



# repair manual

Bmw i3  
(2013-2022)

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with motor code IB1P25B  
**Ajusa reference EV001401**



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# 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.

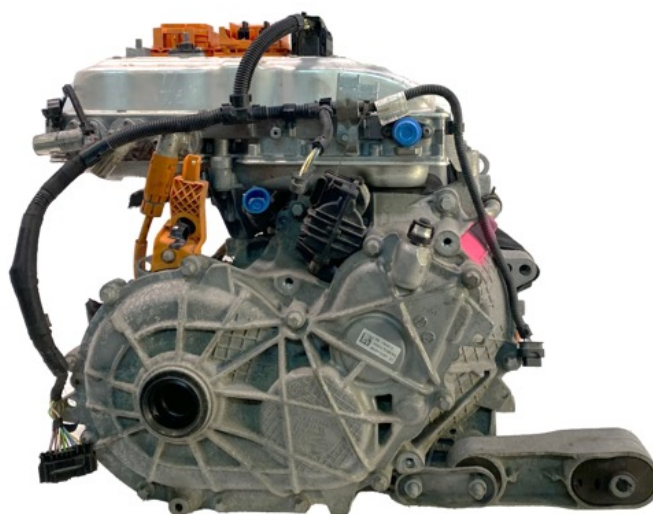
Before working with the electric propulsion system, make sure that the recommended **waiting time after insulating** the high-voltage batteries ensemble has passed by.

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 has the reference **EV001401**.  
This technical data sheet corresponds to the BMW i3 model with motor code IBIP25B.



## IB1P25B motor compatibilities

Model	Years	Notes
BMW i3 (I01) BEV 100% electric version	2013–2022 approx.	Electric motor with code IB1P25B. Typical power ~125 kW / 170 PS
BMW i3 (I01) Rex Range Extender (version with petrol range extender)	2013–2016 approx.	Also uses the 2-cylinder combustion engine with code W20K06A / IB1P25B as a range extender, in combination with the electric motor.

# 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.
- In need to reset 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 both of the area and of the workers.

The **batteries 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 No. Ele.2005: Safety cover for the battery pack isolator plug connection.
- Tool No. Ele.2211: Lock for the above-mentioned cover
- Electrical test meter
- Ensure that all devices and test equipment are compatible with high-voltage applications.

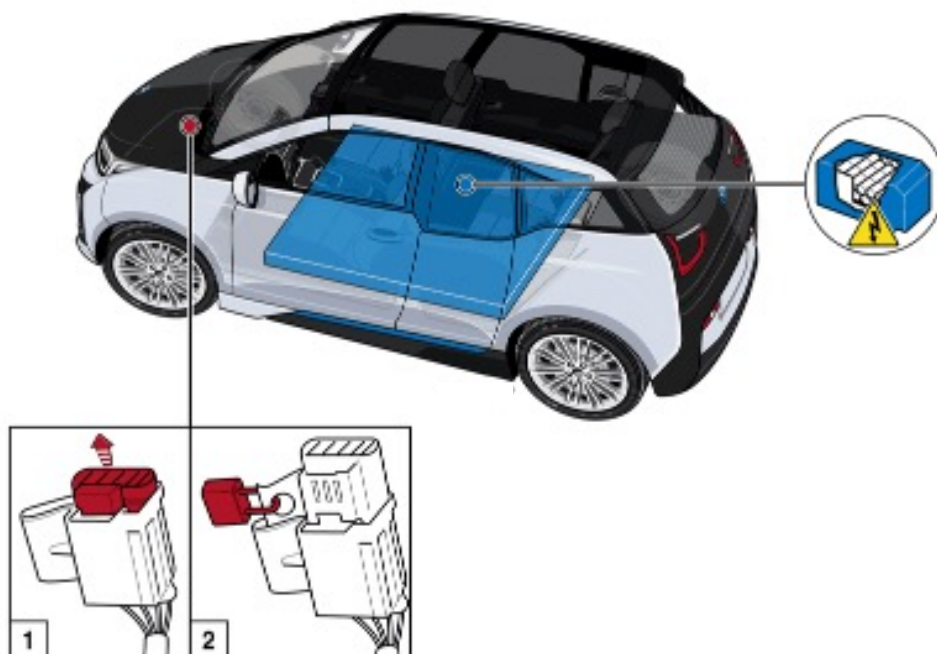
When the batteries are insulated, a recommended **waiting time must pass** by before proceeding to handling the electric propulsion system.

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/Isolation of the Electric Vehicle Battery Pack

- 1) Ensure that all electrical components are switched off.
- 2) Make sure the ignition is off and that the vehicle keys are not left inside the cabin.
- 3) Wait 2 minutes.
- 4) Disconnect the service connector. Fig1.
- 5) Secure the service connector with a padlock to prevent accidental reconnection. Fig2.
- 6) Switch on the ignition.
- 7) The message "High voltage system deactivated" should appear on the instrument cluster.
- 8) Disconnect the vehicle's main battery.

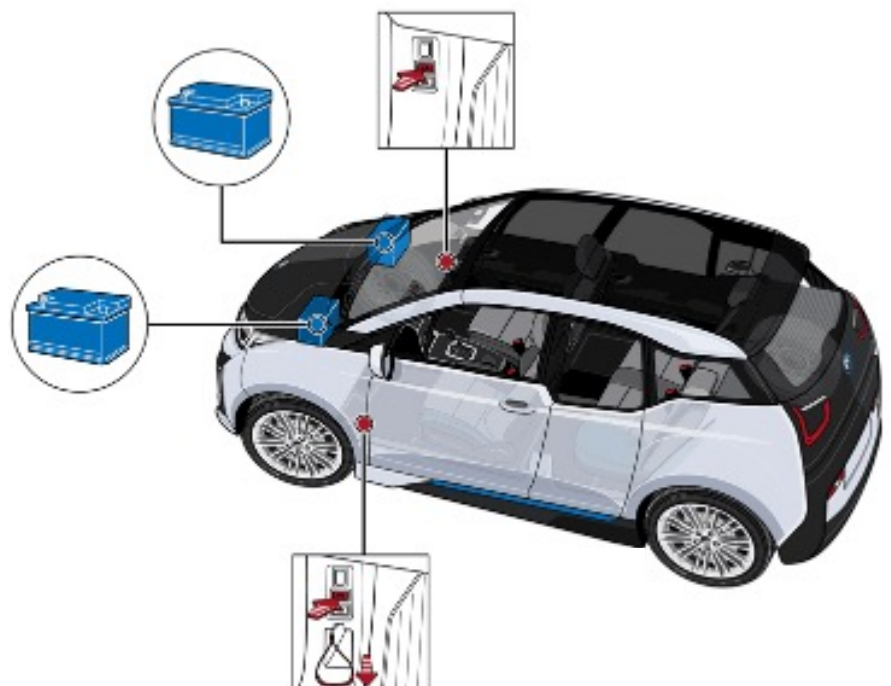


## Main battery location

- 1) Ensure the ignition is off and that the vehicle keys are not left inside the cabin.
- 2) Wait 2 minutes.
- 3) Disconnect/isolate the high-voltage battery pack.
- 4) Before performing repairs on the passive safety system (SRS) components:
- 5) Wait 1 minute after disconnecting the battery before starting work on the passive safety system (SRS) components.

## Connection of the electric propulsion battery pack

- 1) Ensure the ignition is off and that the vehicle keys are not left inside the cabin.
- 2) Remove the padlock from the service connector (fig. 2).
- 3) Plug in the service connector (fig. 1).
- 4) Repeat the following procedure 4 times:
  - Press the start/stop button.
  - Release the start/stop button.
  - Wait 1 second.
- 5) Connect the vehicle's main battery.



# composition



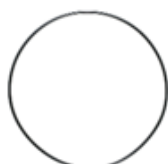
**Transmission seal<sup>1</sup>**  
(2 units)



**Rotor shaft seal<sup>2</sup>**  
(1 unit)



**Rotor dust seal<sup>3</sup>**  
(1 unit)



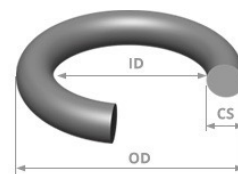
**Stator cooling gasket<sup>4</sup>**  
(2 units)



**Electric motor / transmission  
housing joint gasket<sup>5</sup>**  
(1 unit)



**O-rings gaskets kit**  
(5 units)



<b>Inverter cooling gasket<sup>6</sup></b> (2 units)	23,50	15,50	2,50
<b>Rotor shaft gasket<sup>7</sup></b> (1 unit)	24,00	19,00	2,50
<b>Lock actuator gasket<sup>8</sup></b> (1 unit)	28,68	25,12	1,78
<b>Drain plug gasket<sup>9</sup></b> (1 unit)	20,00	16,00	1,50

# repair

The repair of this motor is shown below in a few simple steps.

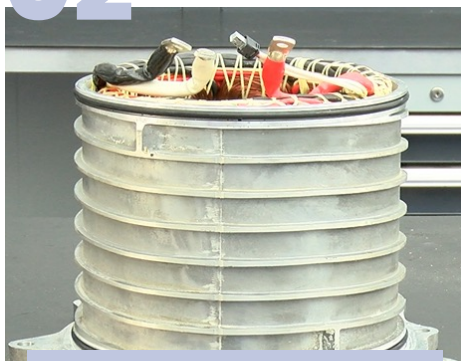
## 01



### Rotor installation

Next, we insert the rotor into the stator's cooled housing. Using a press, the rotor is moved until the shaft is perfectly seated in the second bearing, ensuring proper alignment and preventing stress or damage to the components.

## 02



### Stator cooling

We place the new stator cooling gaskets **stator cooling gasket<sup>4</sup>** in their respective housings in the stator, ensuring the coolant circuit is sealed after assembling the cooled housing.

## 03



### Joining the cooling housing and stator

We continue with securing the cooled housing to the stator. To do this, carefully place the housing onto the stator and apply light pressure until it is correctly positioned, then tighten its three bolts to 10 Nm.

## 04



### Dust seal

We proceed with the installation of **rotor dust seal<sup>3</sup>**, fitting it evenly into its housing until it is aligned with the previously installed sliding surface.

## 05



### Rotor shaft

We will install **rotor shaft seal<sup>4</sup>** and **rotor shaft gasket<sup>7</sup>** on the rotor output shaft, ensuring they are properly seated in their housings.

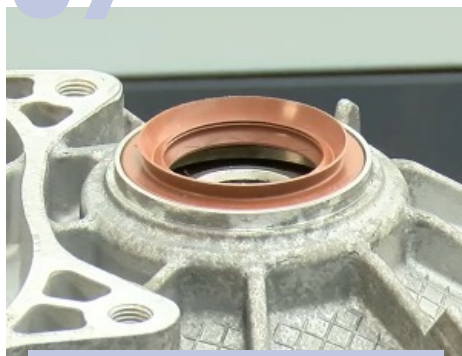
## 06



### Rotor seal

We will position the **electric motor / transmission housing joint gasket<sup>5</sup>** ensuring it is properly seated in its housing.

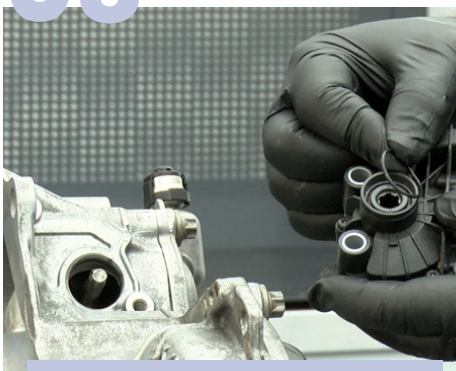
# 07



## Transmission seals

It is time to install the side seals on both sides of the transmission housing **transmission seal**<sup>1</sup>.

# 08



## Transmission lock

We continue with the installation of the transmission lock actuator. For this, we will use **lock actuator gasket**<sup>8</sup> and then tighten the mounting bolts to 15 Nm.

# 09



## Transmission housing plug

We install the drain plug, this time tightening it to 20 Nm, using **drain plug gasket**<sup>9</sup>.

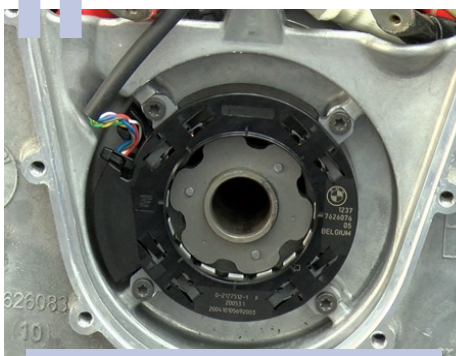
# 10



## Motor-to-transmission coupling

We align the rotor output shaft with the input shaft of the transfer case. Apply gentle pressure until both components fit together. Tighten the coupling bolts to 45 Nm.

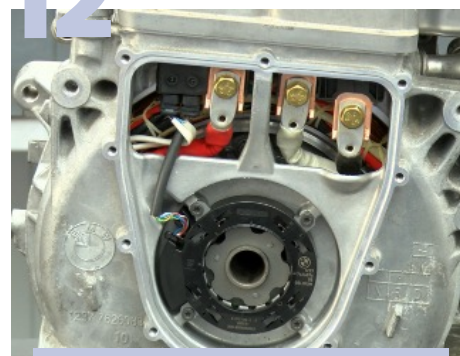
# 11



## Encoder sensor

We install the pulse wheel on the rotor, then position the encoder sensor. The bolts should be tightened to 6 Nm.

# 12



## Inverter

Install the inverter onto the motor, securing it with bolts tightened to 25 Nm. Next, connect the three-phase terminals, tightening their bolts to 15 Nm, and then connect the encoder and temperature sensors.

# 13



### **Encoder cover**

Next, we will install the encoder cover, tightening the mounting bolts to 10 Nm.

# 14



### **Cooling ports**

Finally, we install the inverter cooling circuit's inlet and outlet ports, along with the corresponding **inverter cooling gasket**® tightening them to 8 Nm.



**Motor** · Final view of the completed assembly

# 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**:

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