5. Starting system

Notice before service

1. If current flows through the starter motor when the engine is not started , it can be determined that the starter motor is damaged and needs to be replaced.
2. Before repairing the starter motor, the engine shutdown switch must be turned to " " to prevent personal injury caused by the starter motor starting suddenly due to misoperation .
3. When the battery is low, the engine may not start quickly or the ignition current may not be provided .
4. Refer to the steps in the troubleshooting process to check or repair the startup system .
5. If there is a " " symbol on the right side of the step , you can click it to quickly jump to the corresponding step.

WARNING

●When the engine cannot be started , do not press the electric start button frequently. Frequent operation may cause overheating or damage of the starter motor, flooding of the cylinder, battery failure , etc.

Troubleshooting

Notice:

● Make sure the battery is fully charged and in good condition.

● Check if the main fuse (25A) and ECM fuse (15A) are blown . If the fuse is blown again after replacing it, check the circuit fault first .

starting motor should work under the following conditions:

a. Unlock the vehicle ;

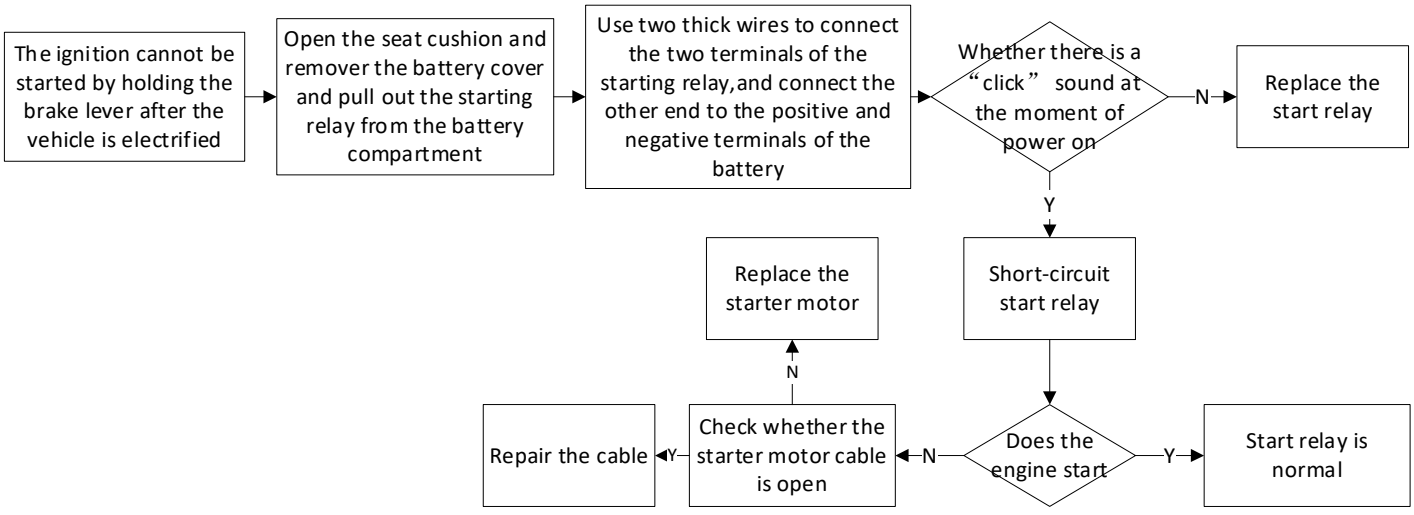
b. Retract the side stand;

c . Turn the engine shutdown switch to " ";

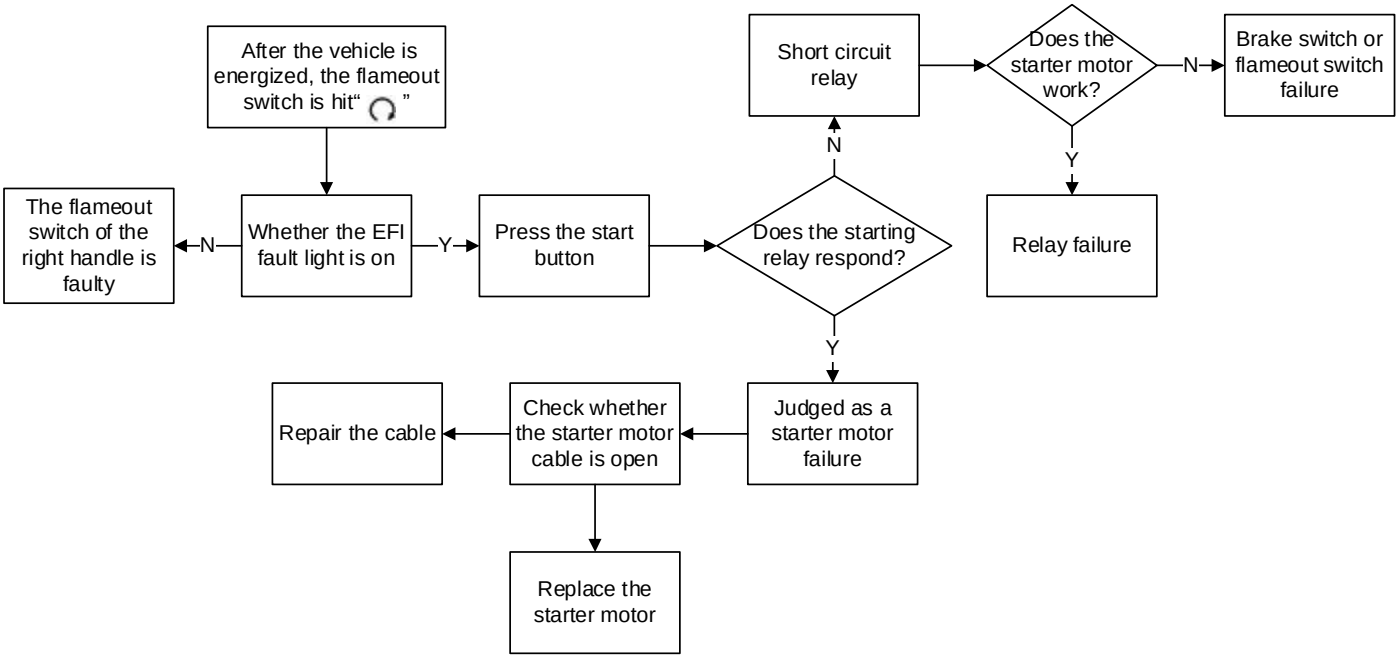
d. Press the start button.

Starter motor does not run troubleshooting process:

1. Starter relay



2. Starter motor



3. The starting motor runs slowly

Check whether the battery power is low;
Check whether the battery cable connector has poor contact;
Check whether the starter motor cable has poor contact;
Check the starter motor for abnormalities.

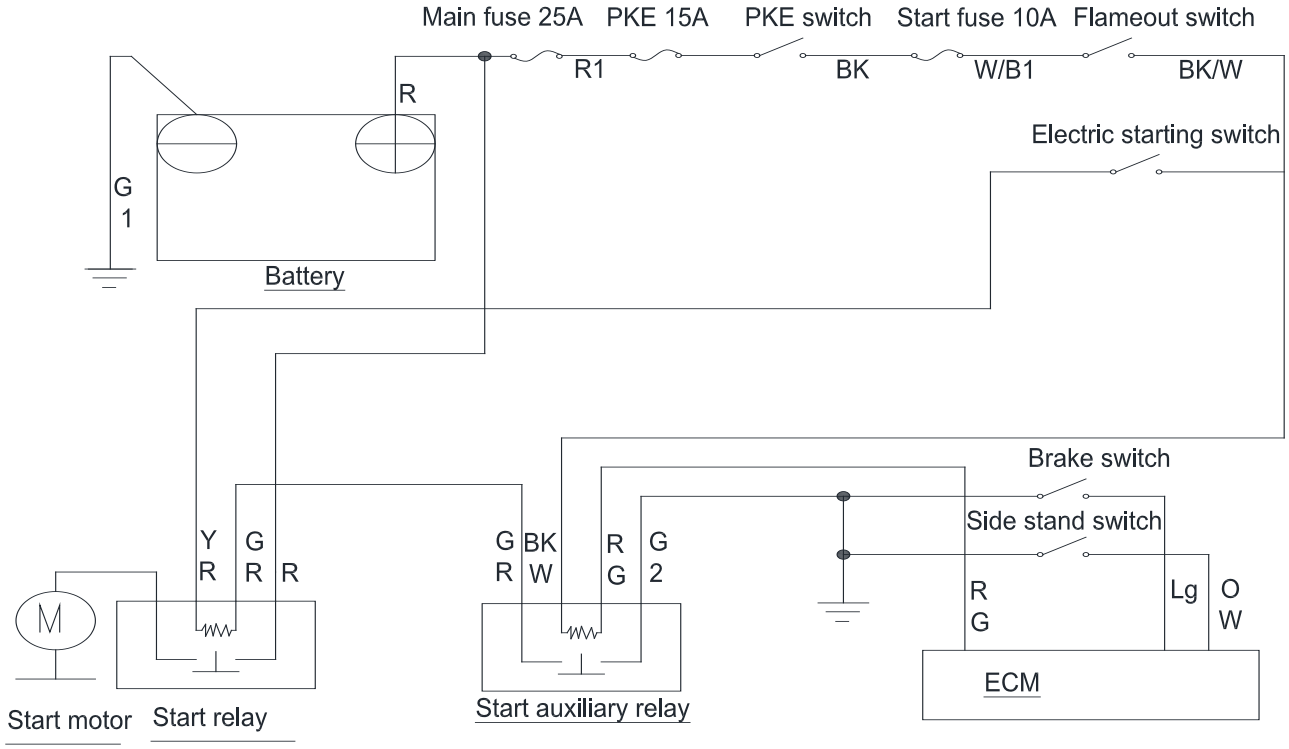
4. The starting motor works normally, but the engine cannot start

Check whether the starter gear system is faulty ;
Check for ignition system malfunctions .

Starting system layout

1- Right handlebar switch (ignition off switch, start button) 2- Right handlebar auxiliary switch (unlock vehicle) 3- PKE 4-Starter motor 5-Side stand ignition off switch 6- fuse box 7-battery
8-starter relay 9-rear brake switch 10- front brake switch)

Starting system electrical schematics



Starter motor

Notice:

●If the starter motor is removed for maintenance, replace the new O-ring and apply an appropriate amount of engine oil.

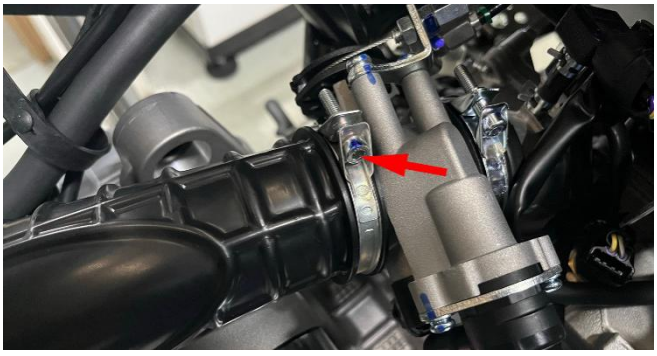
●Our company only sells the starter motor assembly , and does not sell O-rings and motor parts separately. The inner diameter of the O-ring is ϕ25 mm (0.98 in) and the wire diameter is 3 mm (0.12 in) .

1. Remove the starter motor

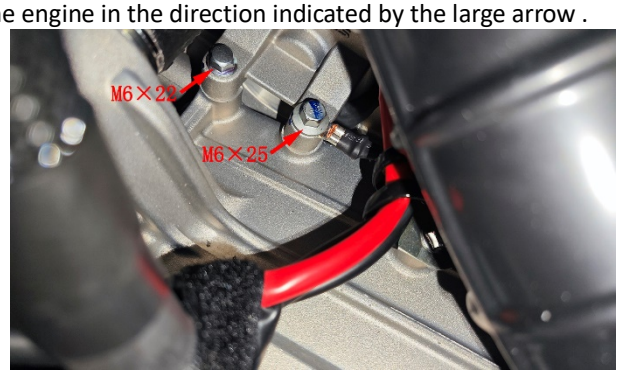
a. Remove the rear storage box by referring to the steps for removing the rear storage box . For details on the removal steps, refer to the section on removing the stepper motor and cleaning the carbon deposits in the throttle valve body in the Maintenance chapter .

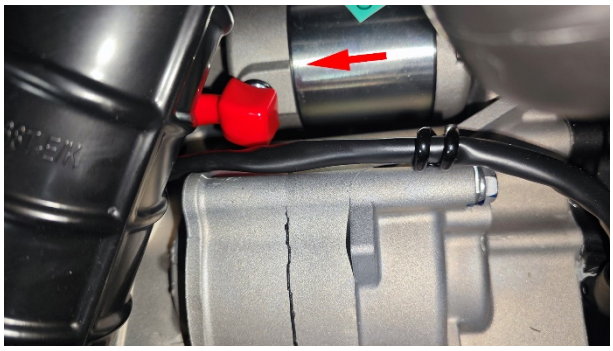
b. Untie the Velcro and cable ties.

c. Use a 4 # hexagon socket to loosen the clamp bolt shown in the figure counterclockwise and pull the air filter outlet pipe out of the throttle valve body toward the rear wheel .



d. Pull the exhaust pipe to the right side of the vehicle to expose the two M6× 22 and M6× 25 bolts fixing the starter motor , and remove them with an 8 # sleeve. Open the red protective cap, remove the nut with a 10 # sleeve, remove the red positive wire, and screw the nut back to prevent loss. After removing the M6 bolt , remove the starter motor from the engine in the direction indicated by the large arrow .





When reassembling, be careful not to miss the O-ring that comes with the starter motor , and align it with the teeth of the electric starter reduction gear. Note that the O-ring must be correctly assembled into the box. If the edge is cut, it will cause leakage. The torque of the two bolts that fix the starter motor is: 12±1.5 Nm (1.2±0.2 kgf.m, 9±1 lbf.ft) . And mark it with a marker.

2. Disassemble the starter motor

Notice:

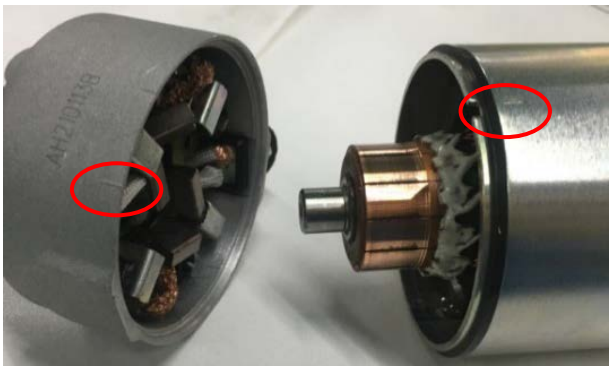
●If the magnet pulls the pole toward the motor housing, the coil may be damaged.

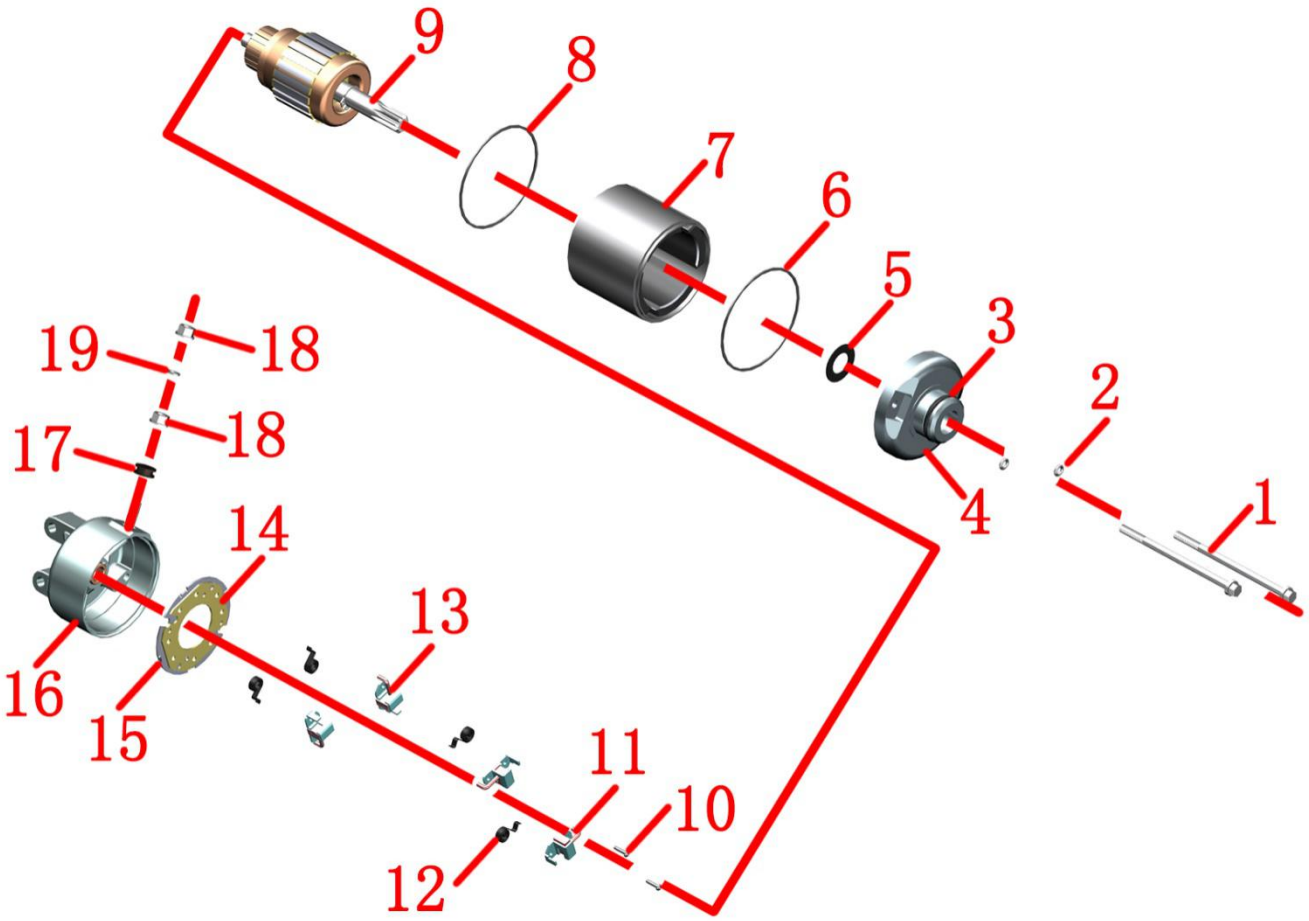
●When installing the switch from the housing slot of the starter motor to the housing, make sure the commutator bar faces the rear side;

●When installing the starter motor rear cover, align the marking line with the index line;

●When installing the front cover of the starter motor, be careful to prevent damage to the oil seal lip of the electric shaft, and align the marking line on the front cover with the index line on the motor housing.

Disassemble and assemble the starter motor as shown below.





1-M 6 × 90 bolt × 2 2-O ring × 2 3-O ring 4-Starter motor front cover 5-gasket 6-rectangular seal 7-Starter motor outer shell 8-rectangular seal 9-electrode 10- screw × 2 11- Negative brush × 2 12-Coil spring × 4 13-Positive brush × 2 14-Brush rack 15-Brush rack insulation gasket 16-Starter motor rear cover 17-Insulation pad 18-Nut × 2 19-Gasket

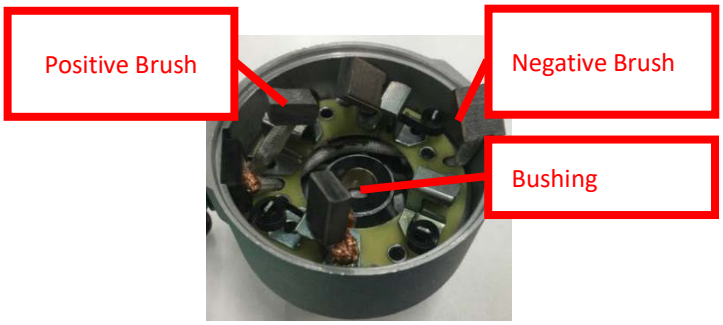
Examine

Starter motor front cover:

Check the oil seal of the front cover for wear and damage;
Also check that the outer ring fits tightly against the front cover.

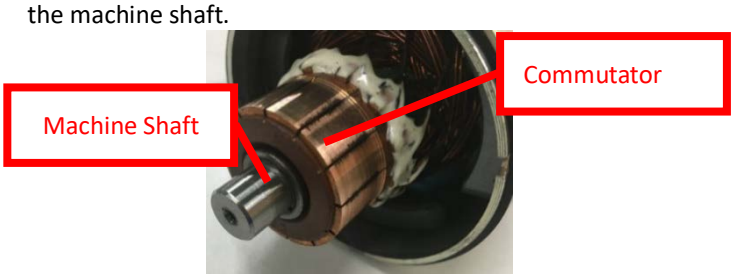
Starter motor rear cover:

Check the bushing of the rear cover for wear or damage;
Check the brush for damage and measure the brush length.
The maximum length is 11.5 mm (0.45 in).
The connectivity check of the back cover is as follows:
The positive brush is connected to the end of the cable; the end of the cable is not connected to the back cover; the negative brush is connected to the back cover.



Electrocution:

Clean the metal debris on the switch and check whether the commutator bar has changed color;
Check that there is clearance between the commutator and the machine shaft.



Check the starter relay

1. Operational inspection

a. Remove the hood. For detailed disassembly and assembly methods, see the " ZT368T-G Hood Disassembly and Assembly Video Tutorial ".

b. Unlock the vehicle, turn the engine off switch to " ", retract the side stand, hold the brake handle and press the start button. You should be able to hear the start relay closing. Otherwise, check the starting circuit.

2. Check the relay coil

2.1 Input Line

Adjust the multimeter to the DC voltage 20V position (if it is an automatic range multimeter, adjust it to the DC voltage position). Insert the red test lead into the rubber sleeve of the yellow/red wire and hold it close to the terminal.

Unlock the vehicle, turn the engine off switch to " ", and use the black test lead to select any bolt connected to the frame nearby. When you hold the brake handle and press the start button, the voltage between the yellow/red wire and the ground wire should be the battery voltage.

2.2 Ground Wire

Turn off the power of the vehicle and lock it. Set the multimeter to the beep position, connect one probe to the green/red wire and one probe to any bolt connected to the frame. It should be conductive when the start button is pressed.

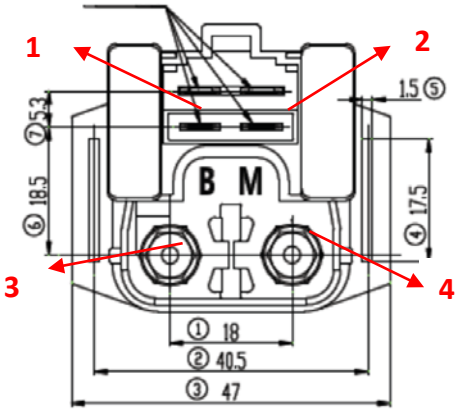
3. Check the starting relay

Use a thicker wire to directly connect the 12V battery to the relay. Use the buzzer mode of the multimeter to measure the green/red and red-yellow wires. They should be conductive and disconnected after the battery is disconnected.

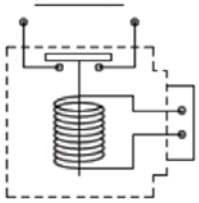
The rated voltage of the starter relay is DC 12V, the operating temperature is -40～+80℃, the operating voltage is DC≤7.5V (20℃), the reset voltage is DC≤3.5V (20℃), the coil current is below 4A (12V 20℃). The insulation resistance is DC500V megohmmeter 5MΩ or more.

The detection method is as follows:

After unplugging the relay, use the buzzer setting of the multimeter to measure pins 1 and 2. They should be in a normally closed state, and the buzzer of the multimeter will sound. Connect pins 3 and 4 to a normally open state, and the buzzer should not sound. Connect pins 1 and 2 to a battery or a DC12V power supply with wires. If the buzzer sounds when measuring pins 3 and 4, it indicates that the relay is normal. Otherwise, it is abnormal and needs to be replaced.

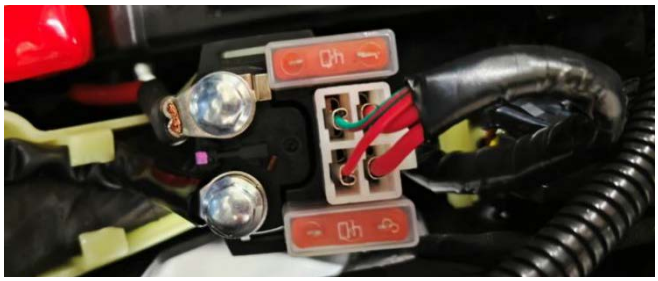


Internal wiring diagram



4. Disassembly and assembly of the starting relay

Open the white protective cover of the starter relay and use an 8# socket to remove the M6 bolt that comes with it. After taking out the wire, screw it back into the bolt to prevent it from being lost. Remove the other end in the same way. Pull out the relay connector.



When reinstalling the relay, the red wire is installed in the threaded hole marked "B" on the relay, and the black wire is installed in the threaded hole marked "M" on the relay. Make sure the screws are tightened and the protective cap is put on, then plug in the relay connector.