

ELECTRIC VEHICLE CHARGER AND CONVERTER: REMOVAL - REFITTING



Note, one or more warnings are present in this procedure



Special tooling required	
Mobile crane	Ms. 1977

Location and specifications (tightening torques, parts always replaced, etc.)([see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting](#)) .



WARNING

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
 - (see [Electric vehicle power electronics : Precautions for the repair](#)) ,
 - [Vehicle: Precautions for the repair](#) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift([see 17E, Power electronics, Electric powertrain assembly : Exploded view](#)) .



WARNING

DANGER: HIGH VOLTAGE VEHICLE.

Risks of serious burns or electric shocks that may prove fatal.

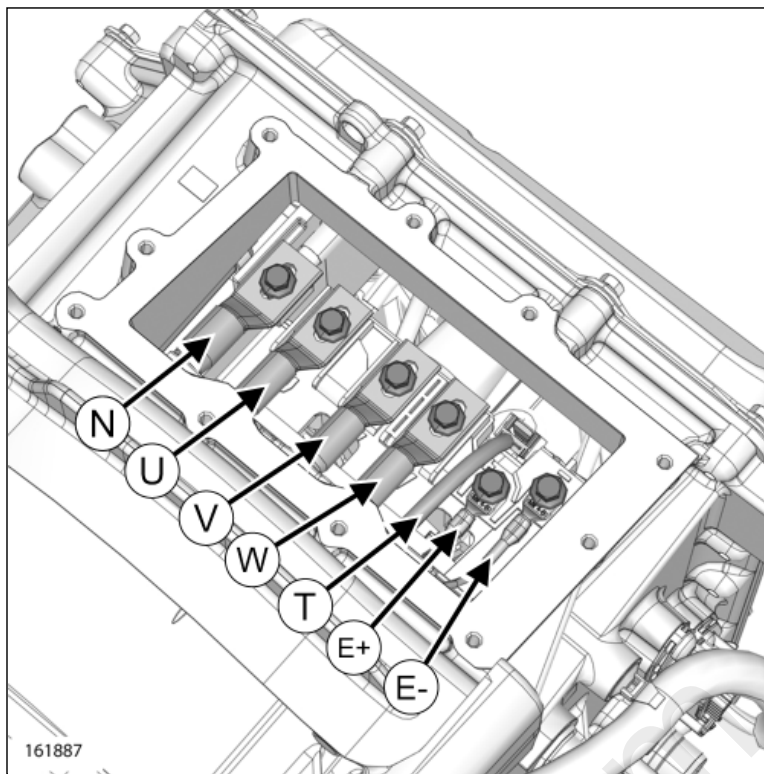
Before carrying out any work on the vehicle, it is essential that you follow the instructions regarding vehicle lockout. This work must be carried out by an employee who is qualified and authorised to work on a high-voltage onboard network([Vehicle: Precautions for the repair](#) .

- Lockout the vehicle([Vehicle: Lockout - Removal of lockout](#) .

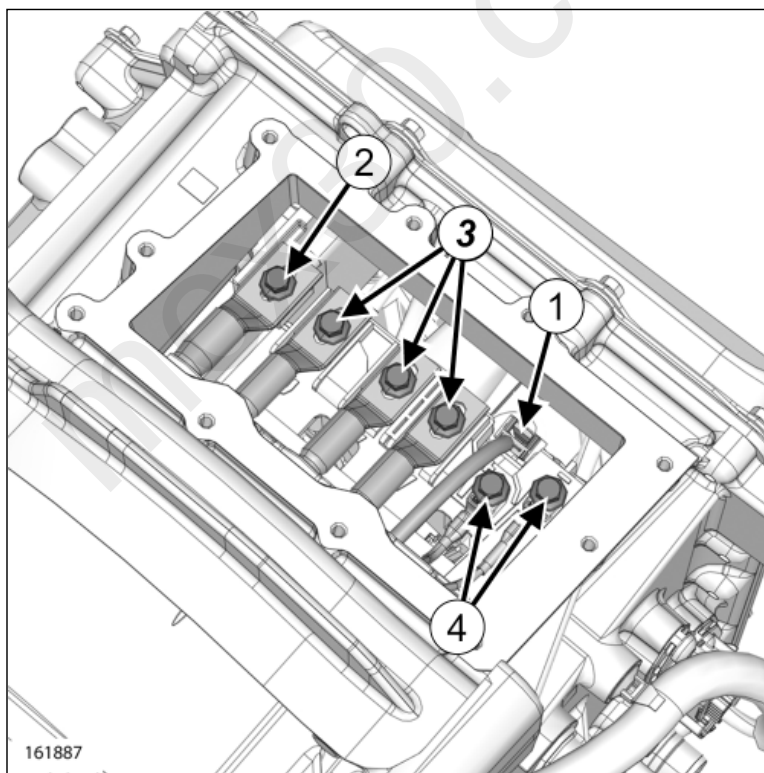
- Remove the electric powertrain assembly([see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting](#)) .

2. REMOVAL OPERATION

- lift the electric powertrain assembly using the toolMobile crane ([Ms. 1977](#)) .
- Place the electric powertrain assembly on the working table (for an acces to the acces flap to engine electrical connections of electric charger and converter).
- Remove ([see 17E, Power electronics, Electric powertrain assembly : Exploded view](#)) :
 - the acces flap to engine electrical connections of electric vehicule charger and converter screws,
 - the acces flap to engine electrical connections of electric vehicle charger and converter,
 - the acces flap seal to engine electrical connections of electric vehicule charger and converter.
- To avoid damaging the temperature sensor connector at the separation of the two elements, fix the temperature sensor to a phase cables.



Identify cables (N), (U), (V), (W), (T), (E+), (E-) with a paint marker.



Unclip the heating connector(1) .

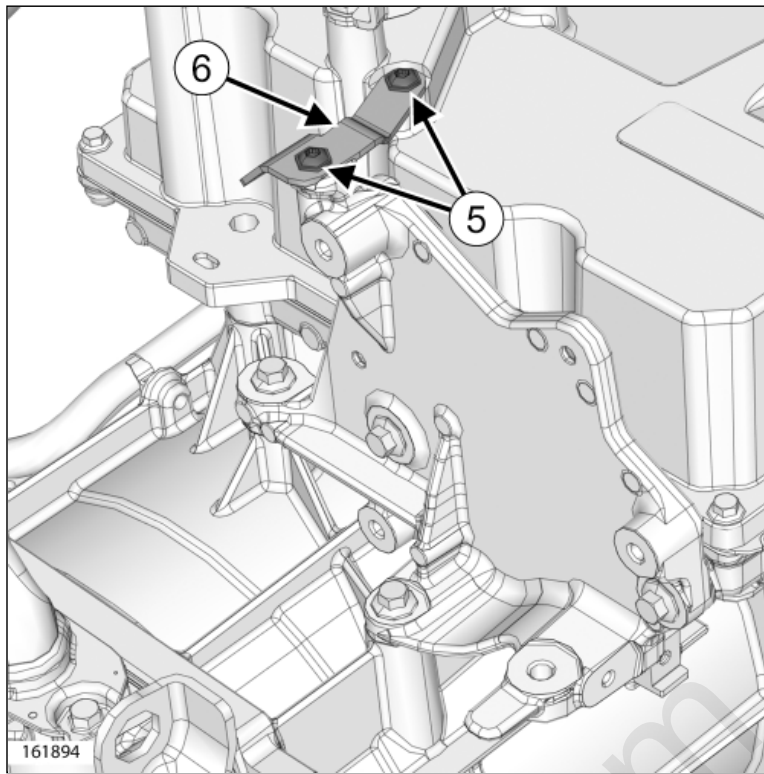
Remove :

- the neutral electric connection screw(2) ,
- the phase electric connections screws(3) ,
- the excitation electric connections screws(4) .

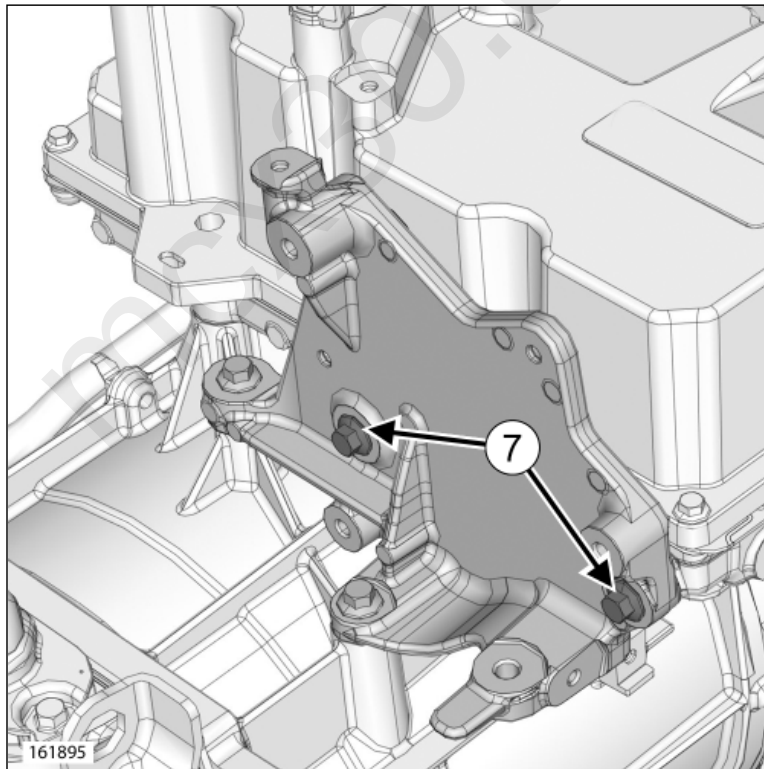
Lift the electric powertrain assembly using the tool Mobile crane (Ms. 1977) .

Place the electric powertrain assembly on the working table.

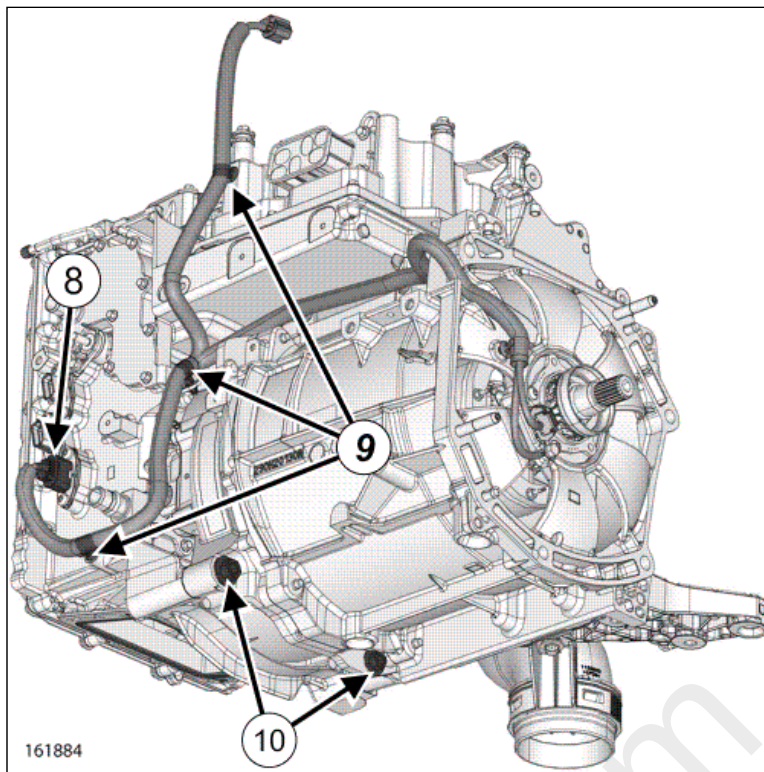
Remove the electric traction reducer assembly(see Electric traction reduction gearing: Removal - Refitting) .



- Remove (see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting) :
- the charger and converter support screws(5) ,
 - the charger and converter support(6) .



- Remove the charger and converter support screws(7) (see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting) .



- Disconnect the electric traction motor signal wiring connector(8) .
- Unclip the electric traction motor signal wiring from the electric vehicle charger and converter(9) .
- Remove the nuts(10) between the electric traction motor assembly and the electric vehicle charger and converter([see 17E, Power electronics, Electric powertrain assembly : Exploded view](#)) .
- Disassemble the electric traction motor assembly from the electric vehicle charger and converter.
- Fit the elements on the working table.
- 2 possible cases :
 - When replacing a traction motor, do not remove the seal. It will be delivered assembled with the new traction motor.
 - When replacing an electric vehicle charger and converter, when repairing of an electric vehicle charger and converter or when removing the electric traction motor brushes, remove the seal between electric traction motor and the electric vehicle charger and converter.

REFITTING

1. REFITTING OPERATION

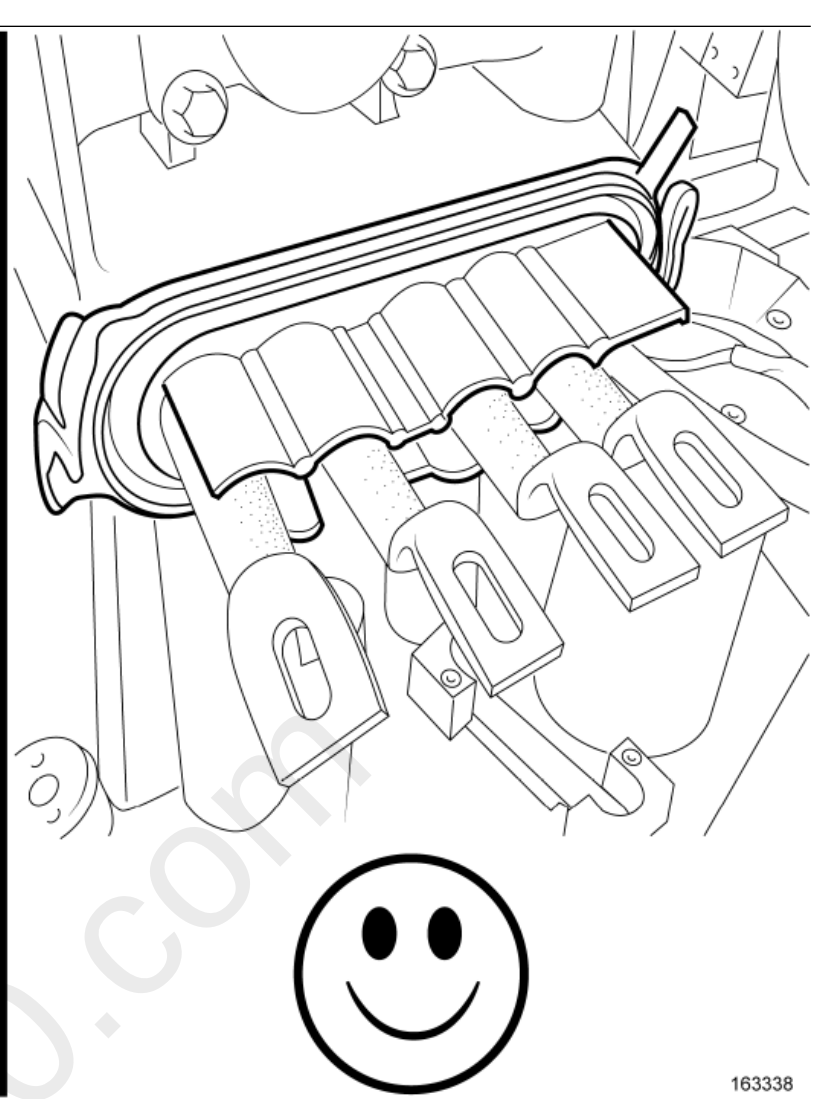
Reminder:



When replacing a traction motor, the new seal between electric traction motor and the electric vehicle charger and converter is delivered assembled with the new traction motor,

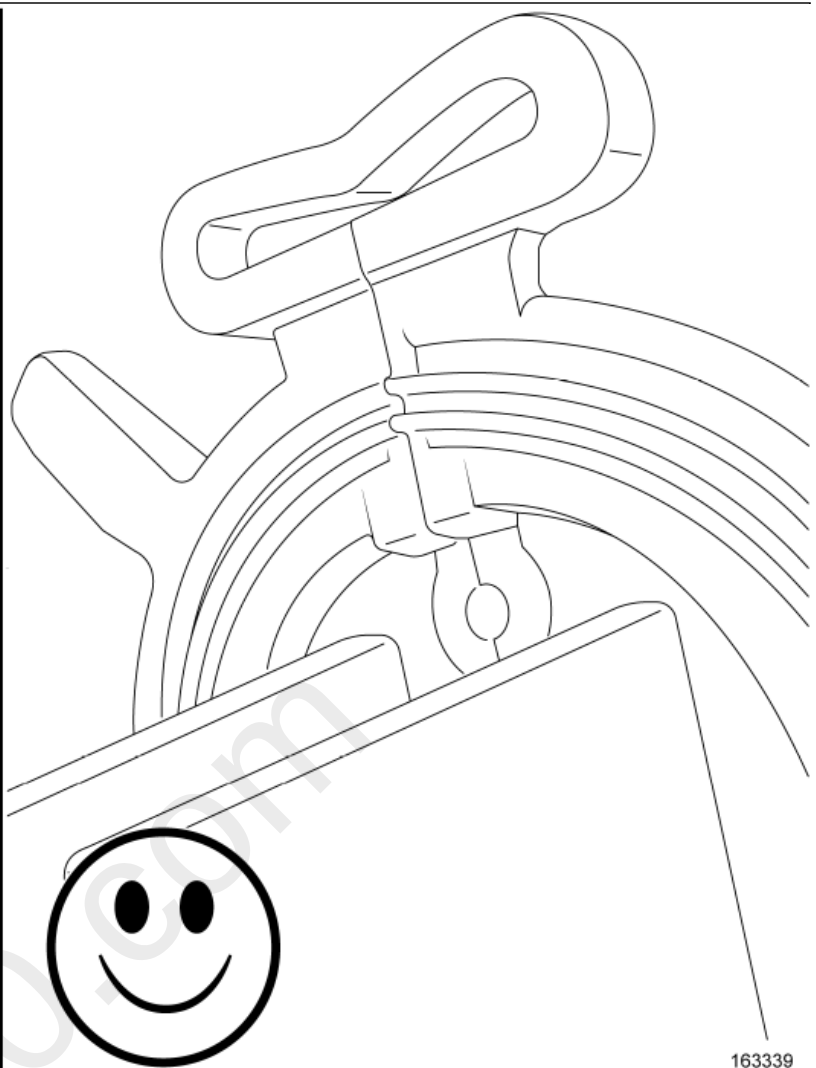
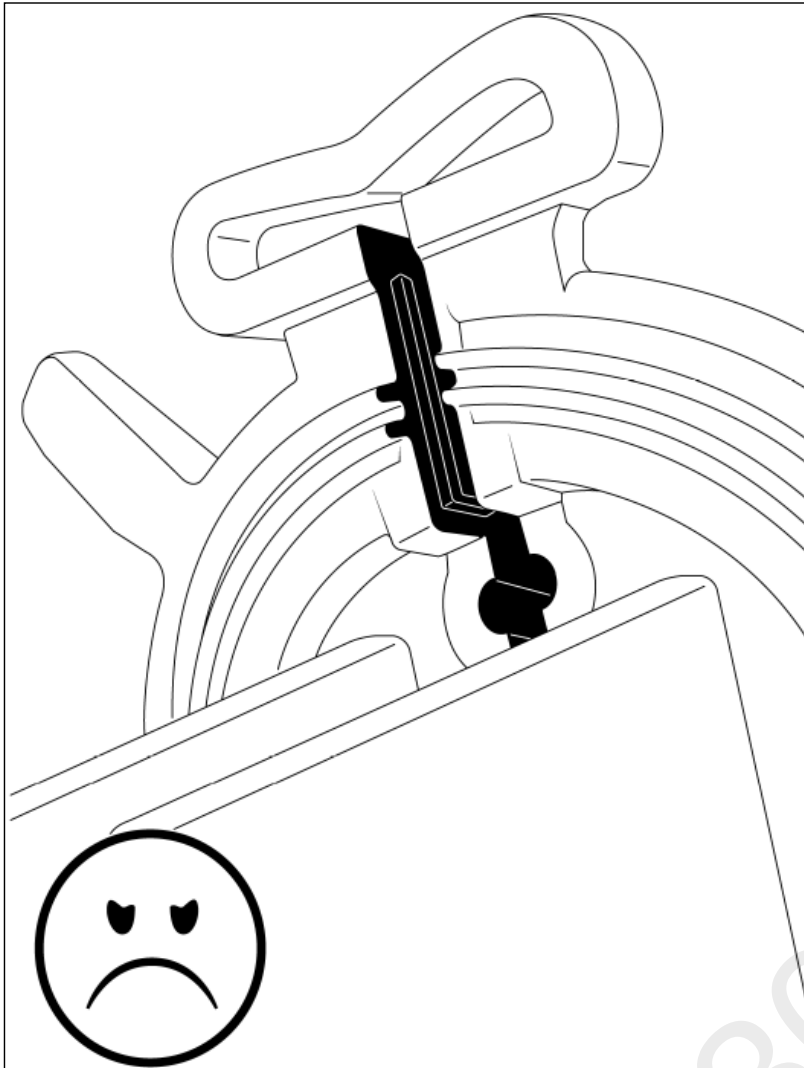
For other operations requiring the disassembly of electric vehicle charger and converter, fit the new seal between electric traction motor and the electric vehicle charger and converter on the traction motor.

- Fit the new seal between electric traction motor and the electric vehicle charger and converter.



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- To ensure good fitting, check :
- the coupling of the seal on the housing of electrical machine.



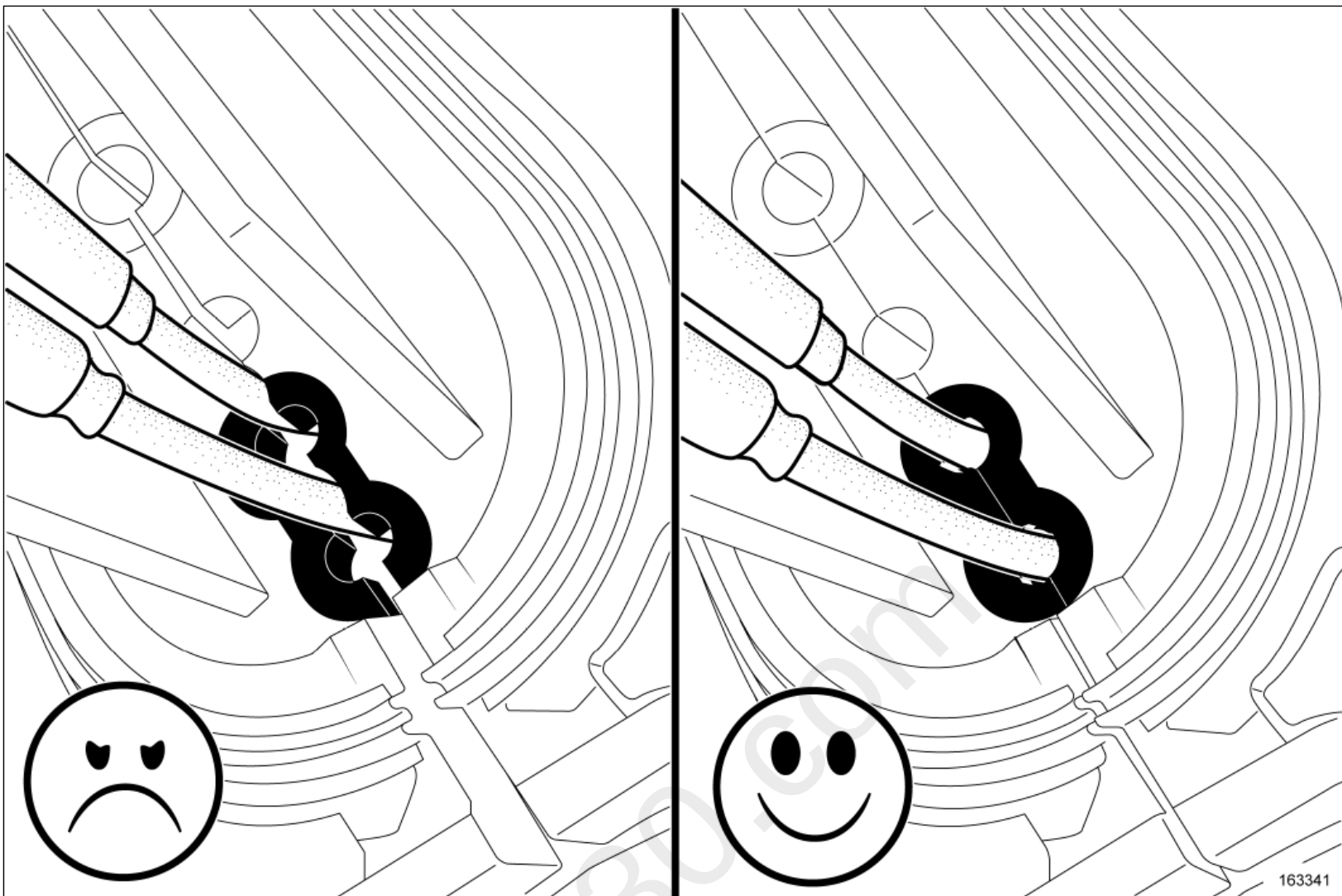
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To ensure good fitting, check :

- the position of the seal,
- the upper part and the lower part must be perfectly aligned.

Check at each end of the seal.



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To ensure good fitting, check :

- the position of the wires in the seal between electric traction motor and the electric vehicle charger and converter, particularly the excitation wires.

Assemble the electric traction motor assembly on the electric vehicle charger and converter.

Refit the nuts between the electric traction motor assembly and the electric vehicle charger and converter.

Torque tighten the nuts between the electric traction motor assembly and the electric vehicle charger and converter([see 17E, Power electronics, Electric powertrain assembly : Exploded view](#)) .

Mark always the nuts with a paint marker of a color different from the original.

Refit ([see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting](#)) :

- the charger and converter supports,

- the charger and converter supports screws.

Torque tighten the charger and converter supports screws([see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting](#)) .

Mark always the screws with a paint marker of a color different from the original.

Clip the electric traction motor signal wiring on the electric vehicle charger and converter.

Connect the electric traction motor signal wiring connector.

Lift the electric powertrain assembly using the tool Mobile crane ([Ms. 1977](#)) .

Place the electric powertrain assembly on the working table (for an access to the access flap to engine electrical connections of electric charger and converter)



Note:

If necessary, align the length of the phase, neutral and excitation wires by pulling gently on them.

Clip the heating connector.

Refit :



the neutral electric connection screw,



the excitation electric connection screws,



the phase electric connection screws.

Torque tighten ([see 17E, Power electronics, Electric powertrain assembly : Exploded view](#)) :



the neutral electric connection screw,



the excitation electric connection screws,



the phase electric connection screws.

Mark always the screws with a paint marker of a color different from the original.

Refit ([see 17E, Power electronics, Electric powertrain assembly : Exploded view](#)) :



the access flap seal to engine electrical connections of electric vehicle charger and converter,



the access flap to engine electrical connections of electric vehicle charger and converter,



the access flap to engine electrical connections of electric vehicle charger and converter screws.

Torque tighten the access flap to engine electrical connections of electric vehicle charger and converter screws ([see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting](#)) .

Mark always the screws with a paint marker of a color different from the original.

2. FINAL OPERATION

Refit the electric traction reducer assembly ([see Electric traction reduction gearing: Removal - Refitting](#)) .

Refit the electric powertrain assembly ([see 17E, Power electronics, Electric powertrain assembly : Removal - Refitting](#)) .

Remove the Lockout of the vehicle ([Vehicle: Lockout - Removal of lockout](#)) .

Let the vehicle on the two post lift before placing the vehicle on the ground.

Make a test to check if the electric runs properly :



put the gear lever to the drive position and check that the wheels run forwards,



put the gear lever to the rear position and check that the wheels run backwards.



Put the gear lever to the park position.



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