# repair manual

## Volkswagen E-Golf

(2014-2021)

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with motor code EBSA

**Ajusa reference EV001501**



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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.

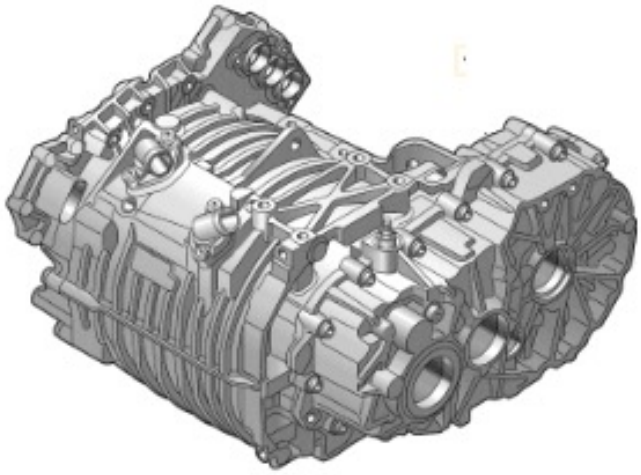
Before working with the electric propulsion system, make sure that the recommended **waiting time after insulating** the high-voltage batteries ensemble has passed by.

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 **EV001501**.

This technical data sheet corresponds to the VW E-GOLF model with motor code EBSA.

# Compatibility

| Model | Years | Note |
|---|---|---|
| VW e-Golf (Golf VII, pre-facelift) | 2014 – 2016 | First version of the e-Golf, EBSA electric motor with 100 kW. Battery of 24.2 kWh (approx. 190 km NEDC). |
| VW e-Golf (Golf VII, facelift) | 2017 – 2020 (production until early 2021 in some markets). | Restyled version with a 35.8 kWh battery (300 km NEDC). It retains the same 100 kW EBSA 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 the ignition is off and that the vehicle keys are not left inside the cabin.

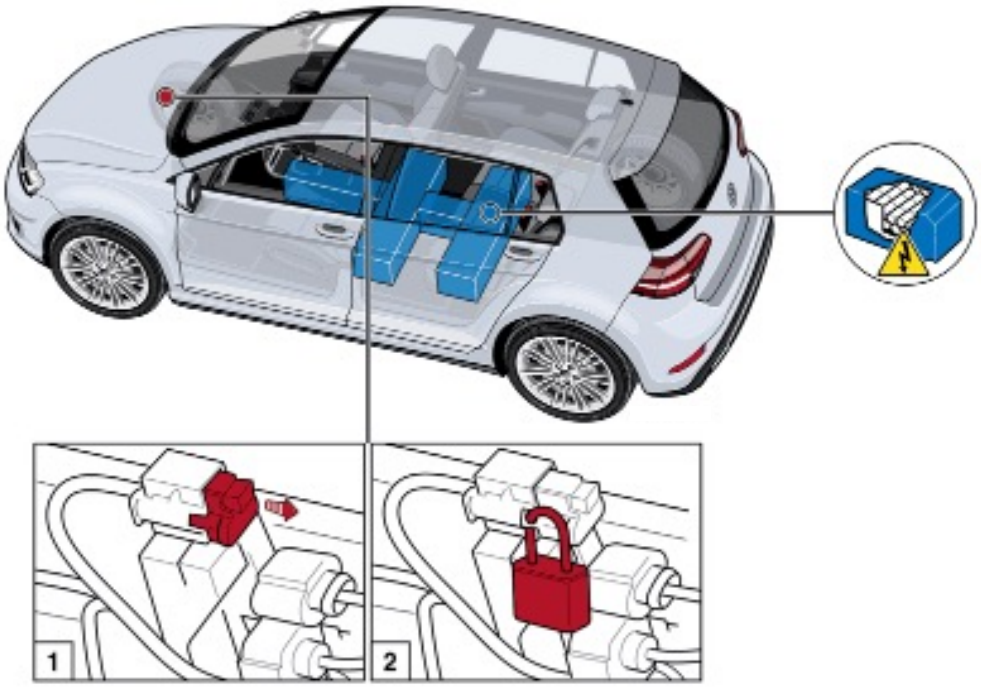
2) Ensure all electrical components are switched off.

3) The disconnection of the electric propulsion battery pack can only be carried out using the manufacturer's diagnostic equipment or its equivalent.

4) Disconnect the service connector when requested by the diagnostic equipment.

5) Secure the service connector with a padlock to prevent accidental reconnection.

6) Disconnect the vehicle's main battery.



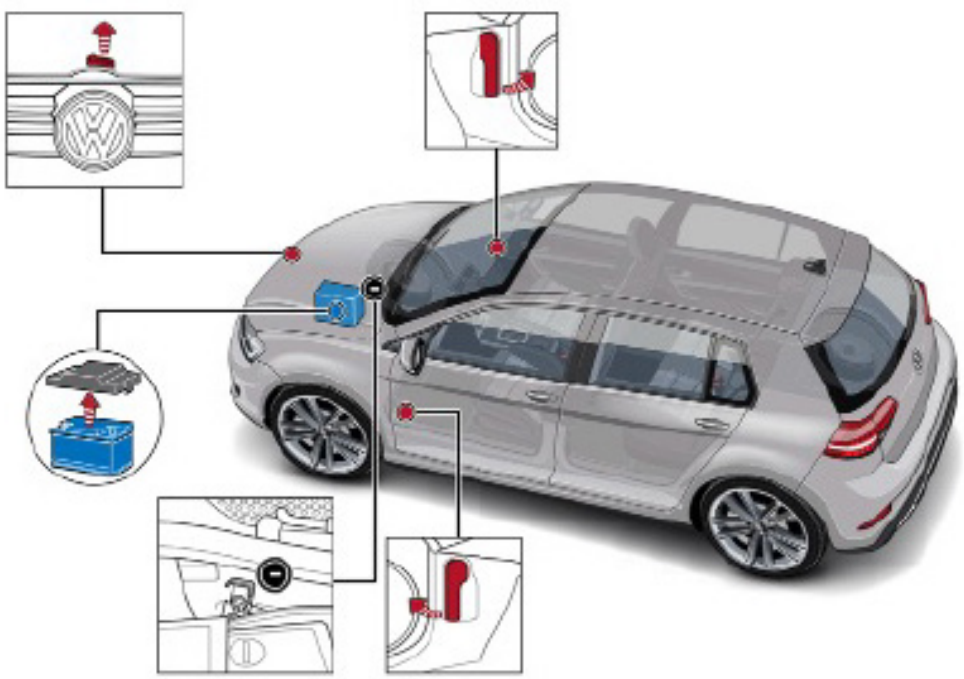
## Main battery location

Before performing repairs on the passive safety system (SRS) components:

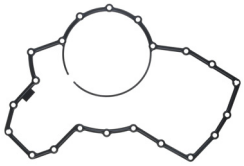
1) Ensure no one is inside the cabin.

2) Switch on the ignition.

3) Wait 10 seconds after disconnecting the battery before starting work on the passive safety system (SRS) components.



# composition



**Encoder cover gasket**[1]
(1 unit)



**Transmission seal**[2]
(2 units)



**Lock actuator seal**[3]
(1 unit)



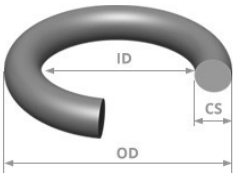
**Rotor shaft seal**[4]
(1 unit)



**Access covers**[5]
(2 units)



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

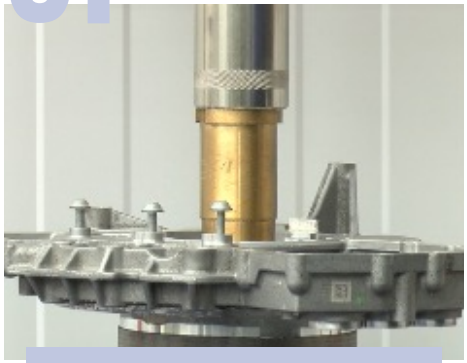



| | | | |
|---|---|---|---|
| **Cooling inlet and outlet gasket**[6] (2 units) | 42,50 | 34,50 | 5,00 |
| **Breather gasket**[7] (1 unit) | 24,00 | 19,00 | 2,50 |
| **Vacuum and fill/level plug gasket**[8] (2 units) | 24,80 | 20,00 | 2,40 |

# repair

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

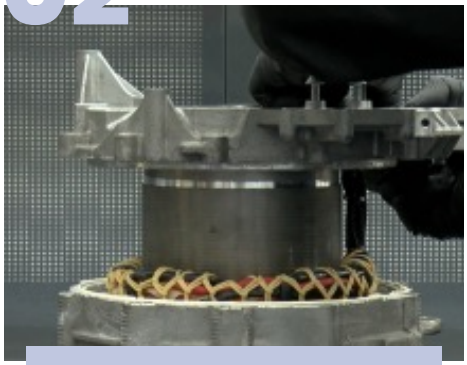
01



***Bearing assembly***

We begin the repair by positioning the stator cover on the rotor, ensuring that the previously installed bearing is properly seated in its position.

02



***Rotor installation in stator***

Next, we apply AjusEV sealant on the stator's sealing surface, place the adjustment washer in the bearing housing, and insert the assembly into its position, ensuring proper seating. Tighten to 25 Nm.

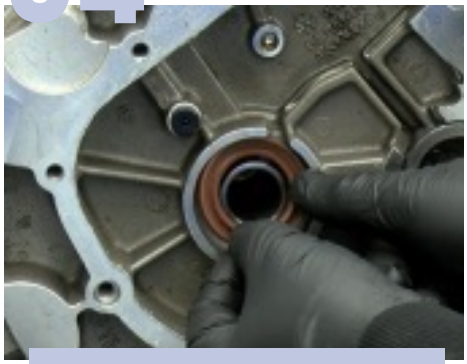
03



***Cooling ports***

We install the stator's cooling circuit inlet and outlet ports, along with their respective **cooling inlet and outlet gasket**[6] This time, tighten to 10 Nm.

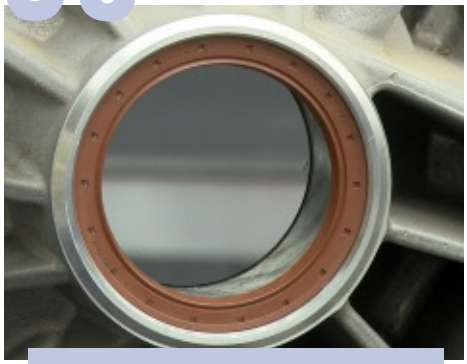
04



***Rotor seal***

We continue by installing the **rotor shaft seal**[4] on the rotor output shaft, ensuring it is properly seated in its housing.

05



***Transmission seals***

It's time to install the side seals on both sides of the transmission housing **transmission seal**[2].

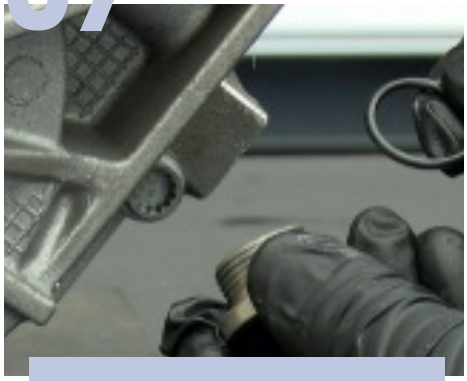
06



***Motor coupling to the transmission housing***

First, we apply a uniform, continuous bead of AjusEV sealant on the contact surface. Then, we align the rotor output shaft with the input shaft of the transfer case. Apply gentle pressure until both components fit together. Tighten the joining bolts to 25 Nm.

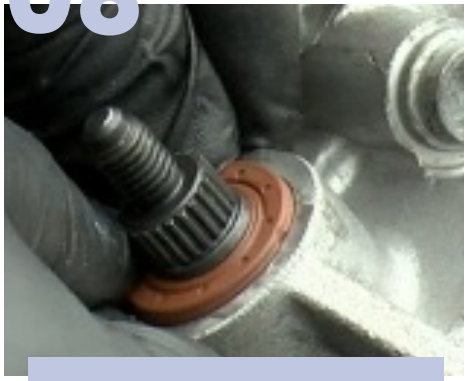
07



### *Transmission housing plug*

Installation of the transfer case drain and fill/level plugs with their corresponding gaskets, **Vacuum and fill/level plug gasket[8]**. Tighten the drain plug to 20 Nm; after filling to the correct level, tighten the fill/level plug to 20 Nm.

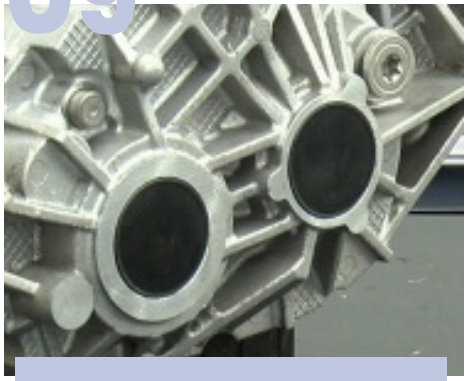
08



### *Transfer case lock*

We insert the **lock actuator seal[3]** onto its shaft, ensuring correct positioning in the housing. Then, we place the operating lever on the splines and tighten the fixing nut to 18 Nm.

09



### *Access covers*

We position the **access covers[5]** in their corresponding locations and, using the appropriate tool, secure them fully and evenly in their housings.

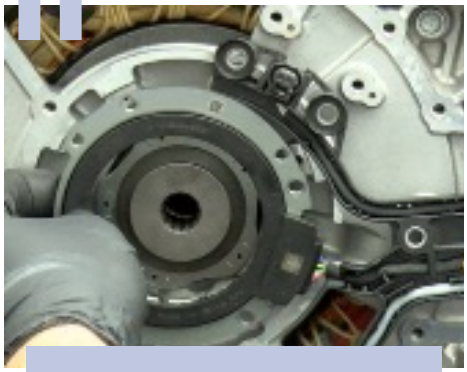
10



### *Three phase connections*

We can now install the stator's three-phase terminal screws, tightening them to 12 Nm.

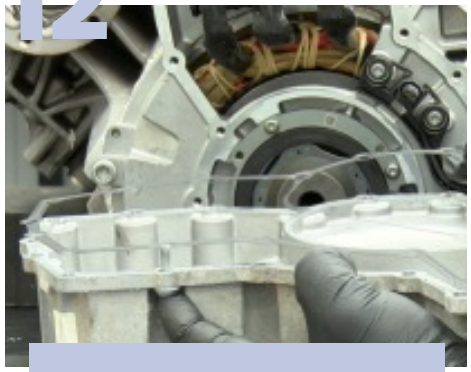
11



### *Encoder sensor*

We install the pulse wheel on the rotor, tightening the fixing screw to 30 Nm. Next, we place the encoder sensor, check that the temperature sensor is properly seated in its stator housing, and tighten the screws to 10 Nm.

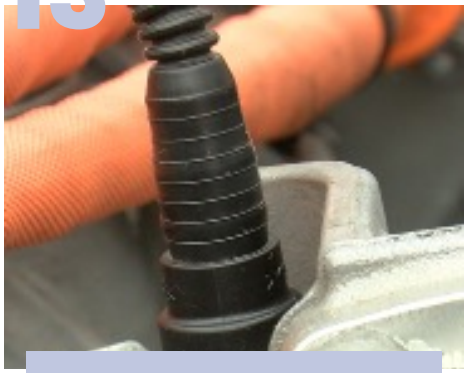
12



### *Encoder cover*

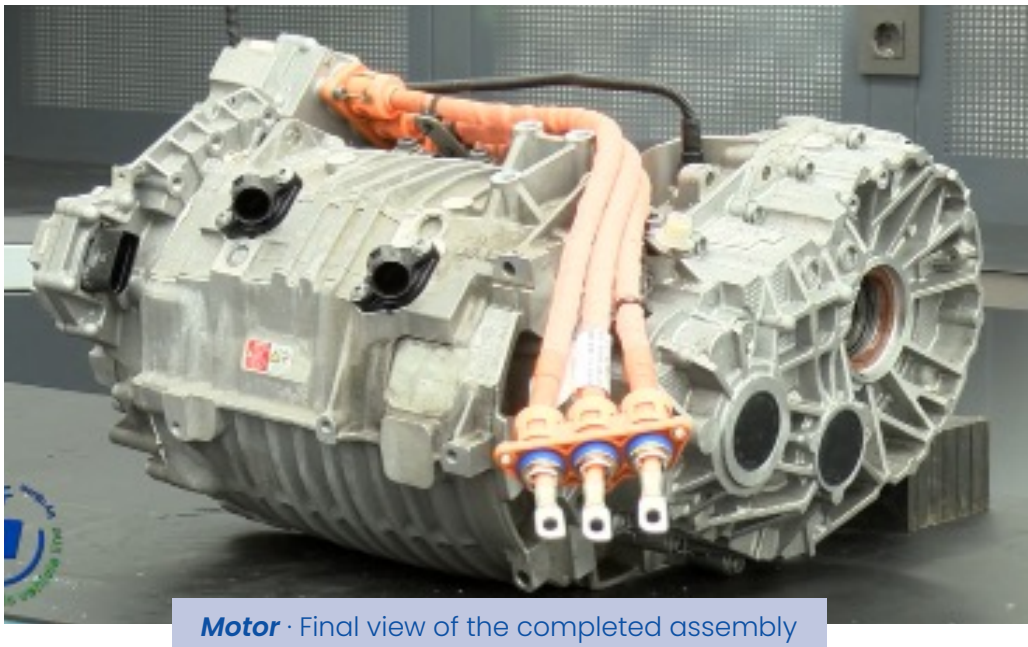
Next, we will install the **encoder cover gasket[1]**, tightening it to 8 Nm

13



***Breather vent for the housing***

Finally, we will install the **breather gasket**[7] on the tube connector and attach the breather tube to the transmission housing fitting, ensuring it is securely in place.



***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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