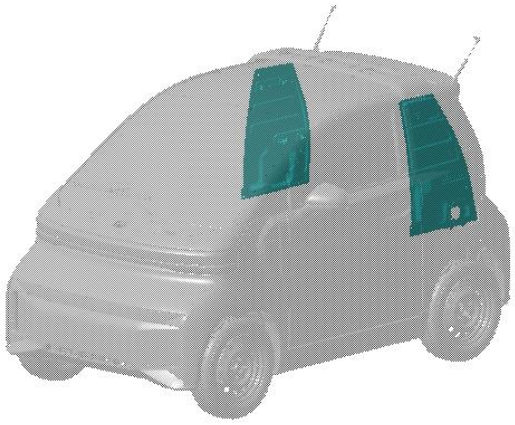


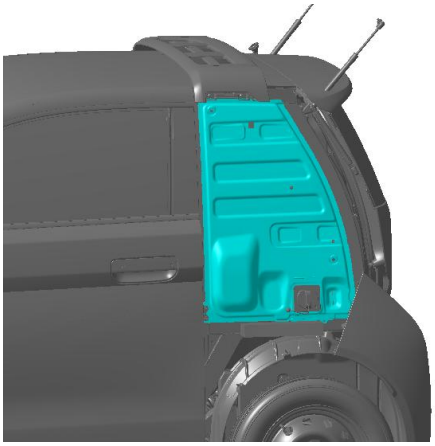
7.3.5 Top data of the vehicle body

8. Maintenance of body parts

8.1 Replace the outer panel at the rear of the side panel

8.1.1 Diagram of Maintenance location





8.1.2 Maintenance Preparation

8.1.2.1 Accessory preparation

Prepare the parts that need to be replaced.

8.1.2.2 Preparation of equipment and tools

When conducting maintenance, tools such as scrapers, hot air guns, pneumatic ring belt grinders, fiber wheel grinders, pliers, dust-blowing guns, stamping riveting guns, pneumatic weld point removal drills, sheet metal hammers, and chisels are needed.

8.1.2.3 Personal protective preparations

Take personal safety precautions as required and use labor protection equipment such as masks, protective glasses, earplugs and protective gloves in a standardized manner。

8.1.2.4 Vehicle fixation

Fix the vehicle on the body calibration platform, adjust the horizontal position of the vehicle body, and then carry out subsequent operations.

Note: The four anchoring fixtures must be kept at the same height.

8.1.2.5 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.1.3 Replacement Process

8.1.3.1 Disassemble the old parts

1. Remove the sealant: Use a hot air gun to heat and use a scraper to remove the sealant at the connection between the rear outer panel of the right side panel and the vehicle body. Then, use a glue removal and grinding machine to remove the sealant at the joint between the rear outer panel of the right side panel and the vehicle body.

Note: When removing glue and grinding, protective masks, protective glasses and earplugs must be worn. Violating this rule may cause harm to the respiratory system, eyes and hearing or occupational diseases.

2. Weld point removal: Use a ring belt grinding machine to grind the aluminum weld points at the connection position between the right rear outer panel and the vehicle body.

3. Separation of the rear outer plate of the right side enclosure: Use a digital display hot air gun to heat the bonding position of the structural adhesive. After heating is completed, use a chisel to wedge into the gap of the connecting plate, separate the structural adhesive and remove the rear outer plate of the right side enclosure.

Note: The temperature for heating structural adhesives must not exceed 180℃ to prevent the production of toxic gases at high temperatures, which could cause harm to the human respiratory system.

4. Cleaning and anti-corrosion: After the outer panel at the rear of the right side is removed, first use a hot air gun in combination with a scraper to remove any remaining structural adhesive on the vehicle body.

5. Disposal of used parts: Use a sheet metal hammer to level the connection area between the rear outer panel of the right side panel and the vehicle body, and use a black wheel grinding machine to grind the bonding area until the metal is exposed. Then, use a blowgun to remove dust and impurities

6. Then clean the surface with a cleaner.

8.1.3.2 New item Handling

1. Pre-installation of new parts: First, install the prepared new part of the rear outer panel of the right side panel onto the vehicle body. After measuring and adjusting the dimensions, fix it with clamps.

Note: The positioning dimension data of the rear outer panel assembly of the side panel can be found in the body data.

2. Based on the original body weld points, use a pneumatic drill to install a 10CM drill bit and drill all MIG plug weld holes on the new part.

3. Grinding treatment: Use a belt grinder to remove burrs from the drilled holes and grind the areas that need to be bonded until the metal is exposed. Clean the surface with a cleaner.

8.1.3.3 Installation of new parts

1. Apply structural adhesive: Use high-strength structural adhesive to squeeze the adhesive in a Z shape on the areas that need to be bonded, and then use a scraper to spread the structural adhesive evenly.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application.

2.Installation of new parts: Install the new part of the outer panel at the rear of the right side panel onto the vehicle body. After adjusting the dimensions, fix it with a fixed fixture.

Note: Body size inspection: Use measuring tools to recheck whether the data after maintenance is consistent with the original vehicle data.

3.Welding: Use MIG welding to weld the seam welding and plug hole welding at the connection part between the right rear outer panel and the vehicle body.

Note: Before welding, a test weld must be conducted using materials of the same material and thickness

4.Post-repair treatment: Use a scraper to remove the excessive structural adhesive that has overflowed.

5.Structural adhesive drying: Leaving the vehicle at room temperature for 48 hours can allow the structural adhesive to fully cure. Or use an infrared lamp to set the temperature to 80℃ and bake for 1 hour.

Note: Vehicles must not be moved during the drying process of structural adhesives.

6.Maintenance inspection: After the replacement of the outer panel at the rear of the right side is completed, use measuring tools to recheck the data after maintenance.

8.1.3.4 Anti-corrosion treatment

1. Apply sealant: After the structural adhesive dries, spray or brush the exposed metal with epoxy primer

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal

2. After the epoxy primer has dried, apply sealant to the joint where the outer panel of the right rear panel connects to the vehicle body for sealing. Only after the sealant has dried can it be handed over to the painting technician for construction.

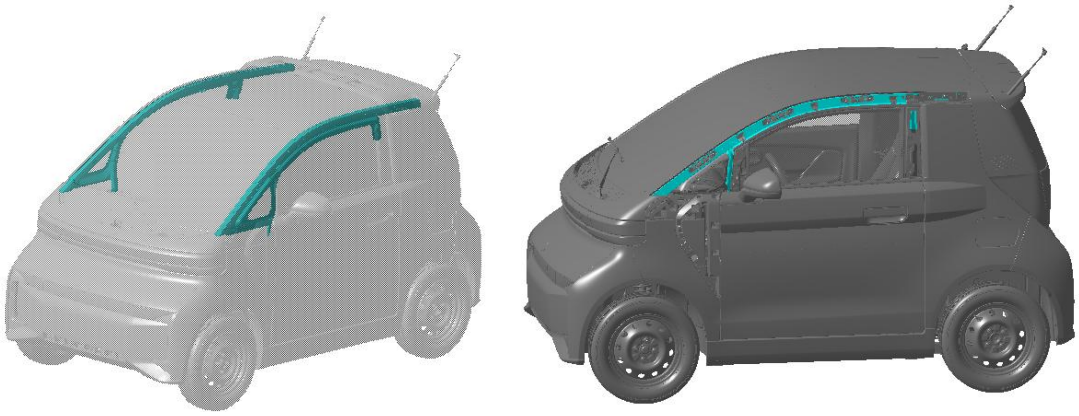
3. Anti-corrosion wax for cavities: Anti-corrosion wax for cavities can only be sprayed after the coating operation is completed and before the accessories are assembled.

8.1.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.2 Replace the upper beam

8.2.1 Diagram of maintenance location



8.2.2 Maintenance Preparation

8.2.2.1 Accessory preparation

Prepare the parts that need to be replaced.

8.2.2.2 Preparation of equipment and tools

When conducting maintenance, tools such as scrapers, hot air guns, pneumatic ring belt grinders, fiber wheel grinders, pliers, dust-blowing guns, stamping riveting guns, pneumatic weld point removal drills, and sheet metal hammers are needed.

8.2.2.3 Personal protective preparations

Take personal safety precautions as required and use labor protection equipment such as masks, protective glasses, earplugs and protective gloves in a standardized manner.

8.2.2.4 Vehicle fixation

Fix the vehicle on the body calibration platform, adjust the horizontal position of the vehicle body, and then carry out subsequent operations.

Note: The four anchoring fixtures must be kept at the same height

8.2.2.5 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9.When performing welding operations, the sparks and arcs generated can damage eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.3 Replacement Process

8.3.1 Disassemble the old parts

1. Remove the sealant: Use a hot air gun to heat and use a scraper to remove the sealant at the connection between the left upper beam and the body. Then, use a glue remover and grinder to remove the sealant at the joint between the left upper beam and the body.

Note:Personal protective gear must be worn throughout the entire maintenance process. Such as (protective masks, protective glasses, protective gloves, solvent gloves, protective earplugs, etc.).

2.Personal protective gear must be worn throughout the entire maintenance process. Such as (protective masks, protective glasses, protective gloves, solvent gloves, protective earplugs, etc.)

3. Use a riveting gun or drill bit to remove the stamping rivets at the connection part between the left upper beam and the vehicle body.

4.Use a pneumatic ring belt grinding machine to remove the aluminum weld points at the connection between the left upper beam and the vehicle body.

Note: When heating, the temperature of the heated plate must not exceed 180℃ to prevent the generation of toxic gases that could harm the human respiratory system.

5. After the left upper beam is removed, use a hot air gun to heat the remaining structural adhesive on the vehicle body and then use a scraper to remove the structural adhesive.

6. Use a ring band grinding machine to grind the solder joints and burrs.

7.Then use a sheet metal hammer to level the connection edges.

8. Use a fiber wheel grinding machine to grind the joint parts of the vehicle body panels until the metal is exposed.

9. Then use a blowgun to remove dust and impurities, and finally clean the surface with a cleaner.

8.3.2 New Item Handling

1. Install the new left upper beam onto the vehicle body and fix it at multiple points using clamps.

2. Install relevant accessories such as car doors, front and rear fenders, and check and adjust the body clearance.

3. After the vehicle body clearance is normal, remove the front door, front fender and other accessories

4. Mark the positions of MIG continuous welding and plug hole welding on the new part based on the original body weld points

Note: When making the plug welding holes, make sure the positions are accurate.

5. Use a pneumatic drill to install a suitable drill bit to drill out all the plug weld holes and rivet holes.

6. Remove the new part of the upper beam

7. Use a ring belt grinding machine to remove burrs around the plug welding holes on the new part

8.Then, use a fiber wheel to grind the connection part between the new part and the vehicle body until the metal is exposed, and then clean it with a cleaner.

8.3.3 Installation of new parts

1. Use high-strength structural adhesive to squeeze the adhesive in a Z shape at the connection area between the new left upper beam and the vehicle body (non-welded area), and then use a scraper to evenly spread the structural adhesive.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application.

2. Install the new left upper beam with structural adhesive onto the vehicle body and fix it at multiple points using clamps

3. Install all rivets. Use a riveting gun to press and rivet the rivets. After riveting is completed, use a scraper to remove the spilled structural adhesive.

4. Use the MIG aluminum welding machine to weld the seam welding and plug hole welding at the connection position between the new upper beam and the vehicle body.

Note: Before using the MIG aluminum welding machine for welding, a test weld must be conducted with aluminum plates of the same material to ensure that the welding machine is properly debugged before proceeding with the welding operation

5. Use a belt grinder to grind all the plug hole welding points at all positions. Note: Avoid over grinding.

Note: The weld bead of seam welding does not need to be ground

6.Install the front door, front fender and other related accessories, and check and adjust the clearance properly.

8.3.4 Anti-corrosion treatment

1. Apply sealant: After the structural adhesive dries, spray or brush the exposed metal with epoxy primer

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal

2. After the epoxy primer has dried, apply sealant to the joint where the upper beam connects to the vehicle body for sealing. Only after the sealant has dried can it be handed over to the painting technician for construction.

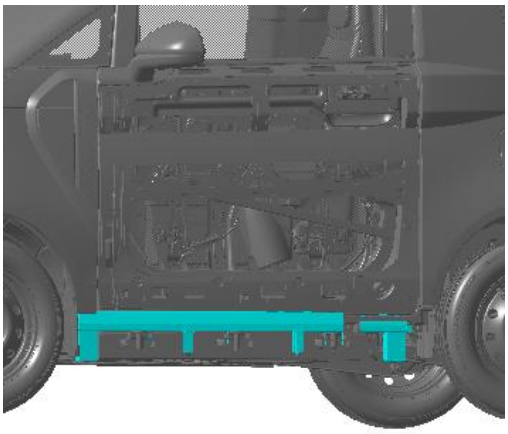
3. Anti-corrosion wax for cavities: Anti-corrosion wax for cavities can only be sprayed after the coating operation is completed and before the accessories are assembled.

8.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.4 Replace the lower beam

8.4.1 Diagram of Maintenance Location



8.4.2 Maintenance Preparation

8.4.2.1 Vehicle Fixation

Fix the vehicle on the body calibration platform, adjust the horizontal position of the vehicle body, and then carry out subsequent operations.

Note: The four anchoring fixtures must be kept at the same height.

8.4.2.2 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.4.3 Replacement Process

8.4.3.1 Disassemble the old parts

1. Remove the sealant: Use a hot air gun to heat and use a scraper to remove the sealant at the connection between the left lower beam and the body. Then, use a glue remover and grinder to remove the sealant at the joint between the lower beam and the body.

Note: Personal protective gear must be worn throughout the entire maintenance process. Such as (protective masks, protective glasses, protective gloves, solvent gloves, protective earplugs, etc.).

2.Use a riveting gun or drill bit to remove the stamping rivets at the connection part between the lower left beam and the vehicle body.

3.Use a pneumatic ring belt grinding machine to remove the aluminum weld points at the connection position between the left lower beam and the vehicle body.

4.After the lower left beam is removed, use a hot air gun to heat the remaining structural adhesive on the vehicle body and then use a scraper to remove the structural adhesive.

Note: When heating, the temperature of the heated plate must not exceed 180℃ to prevent the generation of toxic gases that could harm the human respiratory system.

5.Use a ring band grinding machine to grind the solder joints and burrs.

6.Then use a sheet metal hammer to level the connection edges.

7.Use a fiber wheel grinding machine to grind the joint parts of the vehicle body panels until the metal is exposed.

8.Then use a blowgun to remove dust and impurities, and then clean the surface with a cleaner.

8.4.3.2 New Item Handling

1. Install the new lower beam part onto the vehicle body and fix it at multiple points using clamps.

2. Install relevant accessories such as car doors, front and rear fenders, and check and adjust the body clearance.

3. After the vehicle body clearance is normal, remove the front door, front fender and other accessories

4. Mark the positions of MIG continuous welding and plug hole welding on the new part based on the original body weld points

Note: When making the plug welding holes, make sure the positions are accurate.

5. Use a pneumatic drill to install a suitable drill bit to drill out all the plug weld holes and rivet holes.

6. Remove the new part of the lower beam

7. Use a ring belt grinding machine to remove burrs around the plug welding holes on the new part

8.Then, use a fiber wheel to grind the connection part between the new part and the vehicle body until the metal is exposed, and then clean it with a cleaner.

8.4.3.3 Installation of new parts

1. Use high-strength structural adhesive to squeeze the adhesive in a Z shape at the connection area between the new left lower beam and the vehicle body (non-welded area), and then use a scraper to evenly spread the structural adhesive.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application

2. Install the new left lower beam with structural adhesive onto the vehicle body and fix it at multiple points using clamps

3. Install all rivets. Use a riveting gun to press and rivet the rivets. After riveting is completed, use a scraper to remove the spilled structural adhesive.

4. Use the MIG aluminum welding machine to weld the seam welding and plug hole welding at the connection position between the new left lower beam and the vehicle body.

Note: Before using the MIG aluminum welding machine for welding, a test weld must be conducted with aluminum plates of the same material to ensure that the welding machine is properly debugged before proceeding with the welding operation

5.Use a belt grinder to grind all the plug hole welding points at various positions, and be careful not to over-grind.

Note: The weld beads of seam welding do not need to be ground

6.Install the front door, front fender and other related accessories, and check and adjust the clearance properly.

8.4.3.4 Anti-corrosion treatment

1. Apply sealant: After the structural adhesive dries, spray or brush the exposed metal with epoxy primer

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal.

2. After the epoxy primer has dried, apply sealant to the joint where the lower beam connects to the vehicle body for sealing. Only after the sealant has dried can it be handed over to the painting technician for construction.

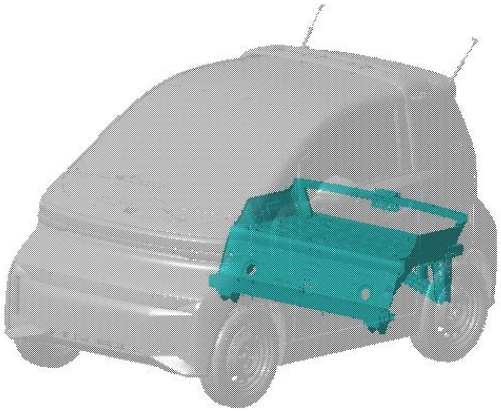
3.Cavity anti-corrosion wax: The application of space anti-corrosion wax must wait until the coating operation is completed and before the accessories are assembled before spraying the cavity anti-corrosion wax.

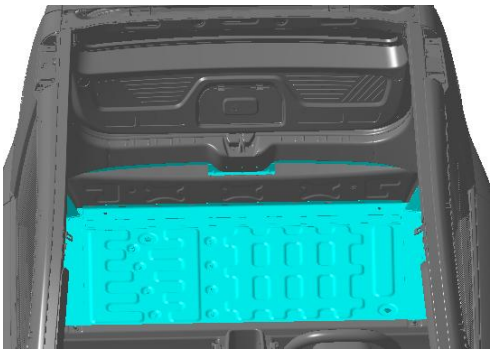
8.4.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.5 Replace the rear floor assembly

8.5.1 Diagram of Maintenance location





8.5.2 Maintenance Preparation

8.5.2.1 Vehicle fixation

Fix the vehicle on the body calibration platform, adjust the horizontal position of the vehicle body, and then c arry out subsequent operations.

Note: The four anchoring fixtures must be kept at the same height.

8.5.2.2 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.5.3 Replacement Process

8.5.3.1 Disassemble the old parts

1. Refer to the rear panel assembly replacement process to remove the rear panel assembly

2. Remove the sealant: Use a hot air gun to heat and use a scraper to remove the sealant at the connection between the rear floor assembly and the body. Then, use a glue remover and grinder to remove the sealant at the joint between the rear floor assembly and the body.

Note: Personal protective gear must be worn throughout the entire maintenance process. Such as (protective masks, protective glasses, protective gloves, solvent gloves, protective earplugs, etc.)

3. Use a pneumatic ring belt grinding machine to remove the aluminum weld points at the connection between the rear floor assembly and the vehicle body

4. Use a hot air gun to heat the structural adhesive at the connection point between the rear floor assembly and the vehicle body. After heating is complete, use a chisel to wedge into the gap of the connection plate, separate the structural adhesive and remove the rear floor assembly.

Note: When heating, the temperature of the heated plate must not exceed 180℃ to prevent the generation of toxic gases that could harm the human respiratory system

5. After the rear floor assembly is removed, use a hot air gun to heat the remaining structural adhesive on the vehicle body and then use a scraper to remove the structural adhesive.

6. Use a ring band grinding machine to grind the solder joints and burrs.

7. Then use a sheet metal hammer to level the connection edges.

8. Use a fiber wheel grinding machine to grind the joint parts of the vehicle body panels to expose the metal.

9.Then use a blowgun to remove dust and impurities, and then clean the surface with a cleaner

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8.5.3.2 New Item Handling

1.Install the new components of the rear floor assembly onto the vehicle body and fix them at multiple points using clamps.

2. After installing the trunk lid and related accessories, check and adjust the vehicle clearance.

3.After the vehicle body clearance is normal, remove the trunk lid and other accessories.

4. Based on the original body weld points, use a pneumatic drill, install the appropriate drill bit, and drill all the plug weld holes and rivet holes on the new part.

Note: When making plug welding holes and rivet holes, it is necessary to ensure that the positions are accurate.

5. Remove the new components of the rear floor assembly

6. Use a ring belt grinding machine to remove burrs around the plug welding holes and rivet holes on the new parts

7. Then, use a fiber wheel to grind the connection part between the new part and the vehicle body until the metal is exposed, and then clean it with a cleaner.

8.5.3.3 Installation of new parts

1. Use high-strength structural adhesive to squeeze the adhesive in a Z shape at the connection area between the new rear floor assembly and the vehicle body (non-welded area), and then use a scraper to spread the structural adhesive evenly.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application.

2. Install the new rear floor assembly with the structural adhesive applied onto the vehicle body, fix the rear floor assembly with the bolts removed from the original vehicle, and then use clamps for multi-point fixation. Use a scraper to scrape off the spilled structural adhesive.

3. Install all the rivets and use a stamping riveting gun to rivet all the rivets

4. Use a scraper to scrape off the spilled structural adhesive

5. Use the MIG aluminum welding machine to weld the plug hole welding and seam welding at the connection position between the new floor assembly and the vehicle body.

Note: Before using the MIG aluminum welding machine for welding, a test weld must be conducted with aluminum plates of the same material to ensure that the welding machine is properly debugged before proceeding with the welding operation

6. Install the rear panel assembly in accordance with the replacement process of the rear panel assembly

7. Use a belt grinder to grind all the solder joints. Note that over grinding should be avoided.

8. Install the rear trunk lid, check and adjust the gap between the rear trunk lid and the rear panel assembly.

9. After debugging to the best state, remove the trunk lid and other accessories.

8.5.3.4 Anti-corrosion treatment

1. Apply sealant: After the structural adhesive dries, spray or brush the exposed metal with epoxy primer

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal

2. After the epoxy primer has dried, apply sealant to the joints where the rear floor assembly, rear panel assembly and the vehicle body connect for sealing. The sealant can only be handed over to the painting technician for application after it has dried.

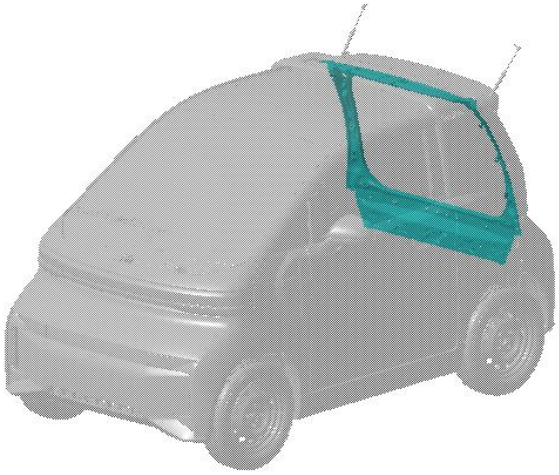
3. Anti-corrosion wax for cavities: Anti-corrosion wax for cavities can only be sprayed after the coating operation is completed and before the accessories are assembled.

8.5.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.6 Replace the rear panel assembly

8.6.1 Diagram of Maintenance location



8.6.2 Maintenance Preparations

8.6.2.1 Vehicle fixation

Fix the vehicle on the body calibration platform, adjust the horizontal position of the vehicle body, and then carry out subsequent operations.

Note: The four anchoring fixtures must be kept at the same height.

8.6.2.2 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.6.3 Replacement Process

8.6.3.1 Disassemble the old parts

1. Remove the sealant: Use a hot air gun to heat and use a scraper to remove the sealant at the connection between the rear panel assembly and the body. Then, use a glue remover and grinder to remove the sealant at the joint between the rear panel assembly and the body.

Note: Personal protective equipment must be worn throughout the entire maintenance process, such as protective masks, protective glasses, protective gloves, solvent gloves, protective earplugs, etc.

2. Use a pneumatic ring belt grinding machine to remove the aluminum weld points at the connection between the rear panel and the vehicle body.

3. Use a hot air gun to heat the structural adhesive at the connection part between the rear panel assembly and the body. After heating is completed, use a chisel to wedge into the gap of the connection plate, separate the structural adhesive and remove the rear panel assembly.

Note: When heating, the temperature of the heated plate must not exceed 180℃ to prevent the generation of toxic gases that could harm the human respiratory system.

4. After the rear panel assembly is removed, use a hot air gun to heat the remaining structural adhesive on the vehicle body and then use a scraper to remove the structural adhesive.

5. Use a ring band grinding machine to grind the solder joints and burrs.

6. Then use a sheet metal hammer to level the connection edges.

7. Use a fiber wheel grinding machine to grind the joint parts of the vehicle body panels to expose the metal.

8. Then use a blowgun to remove dust and impurities, and finally clean the surface with a cleaner.

8.6.3.2 New Item Handling

1.Install the new rear panel assembly onto the vehicle body and fix it at multiple points using clamps.

2. After installing the trunk lid or related accessories, check and adjust the vehicle clearance.
After the vehicle body clearance is normal, remove the trunk lid and other accessories.

3.After the vehicle body clearance is normal, remove the trunk lid and other accessories

4. Drill all the plug weld holes on the new part based on the original body weld points.

Note: When making the plug welding holes, make sure the positions are accurate.

5. Remove the new part of the rear panel assembly.

6. Use a ring belt grinding machine to remove burrs around the plug welding holes on the new part.

7. Then, use a fiber wheel to grind the connection part between the new part and the vehicle body until the metal is exposed, and then clean it with a cleaner.

8.6.3.3 Installation of new parts

1. Use high-strength structural adhesive to squeeze the adhesive in a Z-shaped pattern at the connection part of the new body and rear panel assembly (non-welded area), and then use a scraper to spread the structural adhesive evenly.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application.

2. Install the new rear panel assembly with structural adhesive applied onto the vehicle body, and then fix the rear panel with the bolts removed from the original vehicle. Then, use the pliers to fix at multiple points and scrape off the spilled structural adhesive with a scraper.

3. Use the MIG aluminum welding machine to weld the plug holes at the connection position between the new rear panel assembly and the vehicle body.

Note: Before using the MIG aluminum welding machine for welding, a test weld must be conducted with aluminum plates of the same material to ensure that the welding machine is properly debugged before proceeding with the welding operation

4. Use a belt grinder to grind all the solder joints at all positions. Note: Avoid excessive grinding.

5. Install the rear trunk lid, check and adjust the gap between the rear trunk lid and the rear panel assembly. After debugging to the best state, remove the trunk lid.

34.5.3.4 Anti-corrosion treatment

1. Apply sealant: After the structural adhesive dries, spray or brush the exposed metal with epoxy primer

2. After the epoxy primer has dried, apply sealant to the joint where the rear panel assembly connects to the vehicle body for sealing. The sealant can only be handed over to the painting technician for application after it has dried.

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal.

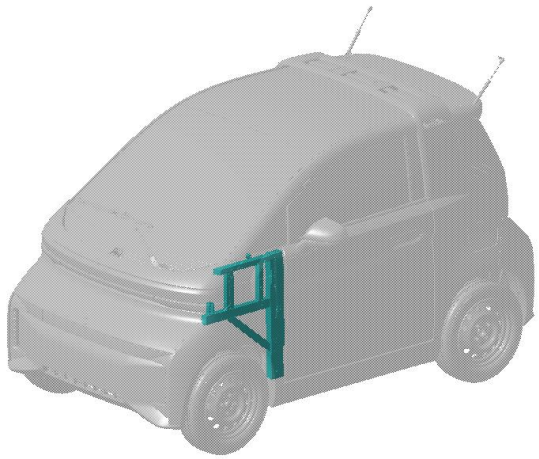
3.Anti-corrosion wax for cavities: Anti-corrosion wax for cavities can only be sprayed after the coating operation is completed and before the accessories are assembled

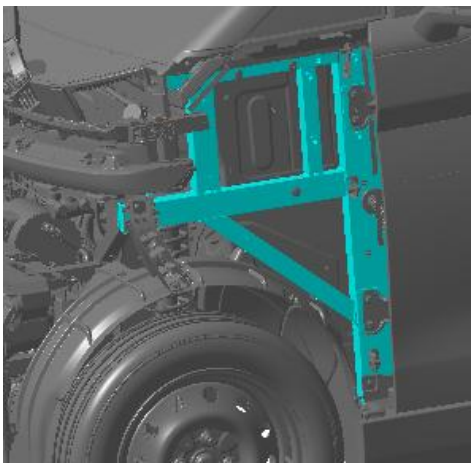
.34.5.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.7 Replace the left A-pillar

8.7.1 Diagram of Maintenance Location





8.7.2 Maintenance Preparation

8.7.2.1 Vehicle fixation

Fix the vehicle on the body calibration platform, adjust the horizontal position of the vehicle body, and then carry out subsequent operations.

Note: The four anchoring fixtures must be kept at the same height.

8.7.2.2 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.7.3 Replacement process

8.7.3.1 Disassemble the old parts

1. Remove the sealant: Use A hot air gun to heat and use A scraper to remove the sealant at the connection between the A-pillar and the body. Then, use a glue remover and grinder to remove the sealant at the joint between the A-pillar and the body.

Note: Personal protective equipment must be worn throughout the entire maintenance process, such as protective masks, protective glasses, protective gloves, solvent gloves, protective earplugs, etc.

2. Use A pneumatic ring belt grinding machine to remove the aluminum welding points at the connection points between the A-pillar and the vehicle body (such as the lower beam and the roof longitudinal beam).

3. Use A hot air gun to heat the structural adhesive at the connection between the A-pillar and the body. After heating is complete, use A chisel to wedge into the gap of the connecting plate, separate the structural adhesive and remove the A-pillar.

Note: When heating, the temperature of the heated plate must not exceed 180℃ to prevent the generation of toxic gases that could harm the human respiratory system.

4. After the A-pillar is removed, use A hot air gun to heat the remaining structural adhesive on the vehicle body and then use a scraper to remove the structural adhesive.

5. Use a ring band grinding machine to grind the solder joints and burrs.

6. Then use a sheet metal hammer to level the connection edges.

7. Use a fiber wheel grinding machine to grind the joint parts of the vehicle body panels to expose the metal.

8. Then use a blowgun to remove dust and impurities, and finally clean the surface with a cleaner.

8.7.3.2 New Item Handling

1. Install the new A-pillar onto the vehicle body and fix it at multiple points using clamps.

2. Install the front door, front fender and other related accessories, and check and adjust the body clearance.

3. After the vehicle body clearance is normal, remove the front door, front fender and other accessories

4. Mark the positions of MIG continuous welding and plug hole welding on the new part based on the original body weld points

Note: When making the plug welding holes, make sure the positions are accurate.

5. Use a pneumatic drill to drill all the plug weld holes.

6. Remove the new component of the A-pillar

7. Use a ring belt grinding machine to remove burrs around the plug welding holes on the new part

8. Then, use a fiber wheel to grind the connection part between the new part and the vehicle body until the metal is exposed, and then clean it with a cleaner.

8.7.3.3 Installation of new parts

1. Use high-strength structural adhesive to squeeze the adhesive in A Z shape at the connection area between the A-pillar and the vehicle body (non-welded area), and then use a scraper to spread the structural adhesive evenly.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application.

2. Install the new A-pillar with the structural adhesive applied onto the vehicle body, and fix it at multiple points using clamps. Use A scraper to remove any excess structural adhesive.

3. Use the MIG aluminum welding machine to weld the seam welding and plug hole welding at the connection position between the new A-pillar and the vehicle body (lower beam, roof longitudinal beam).

Note: Before using the MIG aluminum welding machine for welding, a test weld must be conducted with aluminum plates of the same material to ensure that the welding machine is properly debugged before proceeding with the welding operation

4. Use a belt grinder to grind all the plug hole welding points at all positions.

Note: Avoid excessive grinding. The weld beads of seam welding do not need to be ground

5.Install the front door, front fender and other related accessories, and check and adjust the clearance properly.

8.7.3.4 Anti-corrosion treatment

1. Apply sealant: After the structural adhesive dries, spray or brush the exposed metal with epoxy primer

2. After the epoxy primer has dried, apply sealant to the joint where the A-pillar connects to the vehicle body for sealing. The sealant can only be handed over to the painting technician for application after it has dried.

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal.

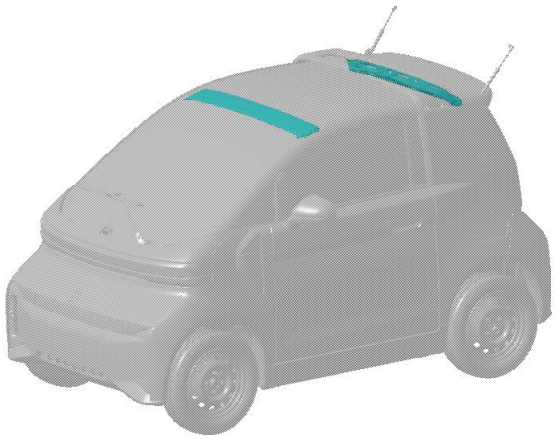
3.Anti-corrosion wax for cavities: Anti-corrosion wax for cavities can only be sprayed after the coating operation is completed and before the accessories are assembled.

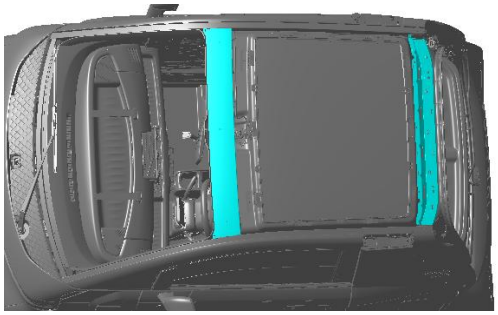
8.7.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.8 Replace the front and rear beam assemblies of the top cover

8.8.1 Diagram of Maintenance location





8.8.2 Maintenance Preparations

8.8.2.1 Accessory preparation

Prepare the parts that need to be replaced.

.8.8.2.2 Prep8aration of equipment and tools

When conducting maintenance, tools such as scrapers, hot air guns, pneumatic ring belt grinders, fiber wheel grinders, pliers, dust-blowing guns, stamping riveting guns, pneumatic weld point removal drills, and sheet metal hammers are needed.

8.8.2.3 Personal protective preparations

Take personal safety precautions as required and use labor protection equipment such as masks, protective glasses, earplugs and protective gloves in a standardized manner.

8.8.2.4 Vehicle fixation

Fix the vehicle on the body calibration platform, adjust the horizontal position of the vehicle body, and then carry out subsequent operations.

Note: The four anchoring fixtures must be kept at the same height.

8.8.2.5 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.8.3 Replacement process

8.8.3.1 Disassemble the old parts

1. Remove the sealant: Use a glue remover and grinder to remove the anti-rust paint from the joints between the front and rear crossbeam assemblies of the roof and the body.

Note:Personal protective gear must be worn throughout the entire maintenance process. Such as (protective masks, protective glasses, protective gloves, solvent gloves, protective earplugs, etc.)

2.Use a pneumatic ring belt grinding machine to remove the aluminum weld points at the connection positions between the front and rear crossbeam assemblies of the roof cover and the vehicle body4. Use a pneumatic ring belt grinding machine to remove the aluminum welding points at the connection positions between the front and rear crossbeam assemblies of the roof cover and the vehicle body

3.After the front and rear crossbeam assemblies of the top cover are removed, use a ring belt grinding machine to grind the weld points and burrs.

4.Then use a sheet metal hammer to level the connection edges.

5.Use a fiber wheel grinding machine to grind the joint parts of the vehicle body panels to expose the metal.

6.Then use a blowgun to remove dust and impurities, and then clean the surface with a cleaner.

8.8.3.2 New Item Handling

1. Install the new assembly of the front and rear crossbeams of the top cover onto the vehicle body and fix it at multiple points using clamps.

2. Mark the positions of MIG continuous welding and plug hole welding on the new part based on the original body weld points

Note: When making the plug welding holes, make sure the positions are accurate.

3. Remove the new parts of the front and rear crossbeam assemblies of the top cover

4. Use a ring belt grinding machine to remove burrs around the plug welding holes on the new part

5. Then, use a fiber wheel to grind the connection part between the new part and the vehicle body until the metal is exposed, and then clean it with a cleaner

8.8.3.3 Installation of new parts

1. Install the new assembly of the front and rear crossbeams of the top cover onto the vehicle body and fix it at multiple points using clamps

2. Use the MIG aluminum welding machine to weld the seam welding at the connection position between the new parts of the front and rear crossbeams of the roof cover and the vehicle body

Note: Before using the MIG aluminum welding machine for welding, it is necessary to conduct a test weld with aluminum plates of the same material to ensure that the welding machine is properly debugged before proceeding with the welding operation

8.8.3.4 Anti-corrosion treatment

1. Apply sealant: After the structural adhesive dries, spray or brush the exposed metal with epoxy primer

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal

2. After the epoxy primer has dried, apply sealant to the joints where the rear floor assembly, rear panel assembly and the vehicle body connect for sealing. The sealant can only be handed over to the painting technician for application after it has dried.

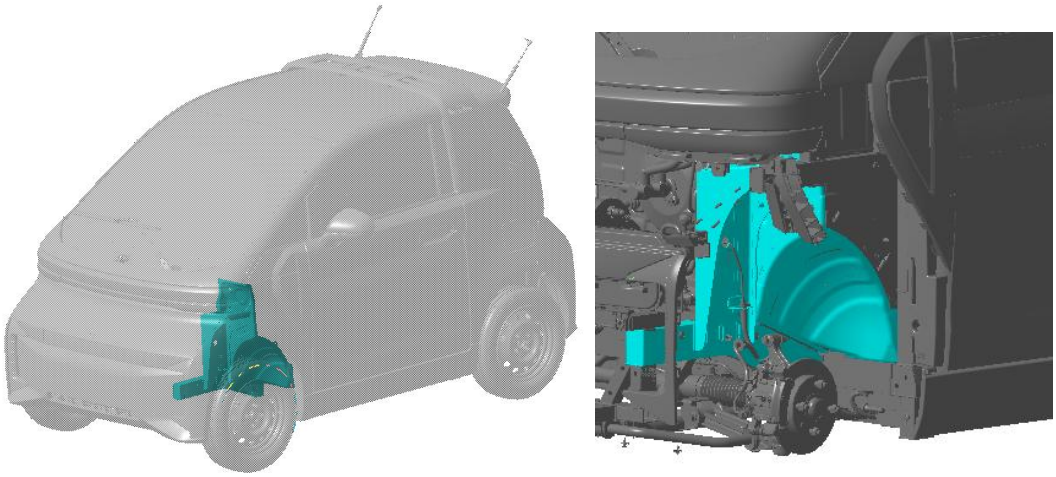
3. Anti-corrosion wax for cavities: Anti-corrosion wax for cavities can only be sprayed after the coating operation is completed and before the accessories are assembled.

8.8.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.9 **Replace the left front longitudinal beam assembly**

8.9.1 Diagram of Maintenance location



8.9.2 Maintenance Preparation

8.9.2.1 Vehicle fixation

Fix the vehicle to the calibration platform and check if the height at which the vehicle body and the calibration platform are anchored is consistent. Measure the values from the base of the left and right installation brackets to the outer edge with a ruler to determine if the vehicle center is aligned. Then, lock all the anchoring clamps.

Note: The four anchoring fixtures must be kept at the same height.

8.9.2.2 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.9.3 Replacement Process

8.9.3.1 Disassemble the old parts

1. Remove the sealant: Use a glue remover and grinder to remove the sealant at the joint between the left front longitudinal beam assembly and the vehicle body.

Note: When removing glue and grinding, protective masks, protective glasses and earplugs must be worn. Violating this rule may cause harm to the respiratory system, eyes and hearing or occupational diseases.

2. Weld point removal: Use a ring belt grinding machine to grind the weld points at the connection position between the left front longitudinal beam and the front wheel cover.

3. Use a center punch to remove the core of the rivet, use a pneumatic drill to drill out the rivet, and then use a punch to remove the rivet.

4. Separation of the left front longitudinal beam assembly: Use a digital display hot air gun to heat the bonding position of the structural adhesive. After heating is completed, use a chisel to wedge into the gap of the connecting plate, separate the structural adhesive and remove the left front longitudinal beam assembly.

Note: The temperature for heating structural adhesives must not exceed 180℃ to prevent the production of toxic gases at high temperatures, which could cause harm to the human respiratory system.

5. Cleaning and anti-corrosion: After the left front longitudinal beam assembly is removed, first use a hot air gun in combination with a scraper to remove the remaining structural adhesive on the vehicle body.

6. Used parts disposal: Use a sheet metal hammer to level the connection area between the left front longitudinal beam assembly and the vehicle body, and use a black wheel grinding machine to grind the bonding area until the metal is exposed. Then, use a blowgun to remove dust and impurities

7. Then clean the surface with a cleaner.

8.9.3.2 New Item Handling

1. Pre-installation of new parts: First, install the prepared new left front longitudinal beam assembly onto the vehicle body. After measuring and adjusting the dimensions, fix it with a positioning mold and a clamp.

Note: The positioning dimension data of the left front longitudinal beam assembly can be found in the vehicle body data.

2. Rivet hole treatment: Use a pneumatic drill with a 6.5mm drill bit to drill out the blind rivet holes connecting the front plate of the left front wheel cover with the inner plate of the left front wheel cover and the vehicle body.

3.FDS screw hole treatment: Use a pneumatic drill with a 5mm drill bit to drill out the FDS bolt holes connecting the left front longitudinal beam assembly with the front panel of the left front wheel cover, the inner panel of the left front wheel cover, and the vehicle body.

4. Grinding treatment: Use a belt grinder to remove burrs from the drilled holes and grind the areas that need to be bonded until the metal is exposed. Clean the surface with a cleaner.

8.9.3.3 Installation of new parts

1. Apply structural adhesive: Use high-strength structural adhesive to squeeze the adhesive in a Z shape on the areas that need to be bonded, and then use a scraper to spread the structural adhesive evenly.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application.

2. Installation of new parts: Install the new part of the left front longitudinal beam assembly onto the vehicle body. After adjusting the dimensions, fix it with a fixed fixture and insert all the blind rivets.

Note: Body size inspection: Use measuring tools to recheck whether the data after maintenance is consistent with the original vehicle data.

3. Connection and installation: Install the bolts and brackets connecting the left front longitudinal beam assembly to the left forearm beam and tighten them.

Note: For installation and adjustment standards, please refer to the vehicle body surface difference clearance description.

4. Riveting: Use a riveting gun to rivet the blind rivets connecting the left front longitudinal beam assembly with the vehicle body and the inner plate of the left front wheel cover.

5.Pay special Note to sealing the position of the rivets. The periphery of the rivets, especially the center of the broken core of the blind rivets, should be noted

6.Post-repair treatment: Use a scraper to remove excessive structural adhesive that has overflowed

7.Drying of structural adhesive: Leaving the vehicle at room temperature for 48 hours can allow the structural adhesive to fully cure. Or use an infrared lamp to set the temperature to 80℃ and bake for 1 hour.

Note: Vehicles must not be moved during the drying process of structural adhesives.

8.Maintenance Inspection: After the replacement of the left front longitudinal beam assembly is completed, use measuring tools to recheck the data after maintenance. Install and adjust the gap size, edge height and surface smoothness of the front accessories.

9.Crossbeam positioning: According to the technical size data, install the front crossbeam and fix it with a fixed fixture

10. Welding: After the MIG welding machine is properly debugged, use the MIG welding technology to weld the front crossbeam.

Note: Before welding, a test weld must be conducted using materials of the same material and thickness

8.9.3.4 Anti-corrosion treatment

1. Surface anti-corrosion: After the structural adhesive dries, spray or brush epoxy primer on the exposed metal surface

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal.

2. Application of sealant: After the epoxy primer has dried, apply sealant to the joints between the left front longitudinal beam assembly and the vehicle body, the front panel of the left front wheel arch, and the inner panel of the left front wheel arch.

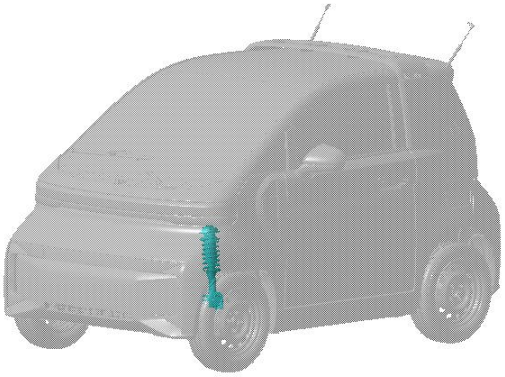
3. Cavity anti-corrosion wax: The cavity anti-corrosion wax can only be sprayed after the painting work is completed and before the accessories are assembled.

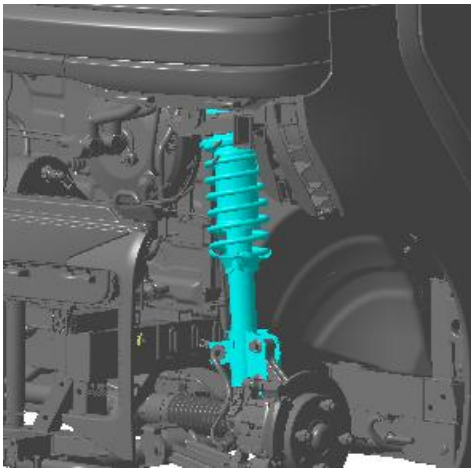
8.9.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

8.10 Replace the left front shock absorber seat

8.10.1 Diagram of Maintenance location





8.10.2 Maintenance Preparation

8.10.2.1 Vehicle fixation

Fix the vehicle to the calibration platform and check if the height at which the vehicle body and the calibration platform are anchored is consistent. Measure the values from the base of the left and right installation brackets to the outer edge with a ruler to determine if the vehicle center is aligned. Then, lock all the anchoring clamps.

Note: The four anchoring fixtures must be kept at the same height.

8.10.2.2 Maintenance Precautions

1.Please take personal safety precautions as required and use labor protection equipment properly, such as masks, protective glasses, earplugs, protective gloves, etc.

2.Before performing any welding operations on the vehicle, the negative terminal of the car battery must be disconnected.

3. During a vehicle collision, there is a potential risk of leakage and short circuit in the power battery pack. Before welding and repairing the vehicle body, please be sure to remove the high-voltage maintenance switch and disconnect the high-voltage system.

4. Please wrap the removed high-voltage wiring harness with dry cotton cloth and secure it safely.

5. Please use the calibration platform and maintenance equipment certified by the manufacturer.

6. The aluminum alloy maintenance workstation should be well-ventilated and equipped with explosion-proof dust collection devices.

7.When repairing aluminum alloy parts, the striking surface of the sheet metal hammer must be smooth and undamaged. Sheet metal hammers with damaged striking surfaces must not be used for aluminum alloy repair operations.

8. Before welding operations, it is essential to use fire blankets to effectively protect the non-maintenance areas of the vehicle to prevent damage caused by sparks generated during welding.

9. During welding operations, the sparks and arcs generated can damage the eyes and skin. Please take personal protective measures before welding and use safety gear such as welding helmets and gloves correctly.

8.10.3 Replacement Process

8.10.3.1 Disassemble the old parts

1. Remove sealant: Use a sealant remover and grinder to remove the sealant at the joints between the front shock absorber seat and the front longitudinal beam as well as the vehicle body.

Note: When removing glue and grinding, protective masks, protective glasses and earplugs must be worn. Violating this rule may cause harm to the respiratory system, eyes and hearing or occupational diseases.

2. Weld point removal: Use A ring band grinding machine to grind the weld points at the connection positions between the front shock absorber seat and the left front longitudinal beam, A-pillar, etc.

Note: When grinding, be careful not to over grind non-replacement parts

3. Use a center punch to remove the core of the rivet, use a pneumatic drill to drill out the rivet, and then use a punch to remove the rivet.

4. Separation of the front shock absorber seat: Use a digital hot air gun to heat the bonding position of the structural adhesive. After heating is completed, use a chisel to wedge into the gap of the connecting plate, separate the structural adhesive and remove the left front shock absorber seat.

Note: The temperature for heating structural adhesives must not exceed 180℃ to prevent the production of toxic gases at high temperatures, which could cause harm to the human respiratory system.

5. Cleaning and anti-corrosion: After the current shock absorber seat is removed, first use a hot air gun in combination with a scraper to remove the remaining structural adhesive on the vehicle body.

6. Used parts disposal: Use a sheet metal hammer to level the connection area between the front shock absorber seat and the vehicle body, and use a black wheel grinding machine to grind the bonding area until the metal is exposed. Then, use a blowgun to remove dust and impurities

7. Then clean the surface with a cleaner.

8.10.3.2 New Item Handling

1. Pre-installation of new parts: First, install the prepared new front shock absorber parts onto the vehicle body, measure and adjust the dimensions, and then fix them with positioning clamps.

Note: The positioning size data of the front shock absorber seat can be found in the vehicle body data.

2. Rivet hole treatment: Use a pneumatic drill with a 6.5mm drill bit to drill out the blind rivet holes connecting the front shock absorber seat and the vehicle body.

3. Weld bead positioning: Based on the weld bead positions on the old parts, confirm the seam welding and plug hole welding positions that need to be welded

4. Fabrication of plug welding holes: At the positions where plug welding is required, install a 10mm drill bit with a pneumatic drill to fabricate the plug welding holes, and then remove the new part of the front shock absorber seat

5. Grinding treatment: Use a belt grinding machine to grind off the burrs from the drilled holes, and grind the area where the front shock absorber seat needs to be bonded to the vehicle body to bare metal. Clean the surface with a cleaner.

8.10.3.3 Installation of new parts

1. Apply structural adhesive: Use high-strength structural adhesive to squeeze the adhesive in a Z shape on the areas that need to be bonded, and then use a scraper to spread the structural adhesive evenly.

Note: Please wear solvent-resistant gloves when applying. To prevent uneven mixing of structural adhesives, 5-10cm should be extruded first and then applied. Installation must be completed within 60 minutes after application.

2. Installation of new parts: Install the new part of the left front shock absorber onto the vehicle body. After adjusting the dimensions, fix it with a fixed fixture and insert all the blind rivets.

Note: When checking the body dimensions, use measuring tools to recheck whether the data after maintenance is consistent with the original vehicle data.

3. Connection and installation: Install the bolts and brackets connecting the new shock absorber seat to the front longitudinal beam, A-column, etc., and tighten them.

4. Riveting: Use a riveting gun to rivet the blind rivets connecting the new front shock absorber to the vehicle body and the front longitudinal beam.

5.Pay special Note to sealing the position of the rivets. The periphery of the rivets, especially the center of the broken core of the blind rivets, should be noted

6.Welding: Use the MIG aluminum welding machine to weld the seam welding and plug hole welding at the connection position between the new front shock absorber and the vehicle body.

Note: Before using the MIG aluminum welding machine for welding, a test weld must be conducted with aluminum plates of the same material to ensure that the welding machine is properly debugged before proceeding with the welding operation

7. Post-repair treatment: Use a scraper to remove excessive structural adhesive that has overflowed

8. Drying of structural adhesive: Leaving the vehicle at room temperature for 48 hours can allow the structural adhesive to fully cure. Or use an infrared lamp to set the temperature to 80℃ and bake for 1 hour.

Note: Vehicles must not be moved during the drying process of structural adhesives.

9. Maintenance inspection: After the front shock absorber seat is replaced, use measuring tools to recheck the data after maintenance. Install and adjust the gap size, edge height and surface smoothness of the front accessories.

10. Crossbeam positioning: According to the technical size data, install the front crossbeam and fix it with a fixed fixture

11. Welding: After the MIG welding machine is properly debugged, use the MIG welding technology to weld the front crossbeam

Note: Before welding, a test weld must be conducted using materials of the same material and thickness

8.10.3.4 Anti-corrosion treatment

1. Surface anti-corrosion: After the structural adhesive dries, spray or brush epoxy primer on the exposed metal surface

Note: It must be applied on a completely dry epoxy primer. It is strictly prohibited to apply sealant on exposed metal.

2. Apply sealant: After the epoxy primer has dried, apply sealant to the joints between the front shock absorber seat and the left front longitudinal beam as well as the vehicle body.

3. Cavity anti-corrosion wax: Cavity anti-corrosion wax can only be sprayed after the coating operation is completed and before the accessories are assembled.

8.10.3.5 Quality Inspection

For the vehicle body review data, please refer to the vehicle body dimensions.

9. Paint

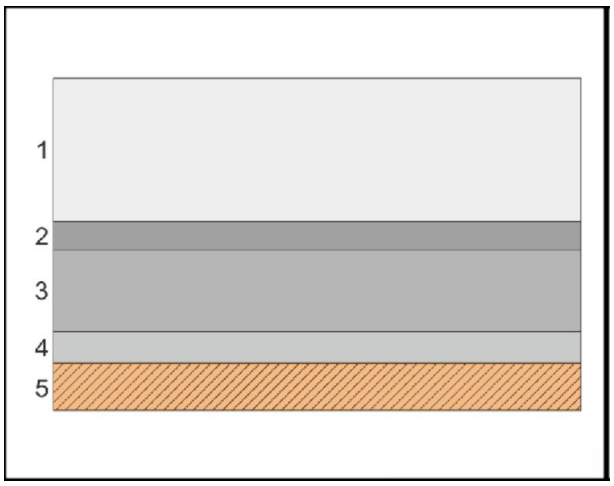
9.1 Overview

9.1.1 Paint

Paint is a mixed liquid that can be applied to various substrates. After drying, it forms a solid paint film, which protects the substrate and beautifies the appearance.

The requirement for spraying paint is to restore the repaired area to its original appearance. During the repair process, it is necessary to strictly follow the spray painting process stipulated by the manufacturer.

9.1.2 Paint coating and its function



a. Layer 1: Transparent paint (transparent outer coating)
b. Layer 2: Colored paint
c. Layer 3: Intermediate coat
d. Layer 4: Electrophoretic primer
e. Layer 5: Body sheet metal parts

❖The main functions of transparent paint:
a. It contains UV-resistant materials that can resist ultraviolet rays in sunlight.
b. Resist the corrosion of the paint surface caused by environmental dust (acid rain).
c. Make the paint surface wear-resistant.
d. Endow the paint surface with better luster.

❖The main functions of colored paint:
a. Add colors.
b. Endow with luster.

❖The main function of the intermediate coat paint:
a. Filling property.
b. Isolation/Sealing property.
c. Accent color paint.

❖The main functions of electrophoretic primer:
a. Rust prevention.
b. Enhance adhesion.
c. Enhance the limited fillability.

9.2 Car paint surface maintenance

9.2.1 Daily maintenance of car paint surfaces

When performing daily maintenance on the car's paint surface, please follow the following principles:

1. During vehicle maintenance and repair, be careful not to touch the car body's paint surface with dirty hands stained with oil or wipe the paint surface with an oily cloth at will. Do not place tools stained with oil or cleaning tools containing organic solvents on the car body. If found, they should be wiped clean in time.
2. If severe scratches, depressions or peeling are found on the paint surface, they should be repaired in time.
3. For some highly corrosive traces (such as asphalt, bird droppings, insects, etc.), they should be removed in a timely manner.
4. Dust on the vehicle body should be removed in a timely manner before and after use to minimize the adsorption of dust by static electricity on the vehicle body.
5. Rinse promptly after rain. After the rain, the rain stains on the car body will gradually shrink, while the concentration of acidic substances in the rainwater will gradually increase. If the rain stains are not washed off with clean water as soon as possible, they will damage the topcoat over time.
6. When washing a car, wait until the vehicle body has cooled down. Do not wash the vehicle under direct sunlight or high temperatures.
7. Wax the paint surface irregularly for protection and carry out regular maintenance (once every quarter) to restore the bright luster of the car body's paint surface in a timely manner.

9.2.2 Warnings and precautions during the paint mixing and spraying operation process

Warning:

- It is essential to use the products provided by the brand manufacturer. Products from different brands must not be mixed.
- Color masterbatches must be stored and mixed in plastic containers free of mold release agents.
- The mixed masterbatch should be thoroughly stirred evenly before use.
- The judgment of pigments must be made by using the method of color comparison with spray test plates.
- The test plates used for spraying must be made of aluminum plates or iron plates coated with primer and fully edge-wrapped.
- Pay attention to keeping the electronic scale clean and avoid placing it in areas prone to vibration or disturbed by air currents.

Note:

•Do not mix paint systems or alternative products from different manufacturers. Mixing incompatible products will result in the following phenomena:

• The primer layer has peeled off.

Poor adhesion between coatings.

• It does not cure thoroughly.

• Reduce luster.

• Poor color accuracy.

• Coating damage (pits, bubbles, orange peel-like loss of luster).

9.2.3 Precautions for the maintenance and repair of transparent paint

- Avoid washing the vehicle under direct sunlight.
- Do not use a brush or broom to remove snow or ice from the vehicle body.
- Avoid using strong soap or chemical detergents containing acids or alkalis.
- After thorough cleaning, the remaining rinse water should be wiped dry immediately and must not be allowed to dry on the surface. It is recommended to dry it with a soft towel.
- 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 the defect is not serious, the polishing range should be reduced as much as possible. Avoid removing too much transparent paint, otherwise it will cause the transparent paint to wear out prematurely.
- Use electric polishing equipment strictly in accordance with the requirements recommended by the polishing equipment manufacturer. Do not use wax or silicone products to cover the vortex marks (the marks will soon reappear and dissatisfy the user).

9.2.4 Precautions for anti-corrosion treatment

•When spraying anti-corrosion materials, preventive measures must be taken to avoid spraying into the open parts of related components (such as door locks, window lift grooves and glass lift switches, etc.) as well as any moving and rotating parts, especially the pull wires of the parking brake. After spraying the materials, ensure that the leakage holes of related components are not blocked or there is no anti-corrosion material residue.
•When performing the operation of this program, special protective glasses, gloves and safety shoes should be worn.
•When the vehicle leaves the factory, all sheet metal parts have undergone electrophoretic coating primer treatment. After maintenance and/or replacement of parts, all exposed metal surfaces of sheet metal parts must be sprayed with anti-rust primer for anti-corrosion treatment.
•During welding operations, if the original electrophoretic coating or anti-corrosion material of the sheet metal parts is damaged, it is necessary to clean them and reapply anti-corrosion treatment.
•When conducting collision repairs, the metal is always exposed and these surfaces must be re-sprayed with special anti-corrosion materials.
•In addition to preventing water and dust from entering vehicles, sealants also have anti-corrosion functions. During maintenance operations, if the sealing area is damaged, it should be corrected by resealing. The connection points of newly replaced panels should also be resealed. The sealants used must remain flexible after curing and painting. For open joints sealed with sealants, high-consistency fillers should be applied. Operate according to the instructions of the selected materials.

9.3 Paint color and formula

PPG

2K		
MMF：LINKTOUR	Code：TN101	Color name：SHUANG YUE BAI PEARL
P425-900	HS SUPER WHITE	66.27
P420-903RT	RT MEDIUM PALE YELLOW	0.20
P420-904RT	RT TRANSPARENT BLACK	0.30
P192-475	SCB CONVERTER	33.23
Three processes		
P420-938	TONE CONTROLLER	5.00
P426-PP05	WHITE PEARL	1.50
P433-XR10	CRYSTAL SILVER	2.00
P192-5600	HS FLIP CONTROLLER	57.53
P190-376	ADJUSTER	33.97

2K		
MMF：LINKTOUR	Code：TG301	Color name：MENG YA LV MET
P425-984	HS MEDIUM FINE ALUMINIUM	40.05
P425-992	HS SHINING COARSE ALUMINIUM	11.69
P429-937	HS PALE YELLOW	2.60
P425-948	HS BLACK	1.60
P420-938	TONE CONTROLLER	0.50
P420-975	BRONZE GREEN	2.30
P425-954	HS BLUE GREEN	3.00
P429-981	TRANSPARENT GOLD	28.77
P192-5600	HS FLIP CONTROLLER	9.49

2K		
MMF：LINKTOUR	Code：TN703	Color name：YAN SHI HUI MAT MET
P425-992	HS SHINING COARSE ALUMINIUM	44.85
P425-948	HS BLACK	8.39
P420-920	VIOLET	3.70
P425-900	HS SUPER WHITE	2.90
P425-922	HS LAGOON BLUE	0.60
P420-938	TONE CONTROLLER	1.50
P420-930	LAKE BLUE	3.00
P426-HE02	ULTRA FINE WHITE	7.39
P426-PP10	COPPER PEARL	9.19
P192-5600	HS FLIP CONTROLLER	18.48
Matte varnish D8115: D17= 70:30		

2K		
MMF：LINKTOUR	Code：TN902	Color name：XING YAO HEI PEARL
P425-948	HS BLACK	37.43
P420-938	TONE CONTROLLER	3.29
P425-900	HS SUPER WHITE	1.00
P433-XR11	SUNBEAM GOLD	0.10
P426-PP10	COPPER PEARL	0.10
P425-992	HS SHINING COARSE ALUMINIUM	0.30
P425-957	HS FAST BLUE	1.60
P429-967	HS DEEP ANGLE BLACK	17.07
P192-5600	HS FLIP CONTROLLER	39.11

2K		
MMF：LINKTOUR	Code：TXN901	Color name：GAO LIANG HEI SOLID
P425-948	HS BLACK	62.03
P420-902RT	RT PALE WHITE	2.00
P429-967	HS DEEP ANGLE BLACK	4.00
P192-475	SCB CONVERTER	31.97

BASF

Hersteller: LIT LINK TOUR		Colorcode: TG301		Name: MENG YA LV MET		Reihe: 55 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	352-91	37.7	87	174	348	522	200
2	M99/17	76.2	262.7	525.4	1050.8	1576.1	577
3	M99/19	56	391.9	783.8	1567.7	2351.5	851
4	A143	16.3	429.6	859.1	1718.3	2577.4	933
5	A640	7.6	447.1	894.1	1788.2	2682.3	970
6	A535	5	458.7	917.4	1834.7	2752.1	996
7	M146	1.2	461.4	922.7	1845.4	2768.1	1000

Hersteller: LIT LINK TOUR		Colorcode: TG301		Name: MENG YA LV MET		Reihe: 90 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	M4	137.9	355.8	711.6	1423.3	2134.9	704
2	M99/01	32.5	439.8	879.6	1759.1	2638.7	857
3	M99/24	9.6	464.5	929	1858.1	2787.1	899
4	A143	9.6	489.4	978.7	1957.5	2936.2	947
5	A640	7.1	507.7	1015.4	2030.7	3046.1	984
6	A115	2.5	514	1028	2056.1	3084.1	996
7	A997	0.8	516	1032	2064	3096	1000

Hersteller: LIT LINK TOUR		Colorcode: TN101		Name: SHUANG YUE BAI PEARL		Reihe: 55 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	352-91	31.7	88.3	176.6	353.2	529.7	529.7
2	M25	167.3	554.8	1109.6	2219.1	3328.7	3328.7
3	A929	1.1	557.7	1115.5	2231	3346.4	3346.4
Schicht: 2	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	352-91	\	\	174	348	522	200
2	M25	\	\	1088.4	2176.9	3265.3	975
3	A927	\	\	1102.6	2205.3	3307.9	991
4	A137	\	\	1110.4	2220.9	3331.3	999
5	A307	\	\	1111.3	2222.6	3334	1000
Schicht: 3	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	352-91	38.7	87	174	348	522	\
2	M919	2.8	93.3	186.5	373	559.5	\
3	M010	1	95.5	191	381.9	572.9	\
4	M0	143.7	418.6	837.2	1674.3	2511.5	\
5	M1	13.9	449.8	899.6	1799.2	2698.8	\
Kommentar:	GREYSHADE /07						

Hersteller: LIT LINK TOUR		Colorcode: TN101		Name: SHUANG YUE BAI PEARL		Reihe: 90 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	M4	81.7	261.7	523.4	1046.8	1570.2	518
2	A031	117.7	638.6	1277.1	2554.3	3831.4	996
3	A926	0.6	640.5	1281	2562	3842.9	1000
Schicht: 2	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	M4	\	260.8	521.5	1043	1564.6	\
2	A031	\	635.5	1271.1	2542.1	3813.2	\
3	A149	\	637.4	1274.8	2549.5	3824.3	\
4	A927	\	638.6	1277.2	2554.4	3831.6	\
5	A307	\	639.7	1279.5	2559	3838.5	\
Schicht: 3	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	M4	8	20.1	40.2	80.5	120.7	\
2	M5	187.5	489.3	978.6	1957.3	2935.9	\
3	M919	1.6	493.4	986.8	1973.6	2960.3	\
4	M010	0.4	494.4	988.8	1977.6	2966.3	\
5	M1	2.4	500.3	1000.7	2001.4	3002.1	\
Kommentar:	GREYSHADE /07 Groundcoat						

Hersteller: LIT LINK TOUR		Colorcode: TN703		Name: YAN SHI HUI MAT MET		Reihe: 55 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	352-91	37.2	87	174	348	522	200
2	M99/22	86.1	288.2	576.4	1152.8	1729.2	623
3	E440	9.9	311.3	622.7	1245.3	1868	660
4	M0	29.7	380.7	761.4	1522.8	2284.2	814
5	A974	13.2	411.6	823.2	1646.3	2469.5	880
6	A143	7.6	429.4	858.8	1717.5	2576.3	919
7	A353	6.3	444	888.1	1776.2	2664.3	951
8	A097	4.4	454.4	908.8	1817.7	2726.5	972
9	A557	3.5	462.6	925.2	1850.4	2775.5	990
10	A589	1.9	467.1	934.2	1868.5	2802.7	1000
Schicht: 2	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	923-55	200	490	980	1960	2940	1000

Hersteller: LIT LINK TOUR		Colorcode: TN703		Name: YAN SHI HUI MAT MET		Reihe: 90 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	M4	132.7	345.2	690.4	1380.9	2071.3	683
2	M99/24	20.7	399.1	798.2	1596.3	2394.5	776
3	M99/02	10.8	427.2	854.5	1708.9	2563.4	828
4	E440	9.8	452.7	905.4	1810.7	2716.1	869
5	A143	9	476.2	952.4	1904.8	2857.2	914
6	A359	6.1	492.1	984.3	1968.5	2952.8	946
7	A589	3.3	500.7	1001.4	2002.9	3004.3	964
8	A097	2.9	508.2	1016.4	2032.8	3049.2	975
9	A924	2.7	515.2	1030.4	2060.7	3091.1	989
10	A533	2	520.4	1040.9	2081.7	3122.6	1000
Schicht: 2	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	923-55	200	490	980	1960	2940	1000
Kommentar:	Alternate flat clearcoats can be found under MIS 18998. Flattened clearcoat--Ensure compliance in your area. Not RFU - Must be activated						

Hersteller: LIT LINK TOUR		Colorcode: TN902		Name: XING YAO HEI PEARL		Reihe: 55 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	352-91	38	87	174	348	522	200
2	M99/17	1.4	90.2	180.4	360.8	541.1	207
3	M505	1.1	92.7	185.5	370.9	556.4	212
4	M99/19	0.8	94.5	189	378	567	216
5	A929	103.1	330.3	660.6	1321.2	1981.8	724
6	A974	31.3	402	803.9	1607.9	2411.8	879
7	A557	15.4	437.3	874.6	1749.1	2623.7	956
8	A125	5.3	449.3	898.6	1797.2	2695.8	982
9	A430	3.6	457.6	915.2	1830.5	2745.7	1000

Hersteller: LIT LINK TOUR		Colorcode: TN902		Name: XING YAO HEI PEARL		Reihe: 90 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	M4	\	357.1	714.2	1428.5	2142.7	\
2	M99/01	\	358.2	716.4	1432.9	2149.3	\
3	M505	\	359.1	718.2	1436.4	2154.6	\
4	A924	\	420.2	840.3	1680.7	2521	\
5	A926	\	474.2	948.5	1896.9	2845.4	\
6	A503	\	488.8	977.5	1955.1	2932.6	\
7	A032	\	496.2	992.5	1984.9	2977.4	\
8	A307	\	502.2	1004.4	2008.8	3013.2	\

Hersteller: LIT LINK TOUR		Colorcode: TXN901		Name: GAO LIANG HEI SOLID		Reihe: 55 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	352-91	38	87	174	348	522	\
2	A929	139	405.5	811	1622	2433	\
3	A974	14.8	439.5	878.9	1757.9	2636.8	\
4	A640	7.7	457.2	914.3	1828.6	2742.9	\
5	A353	0.5	458.2	916.4	1832.8	2749.3	\

Hersteller: LIT LINK TOUR		Colorcode: TXN901		Name: GAO LIANG HEI SOLID		Reihe: 90 EUR	
Schicht: 1	Preisgruppe: SDB-Nummer: 99						
Pos.	Basisfarbe	200g	0.5l	1l	2l	3l	1000-Vol
1	M4	145.2	363.5	726.9	1453.8	2180.7	719
2	A924	27.4	432.1	864.2	1728.3	2592.5	857
3	A926	26.4	498.2	996.4	1992.8	2989.2	995
4	A032	1	500.7	1001.4	2002.8	3004.3	1000

LINKTOUR