



repair manual

Tesla Model 3 · Tesla Model Y

(2017 - 2025)

(2020 - 2025)

DUAL MOTOR versions with front motor code 3D3 (sometimes combined with 3D5, 3D6 or 3D7 motors).

Ajusa reference EV001100



content

- 03** General information
- 04** Technical information
- 05** Battery disconnection
- 08** Composition
- 11** Repair
- 16** Additional information



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

The Ajusa kit has reference **EV001100**.

The front drive unit – motor front drive unit has the following OEM reference:
1120960-20-G.

It fits both Tesla Model 3 AWD (2017–2025) and Tesla Model Y AWD (2020–2025) models, always within the DUAL MOTOR versions with front motor code 3D3 (sometimes combined with 3D5, 3D6 or 3D7 motors).

Equivalent references listed in the catalogs:

1120960-20
1120960
112096020G
1120960 20 G
1120960-10-G
1120960-10-H
1120960-10H
1120960-10-H
1120960-10-G
1120960-00-E
1120960-00-G
1120960-00-H

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 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 equipments 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) **Locate the battery in the underside of the vehicle.** At this point, it is advisable to consult the vehicle's manual, as the way to access the battery differs between different vehicles.

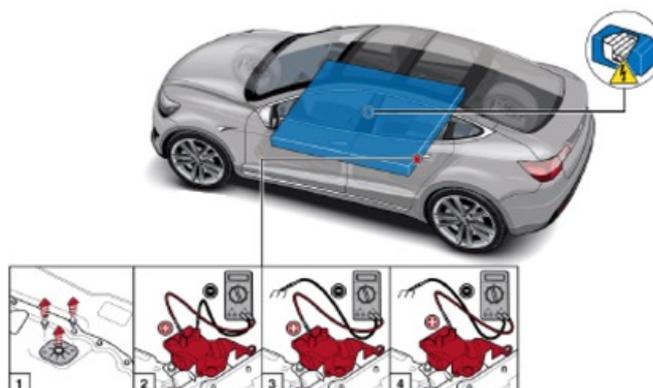
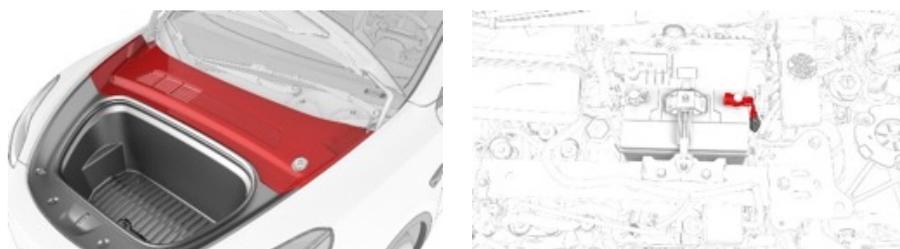


Figure 2. Access to the battery.

- 2) Check that the vehicle's charging cable is disconnected.
- 3) Give the contact and verify that the dashboard works correctly and does not show any warning or error.
- 4) It is recommended to fully open the vehicle's windows and doors as a safety precaution.
- 5) Check that the gearbox is in neutral and that the parking brake is engaged.
- 6) Make sure the ignition is off and that the keys have not been left inside the vehicle.
- 7) Make sure all electrical components are turned off. Switch off the climate control and wait 30 seconds. On the main screen, select Controls > Safety > Power Off.
- 8) Disconnect the vehicle's auxiliary battery (12V lead-acid or 16V Li-Ion). It is located at the front, under the hood.

Lead-acid battery



Disconnect the negative terminal of the battery.

Li-Ion battery



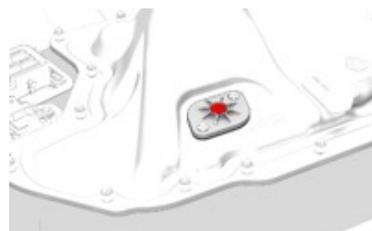
9) Locate the safety loop near the top of the right suspension tower.



10) Remove the rear seat base.



11) Remove the access cover from the voltage test plug terminals of the electric propulsion battery pack figure 2.1



12) Check the voltage between the negative terminal of the voltage test plug on the electric propulsion battery pack and ground to ensure that the residual voltage in the circuit is below 10 V before proceeding (Figure 2.4). Tools No. 1076921-00-B and 1130480-00-A.



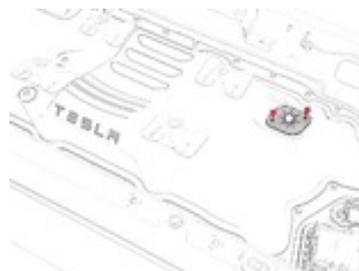
13) Check the voltage between the positive terminal of the electric propulsion battery pack voltage test plug and ground to ensure the residual voltage in the circuit is less than 10 V before continuing. Tool Nos. 1076921-00-B and 1130480-00-A.



14) Check the voltage between the negative terminal of the electric propulsion battery pack voltage test plug and ground to ensure that the residual voltage in the circuit is less than 10 V before continuing figure 2.4. Tool no. 1076921-00-B and 1130480-00-A.



15) Place the access cover on the terminals of the voltage test plug of the electric propulsion battery pack. Use new screws. Tightening torque: 6 Nm.



Connection of the Electric Vehicle Battery Pack

- 1) Ensure that the ignition is off and that the keys are not left inside the vehicle.
- 2) Reverse the previous disconnection steps.
- 3) Connect the vehicle's main battery and check that everything functions correctly.

composition



Stator housing gasket¹
(1 unit)



Inverter gasket²
(1 unit)



Transmission closure gasket³
(1 unit)



Encoder connector gasket⁴
(1 unit)



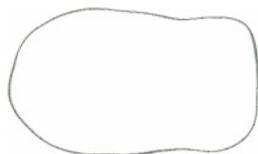
Encoder cover gasket⁵
(1 unit)



Cooler gasket⁶
(1 unit)



Internal gasket of the winding protector⁷
(1 unit)



External gasket of the winding protector⁸
(1 unit)



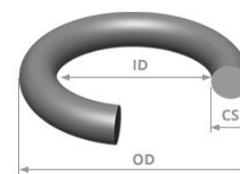
Transmission oil seals⁹
(2 units)



Bearing¹⁰
(1 unit)



O-ring gasket kit
(26 units)



OD (mm) ID (mm) CS (mm)

Small oil pump gasket¹¹
(1 unit)

43,00

39,00

2,60

Medium oil pump gasket¹²
(1 unit)

61,00

57,00

2,00

Large oil pump gasket¹³
(1 unit)

65,00

60,00

2,50

Inverter cooling nozzle gasket¹⁴
(2 units)

29,00

22,00

3,50

Cooler gaskets¹⁵
(2 units)

18,00

13,00

2,50

Stator terminal base gasket¹⁶
(3 units)

19,50

12,50

3,50

Oil dispenser gasket¹⁷
(5 units)

17,40

12,00

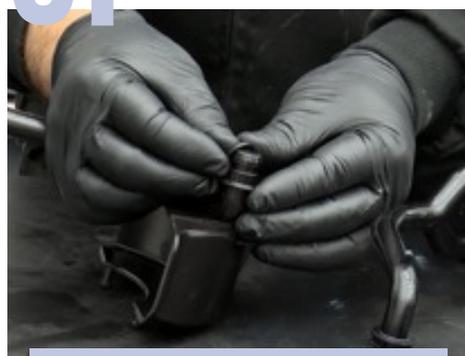
2,70

Connection terminal cover gasket¹⁸ (3 units)	22,70	15,50	3,60
Phase feedthrough gasket¹⁹ (3 units)	-	27,00	5,50
Three-phase terminal cover²⁰ (3 units)	23,00	18,00	2,50
Oil breather plug²¹ (1 unit)	20,00	16,00	2,00
Fill and level plug²² (1 unit)	17,00	13,00	2,00

repair

Below are some simple steps for repairing this motor. Before starting the repair, we must identify the fault. To do this, we will open and prepare the area of the transfer case.

01



Oil dispenser

The first step is to remove the oil dispenser from the assembly and replace 5 O-rings or **oil dispenser gasket¹⁷**. It is important to note that one of the dispensers must be installed together with the differential.

02



Transmission cover

Once the gears or differential are in place, we will install the **transmission closure gasket³**.

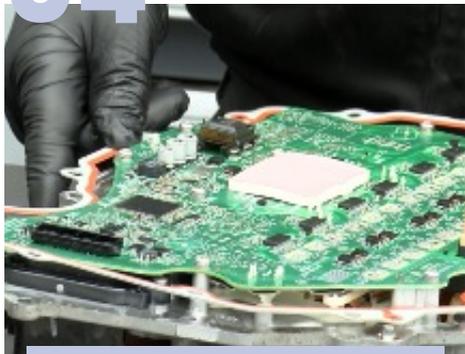
03



Stator feedthrough

Replace **phase feedthrough gasket¹⁹**. Once replaced, the feedthrough is press-fitted into place, and then the other housing is assembled. Tightening torque: 25 Nm.

04



Inverter

We will install the **inverter gasket²** placing it into the positioning or alignment pins. This time, the tightening torque will be 12.5 Nm.

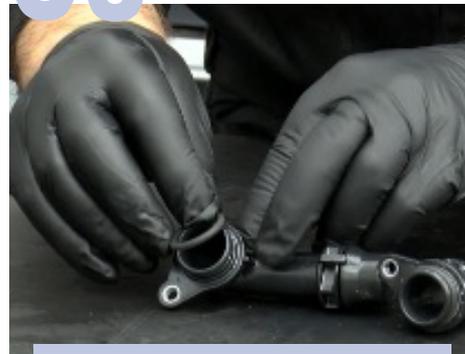
05



Cooler

Place the **cooler gasket⁶**, located on the power inverter cooler. Once positioned, it should be tightened to 10 Nm.

06



Inverter cooling nozzles

The inlet and outlet ports of the cooler consist of nozzles that house O-rings, which we call **inverter cooling nozzle gasket¹⁴**. The tightening torque for these nozzles is 6 Nm.

07



Rotor assembly

The rotor output shaft is inserted into the input shaft of the transmission case, ensuring a smooth coupling without applying excessive force.

08



Heat inductor for bearing installation

Before starting, make sure the work area is free of contaminants (especially metallic objects within a one-meter area). Ensure you have the necessary tools, as well as personal protective equipment (gloves and safety glasses).

09



Placement of the bearing in the heat inductor

We insert **bearing¹⁰** into the aligner, always trying to use the one that best fits the inner diameter (if necessary, we will use two). Once inserted, we place it on the previously greased supports of the inductor.

10



Installing the temperature probe

Next, we will install the temperature probe, always in the inner area of bearing. This way, the inductor will notify us when the bearing reaches the desired temperature, usually between 80 and 120°C.

11



Heating

Once the temperature is reached, we will turn off the station and disconnect the temperature probe. We remove bearing from its base and proceed to installation.

12



Bearing assembly

Align bearing correctly with the shaft. The heat will have expanded the material, allowing the bearing to be installed easily. Make sure the rotor shaft has a smooth finish and that the other components show no signs of damage. Only components that meet the required quality standards should be installed.

13



Impulse wheel assembly

We will install the impulse wheel onto the rotor shaft until it reaches its stop.

14



Winding protection seals

We will now install the **internal gasket of the winding protector⁷** and **external seal of the winding protector⁸** and position them in their place within the motor.

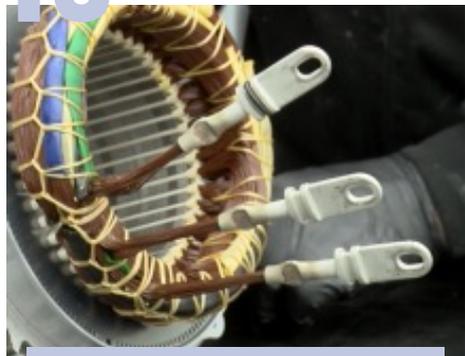
15



Stator housing

The **stator housing gasket¹** is installed on the contact surface, ensuring proper alignment using the centering pins.

16



Motor phases

The next step will be to install the seals for the **stator terminal base gasket**¹⁶ which correspond to the three-phase conductors passing through the bushing.

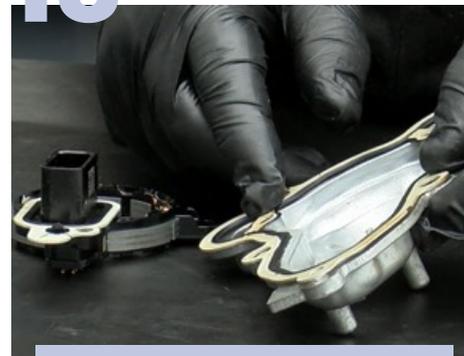
17



Stator assembly

During the stator assembly, the three-phase terminals must be guided through the bushing while carefully centering the bearing in its corresponding housing within the stator. Tighten the fixing screws to 25 Nm.

18



Encoder cover seals

We continue installing **encoder cover gasket**³. To secure the encoder, tighten to 4 Nm. Once positioned, install the cover-encoder assembly. This time, tighten to 8 Nm

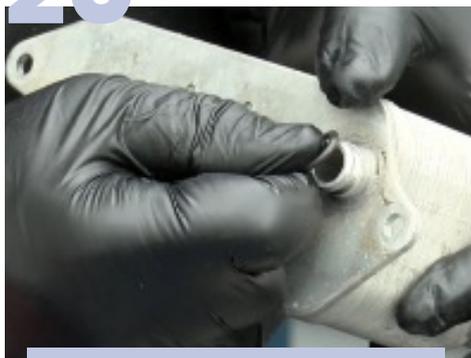
19



Oil pump

On the oil pump, we install three O-rings **large oil pump gasket**¹⁴, **medium oil pump gasket**¹³ and **medium oil pump gasket**¹²). Once installed, position the pump in its housing and apply a tightening torque of 5 Nm + 20°.

20



Oil cooler

Position the two oil cooler seals **cooler gaskets**¹⁶ and, applying light pressure, fit the cooler into its corresponding housings. Tighten to 10 Nm.

21



Fill plug

Install the **fill and level plug**²². Once the transmission fluid filling is complete, tighten the plug to 15 Nm.

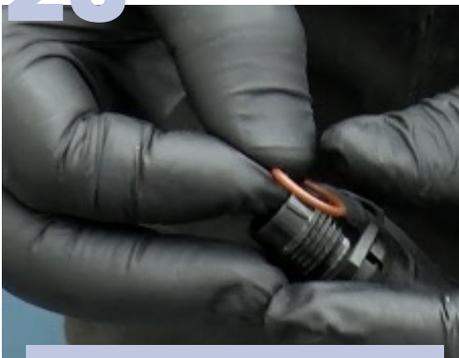
22



Transmission seals

It is now time for the transmission oil seals **transmission oil seals**¹⁰. We will use an appropriate tool for their installation.

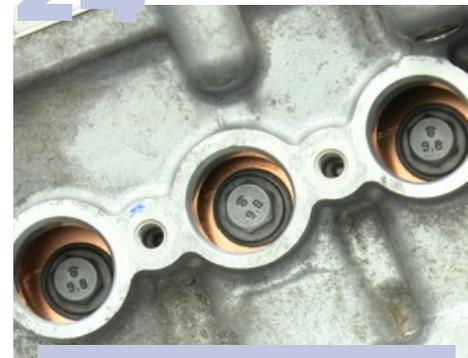
23



Oil breather

Next, we will install the **O-ring for the oil breather plug**²². Since this plug is made of plastic, the tightening torque should not exceed 5 Nm.

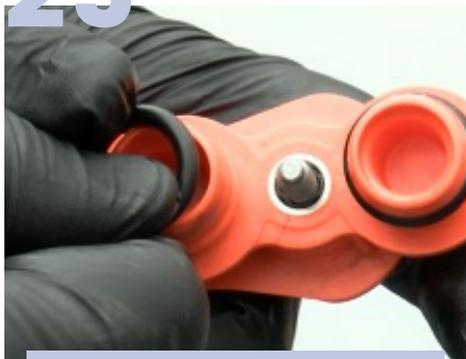
24



Terminals

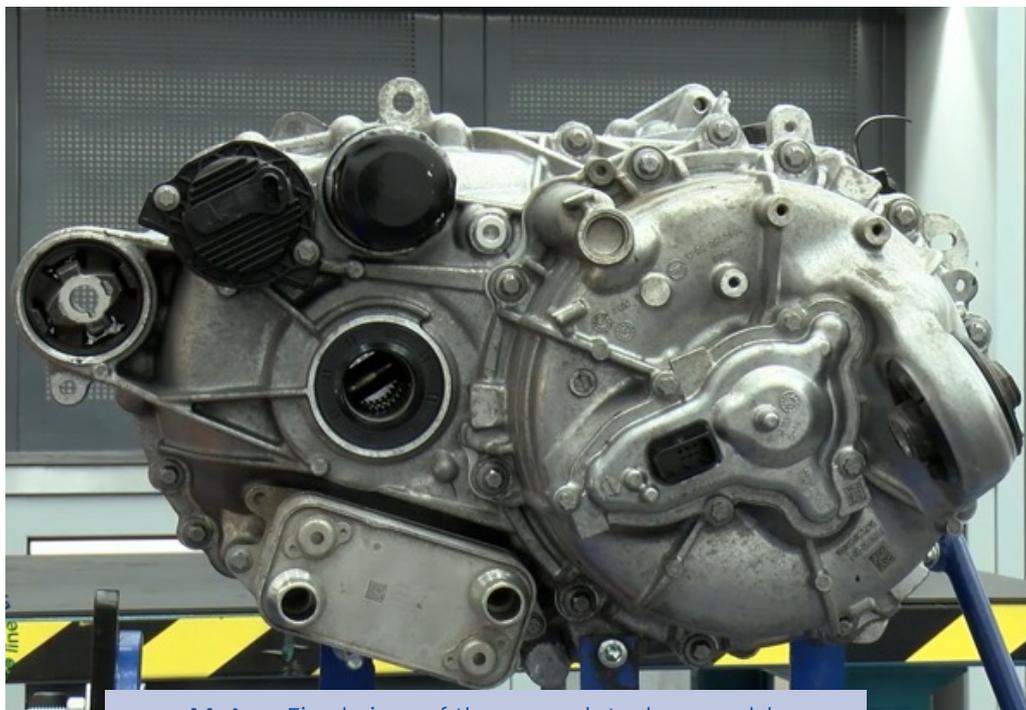
It is time to connect the stator to the inverter. Tighten the three connecting screws to 11.5 Nm.

25



Terminal cover cap

Finally, install the seals for the **three-phase terminal cover**²¹ and **connection terminal cover gasket**¹⁹ on their respective covers, and once in place, tighten to 14 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**:

VÍDEO