by ajusa

electric vehicle line

repair manual

Renault Zoe

(2012 - 2018)

with motor code 5M-450

Ajusa reference EV000100

content

general information

WARNING!

Electric vehicle propulsion

This vehicle works with high-voltage electricity which can present **risks of severe or even lethal damages**.

SAFETY PRECAUTIONS

When working with high-voltage circuits or components, make sure that the **following safety guidelines** are fulfilled:

Make sure all the staff working with the high-voltage systems of electric propulsion have been provided with **proper training** to conduct the necessary procedures.

Put up **high-voltage warning** signs to guarantee the staff safety in the work area.

Make sure that the staff who don't have proper training doesn't have access to any high-voltage circuits and components.

Always wear **insulation gloves** under the related local safety rules.

Insulate the high-voltage batteries ensemble.

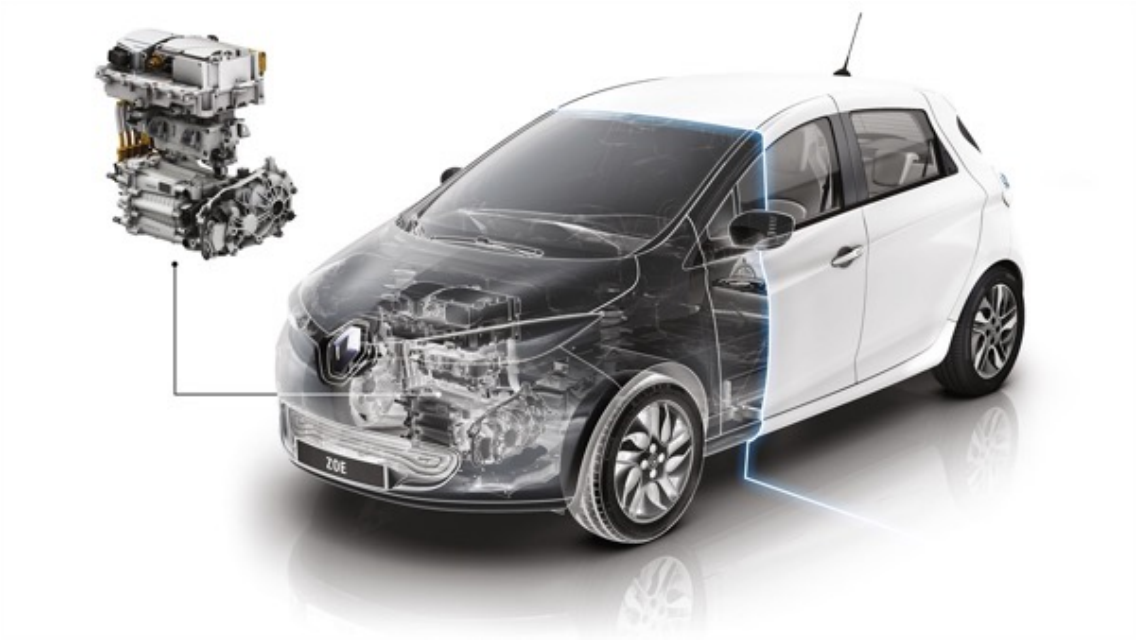
Before working with the electric propulsion system, make sure that the recommended **waiting time after insulating** the high-voltage batteries ensemble has passed by.

Check that the **residual voltage**, which may be in the circuit, is under the recommended safety level.

Make sure that all **test equipment and tools** are suitable to be used in high-voltage circuits or components.

To **ease the identification**, the high-voltage cabling in the electric propulsion system can be covered by an orange insulation.

technical information



Types of failure

Insulation failure.

Problems with the main bearing of the rotor.

References

Ajusa kit is reference **EV000100**.

This technical datasheet is related to model **Renault Zoe 2012 - 2018** with motor code 5M-450.

battery disconnection

Recommendations to connect and disconnect the battery in electric vehicles

Before getting started it is important to highlight that, in usual inspection and maintenance operations, as well as to disconnect the main battery of the vehicle it **is not necessary to disconnect** the batteries ensemble.

Disconnect the battery only when:

> Replacing the battery.
>
> When resetting certain parameters of the vehicle.
>
> When the car is going to be parked for a long lapse of time, so that the battery doesn't get fully discharged.

Safety precautions

The batteries ensemble both in electric and hybrid vehicles work with **high voltage**.

> Any worker who doesn't have proper training mustn't have access to any high-voltage circuits and components.
>
> Always wear suitable personal protective equipment (PPE).

It is essential to put up the related signs to guarantee the safety of both the area and the workers.

The **battery ensemble** of the electric vehicle must be insulated at all times to prevent potential short circuits. To insulate and strip the batteries ensemble there are different special tools:

> Tool number 1076921-00-B. Insulation multimeter.
>
> Tool number 1130480-00-A. Cable for insulation multimeter.
>
> You must be sure that all the testing devices and equipment is compatible with high-voltage applications.

When the batteries are insulated, a recommended **waiting time must pass** by before proceeding to handling the electric propulsion system.

With the insulation multimeter you will check the residual voltage value in the circuit to be sure that such value is under the recommended value.

The high-voltage cabling in electric vehicles has an orange insulation. Knowing this feature, it is easy to identify it.

Disconnection/insulation of the electric vehicle batteries ensemble

1) Find the battery. For this step, it is advisable **to look it up in the vehicle's manual**, as the method to reach the battery differs from one vehicle to another.

2) Check that the vehicle's charging cable is **disconnected**.

3) **Start the vehicle** and verify that the instrument cluster works properly and that it doesn't show any warning or failure.

4) It is recommended to **fully lower the driver's window** and slightly the passenger's window as a safety measure.

5) Check that the **gearbox is neutral** and that the parking brake is activated.

6) Disable the auto heating function and make sure that the **power is not connected**, and that the keys are not inside the vehicle. Make sure that all electric components are off.

7) Open the hood and then open the front doors.

8) Activate manually the open-doors fastener with a suitable tool (screwdriver).

9) Block the vehicle, wait 3 minutes and make sure that the power doors lock system´s LED and the instrument cluster screen **switch off**.

10) Follow steps 1 - 2 - 3 - 4 - 5 in figure 2.

11) Secure the safety cover of the connection plug of the insulator of the battery ensemble with a lock in order to prevent it from connecting involuntarily. Tools number Ele.2005 and Ele.2211

12) Wait 5 minutes and **disconnect the main battery** of the vehicle.

13) Stick insulating tape in the vehicle's main battery negative terminal to prevent any accidental connection.

14) Disassemble the cover access to the electric vehicle's charger fuse box figure 3.

15) Check the voltage between terminals A and C, B and D, A and ground, B and ground, C and ground and D and ground. It must be below 0V.

16) Assemble the cover access to the electric vehicle's charger fuse box with a new gasket figure 3

17) Tighten screws manually.

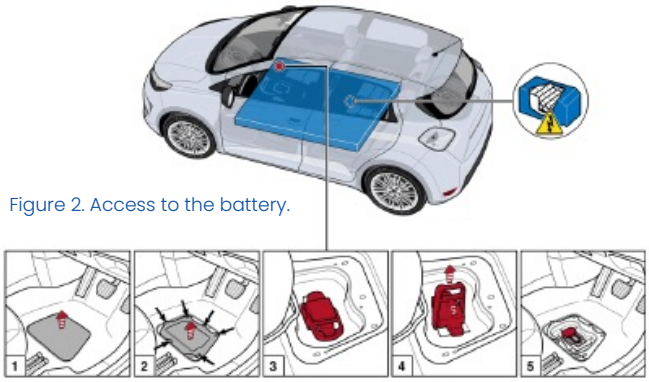


Figure 2. Access to the battery.

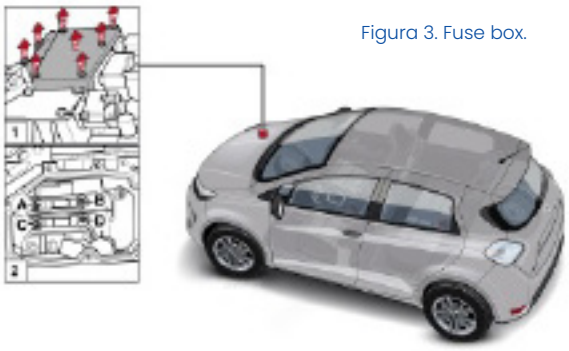


Figura 3. Fuse box.

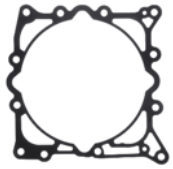
Connection of the electric vehicle´s batteries ensemble

1) Check that the power is not activated and that the keys are not inside the car.

2) Undo previous steps and access to the failures memory and delete failure codes.

3) Connect the vehicle's main battery and check that everything works properly.

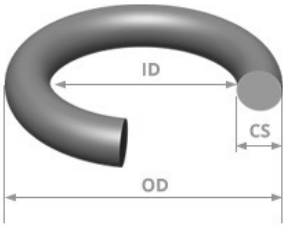
composition



Front cover gasket[1]
(1 unit)

Bearing[2]
(1 unit)

O ring gaskets
(2 units)



	OD (mm)	ID (mm)	CS (mm)
Brushes holder gasket[3] (1 unit)	124	118	3,20
Connections cover gasket[4] (1 unit)	99	93	3,00

repair

As follows, we will show you in simple steps, the repair of this motor.

01

Bearing

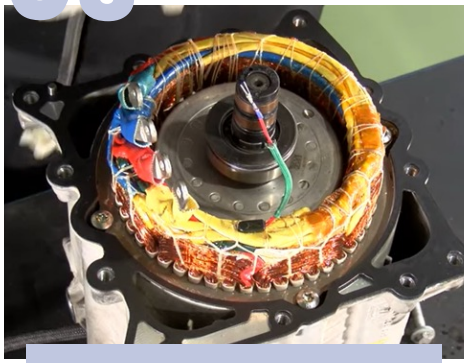
We will start by assembling the new bearing with the help of a special implement.

02

Circlip

With the help of pressure pliers we will place the circlip and then, we will assemble the axial adjustment washers.

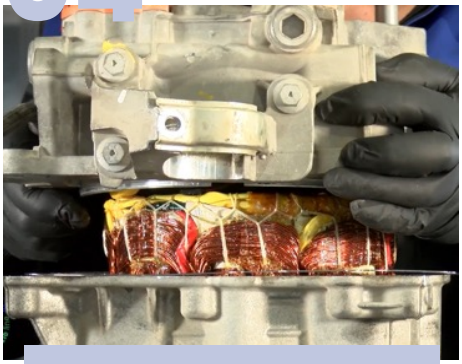
03



Main gasket

Now let's place the block gasket, called **front cover gasket1**[1].

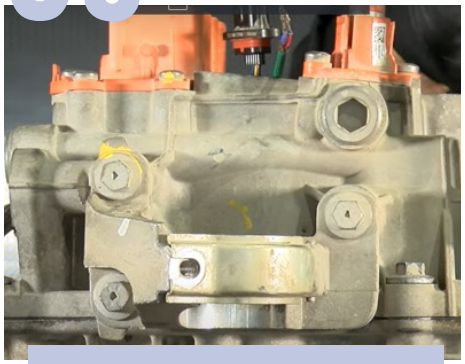
04



Assembly

Once our gasket is placed, we will assemble both motor parts, by guiding the 2 cables of the temperature sensor through the hole in the cover's plug.

05



Closing the cover

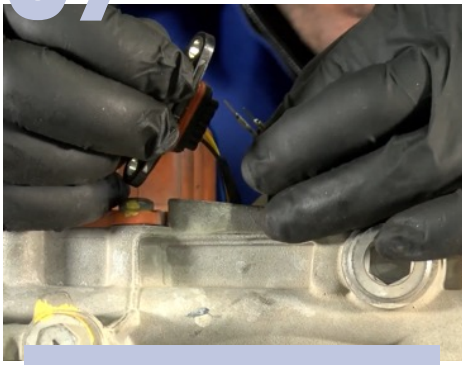
We will place the cover's screws and tighten 60 Nm.

06

Brush holder

We will assemble the **brushes holder gasket**[3] over its cover, we will place its screws and tighten 10 Nm.

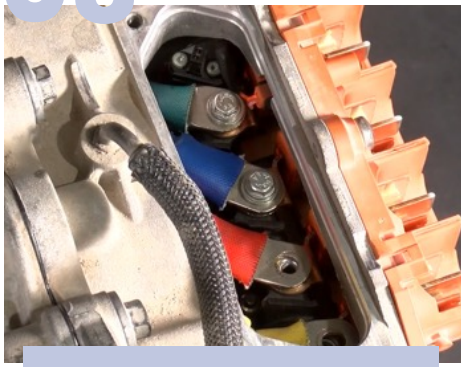
07



Temperature sensor

Next step will be placing the temperature sensor pins in their position. Once it is done, we will screw them in their position, applying a tightening torque of 10 Nm.

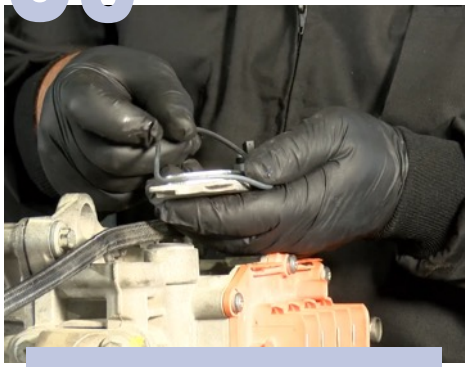
08



Three-phase connections

Now we can conduct the three-phase connections in the stator, conducting a tightening torque of 10 Nm.

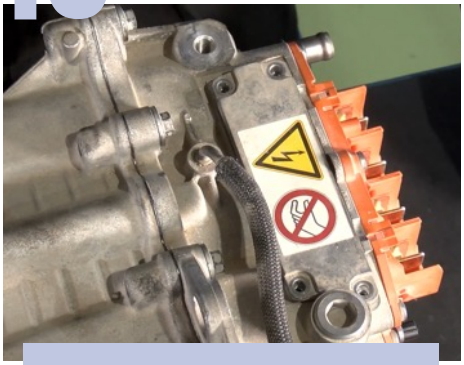
09



Connections cover gasket

Now we will place the **connections cover gasket**[4].

10



Connections cover

To conclude the repair, we will assemble the connections cover applying a tightening of 10 Nm, and we will place the rest of electric plugs in the motor.

additional information

Do you know **which are the tools you need** to repair the motor of an electric vehicle? Do you know the **safety measures** to conduct this repair? Is it that you don't know where to start?

Visit the electric vehicle section on our website where we will give you the answers to all these doubts and much more.

You will be able to see the **safety measures video** as well as the **video tutorial** in which you'll see step by step the assembly of the Ajusa kit related to this vehicle.

Furthermore, you can contact our technical assistance department to solve any doubt.

Subscribe to our Youtube channel and learn everything you must know about mechanics.

Click here to watch the **assembly video**:

VIDEO