

ELECTRIC POWERTRAIN ASSEMBLY : REMOVAL - REFITTING



Note, one or more warnings are present in this procedure



Special tooling required

Support for removal - refitting of engine - gearbox assembly

Mot. 1390

Equipment required

Diagnostic tool

refrigerant charging station

workshop hoist

WARNING



■ To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- [Vehicle: Precautions for the repair](#) ,
- [Wiring: Precautions for the repair](#) .

CAUTION



To prevent contamination of disconnected connectors and sockets, hermetically seal the connectors and sockets using a plastic bag and a securing clip. For traction battery sockets, use traction battery caps [Vehicle: Parts and consumables for the repair](#) .

CAUTION



To prevent moisture from entering the system, place plugs on the cold loop components which are open to the air.

Location and specifications (tightening torques, parts always to be replaced, etc.) [Engine-gearbox unit support assembly: Exploded view](#) .

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift [Vehicle: Towing and lifting](#) .

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](#) .

- Apply the Before repair procedure using the Diagnostic tool [Diagnostic tool : Use](#) :

-Computer concerned by the After repair procedure:

- "BCB" ,

-Component controlled by this computer concerned by the After repair procedure:

- "electric vehicle charger//calculateur BCB" .

- Apply the Before repair procedure using the Diagnostic tool [Diagnostic tool : Use](#) :

-Computer concerned by the After repair procedure:

- "PEB" ,

-Component controlled by this computer concerned by the After repair procedure:

- "electric traction reduction gear assembly" .

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

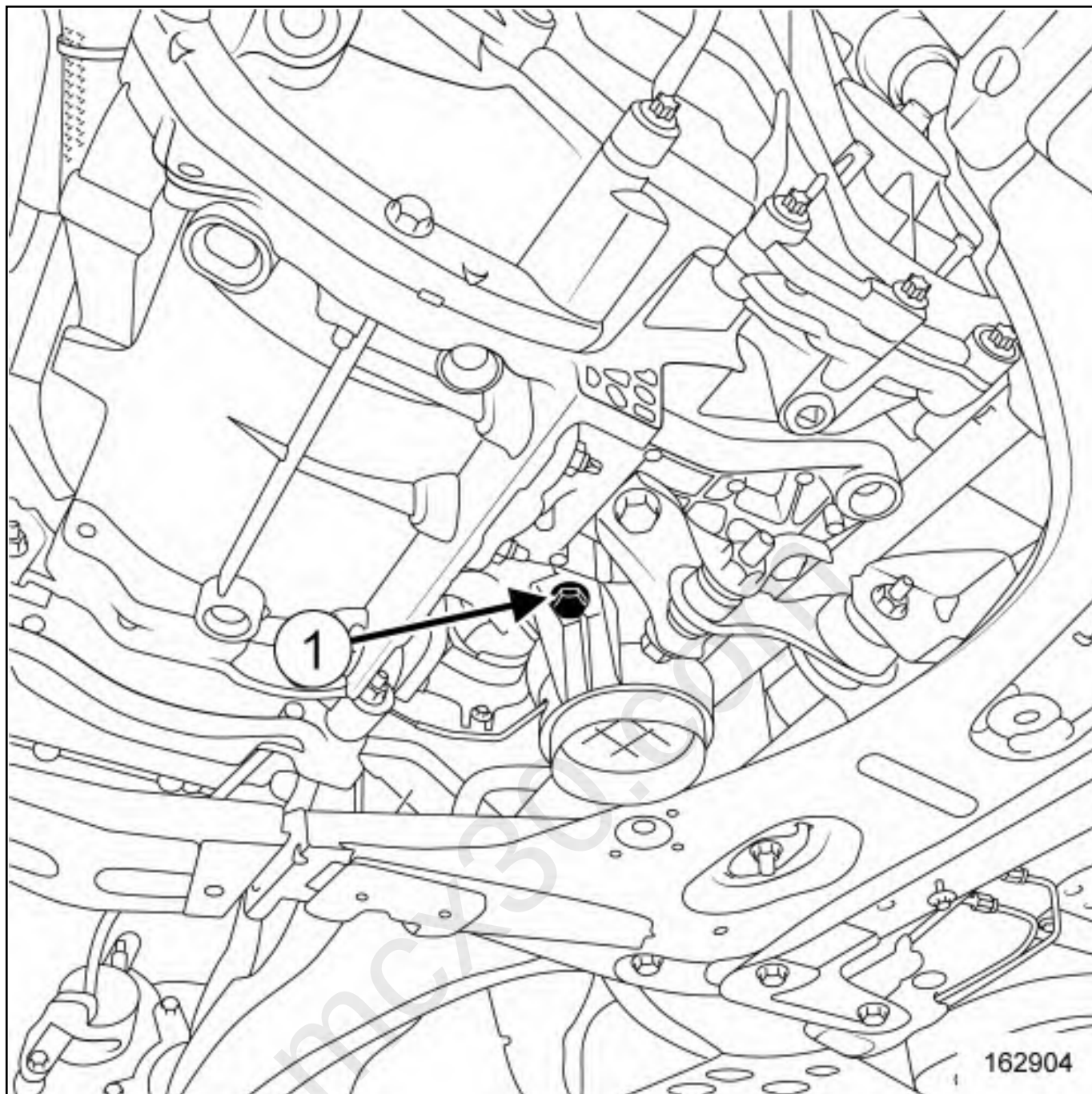
- Remove the engine undertray.

- Drain :

- the cooling system [Cooling system: Draining - Refilling](#) ,
- the electric traction reducer assembly ,
- the refrigerant circuit using the refrigerant charging station [Refrigerant circuit: Draining - Filling](#) .

- Remove:

- the front wheels [Front hub carrier assembly: Exploded view](#) ,
- the front section of the front right-hand wheel arch liner [Exterior body front trim assembly: Exploded view](#) ,
- the front bumper [Front bumper: Removal - Refitting](#) ,
- the front right-hand driveshaft [Driveshaft assembly: Exploded view](#) ,
- the front left-hand driveshaft [Driveshaft assembly: Exploded view](#) .



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

- the screw(1) of the rear air outlet duct,
- the rear air outlet duct .

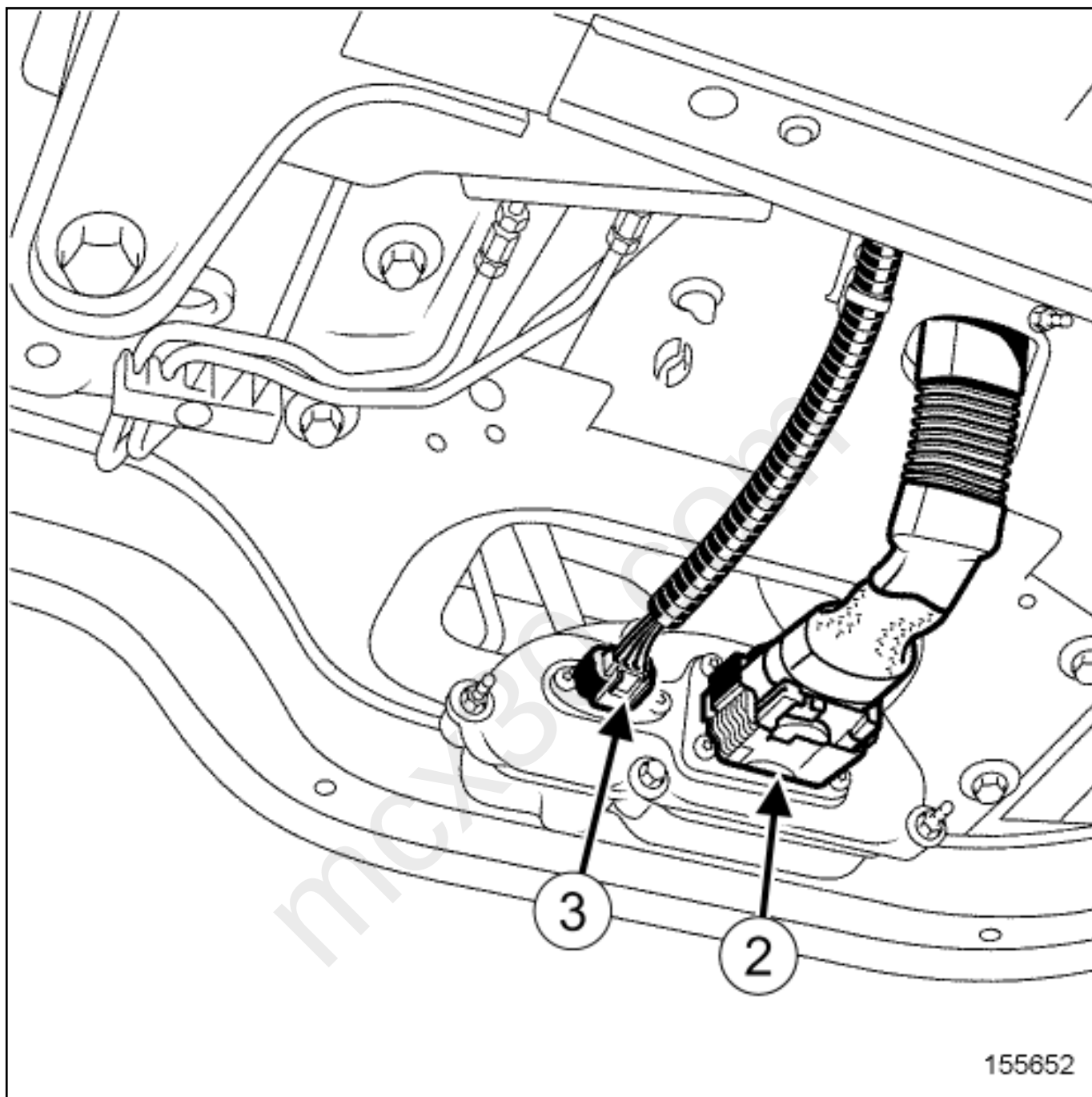
■ Remove [Engine-gearbox unit support assembly: Exploded view](#) :

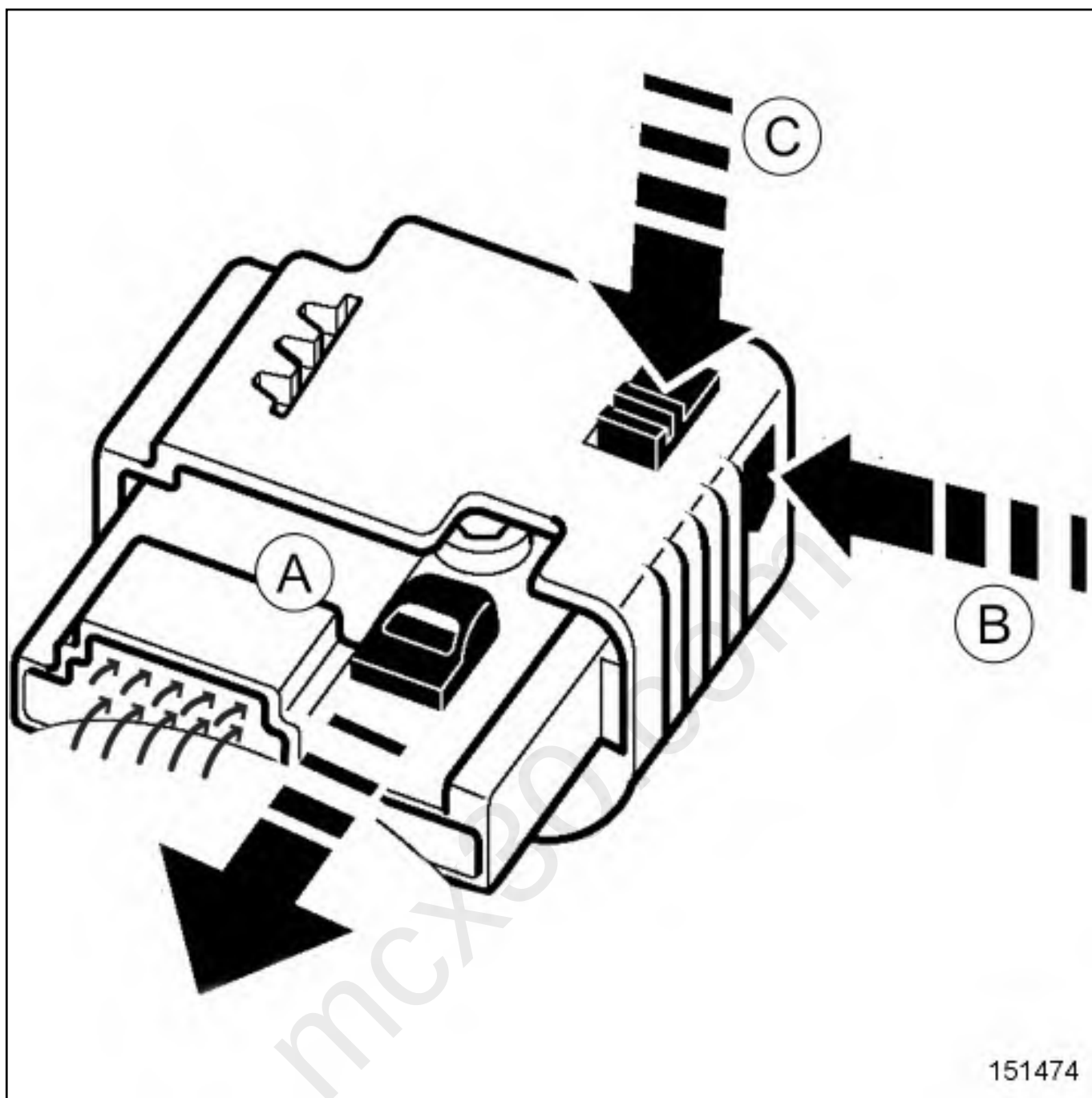
- the lower engine tie-bar bolt from the front axle subframe,
- the lower engine tie-bar bolt from the engine tie-bar mounting,
- the lower engine tie-bar,
- the engine tie-bar mounting bolt,
- the engine tie-bar mounting.

■ Remove [Traction battery assembly: Exploded view](#) :

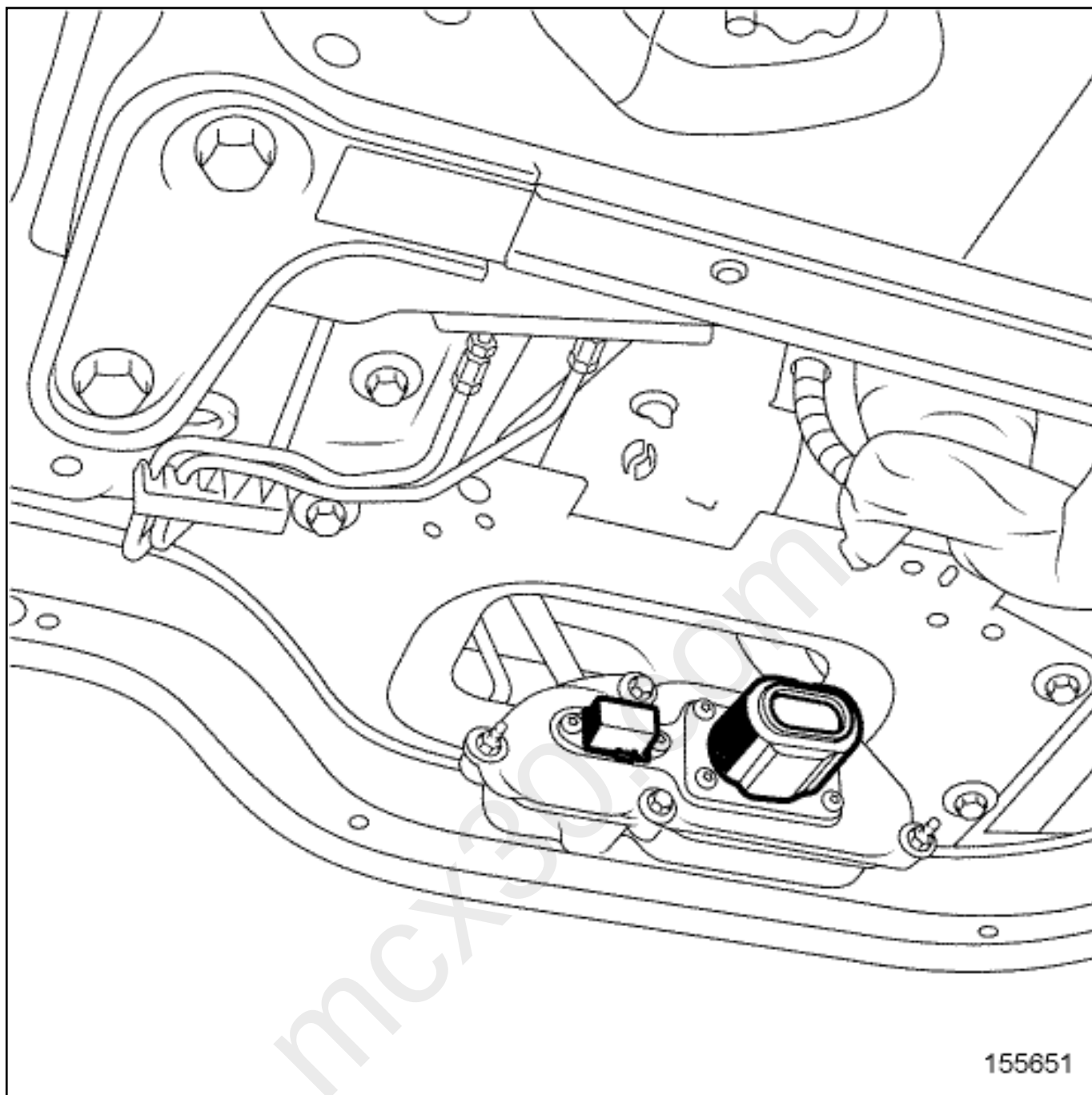
- the under body protector clips,
- the under body protector screws,

- the under body protector,
- the traction battery undercover screws,
- the traction battery undercover.



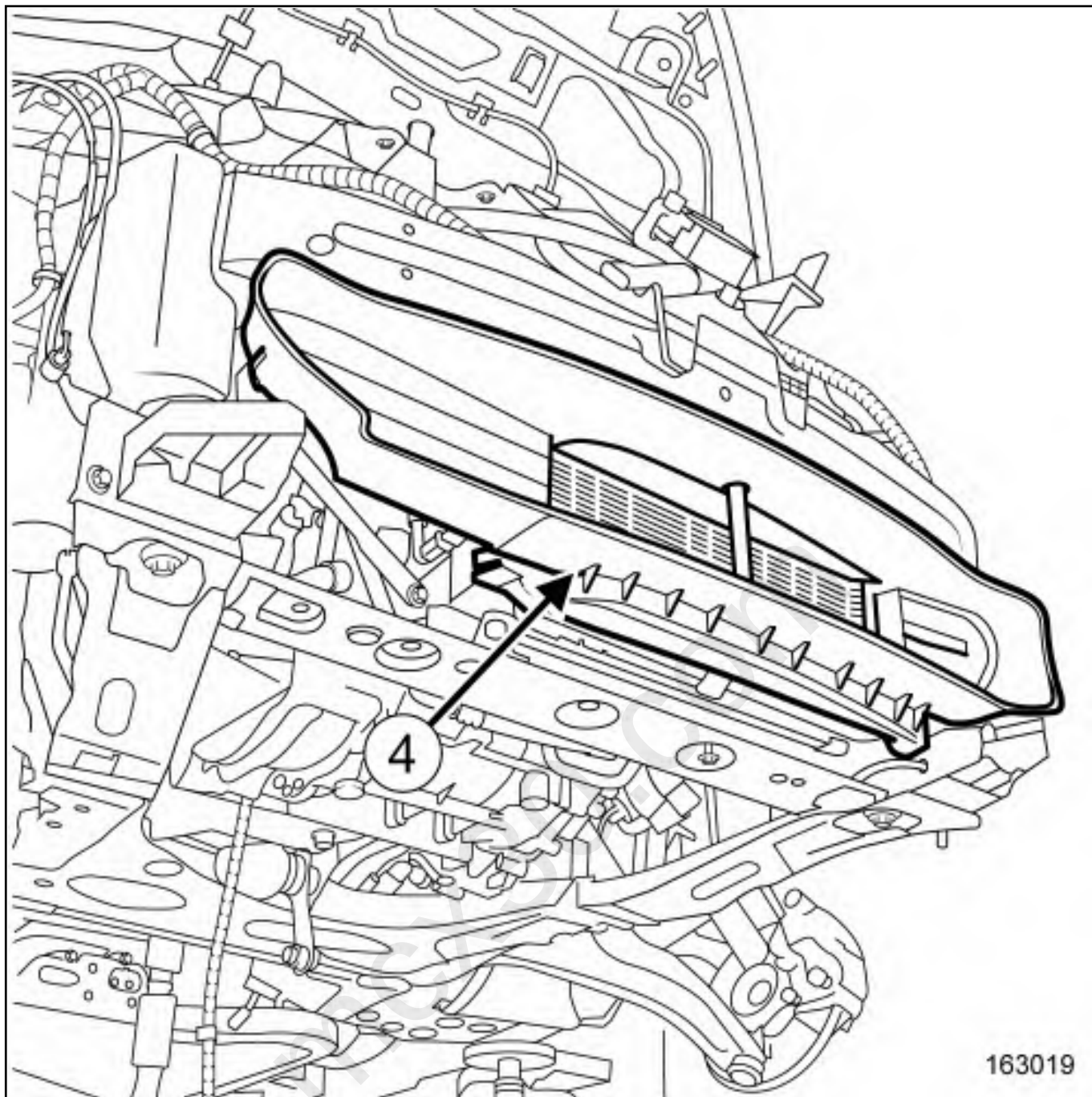


- Disconnect :
 - the traction battery connector(2) by following the steps specified by the arrows(A) , (B) and (C) ,
 - the traction battery signal connector(3) .
- Unclip the traction battery signal wiring.
- Remove the traction battery signal wiring nut.
- Move aside the traction battery signal wiring.



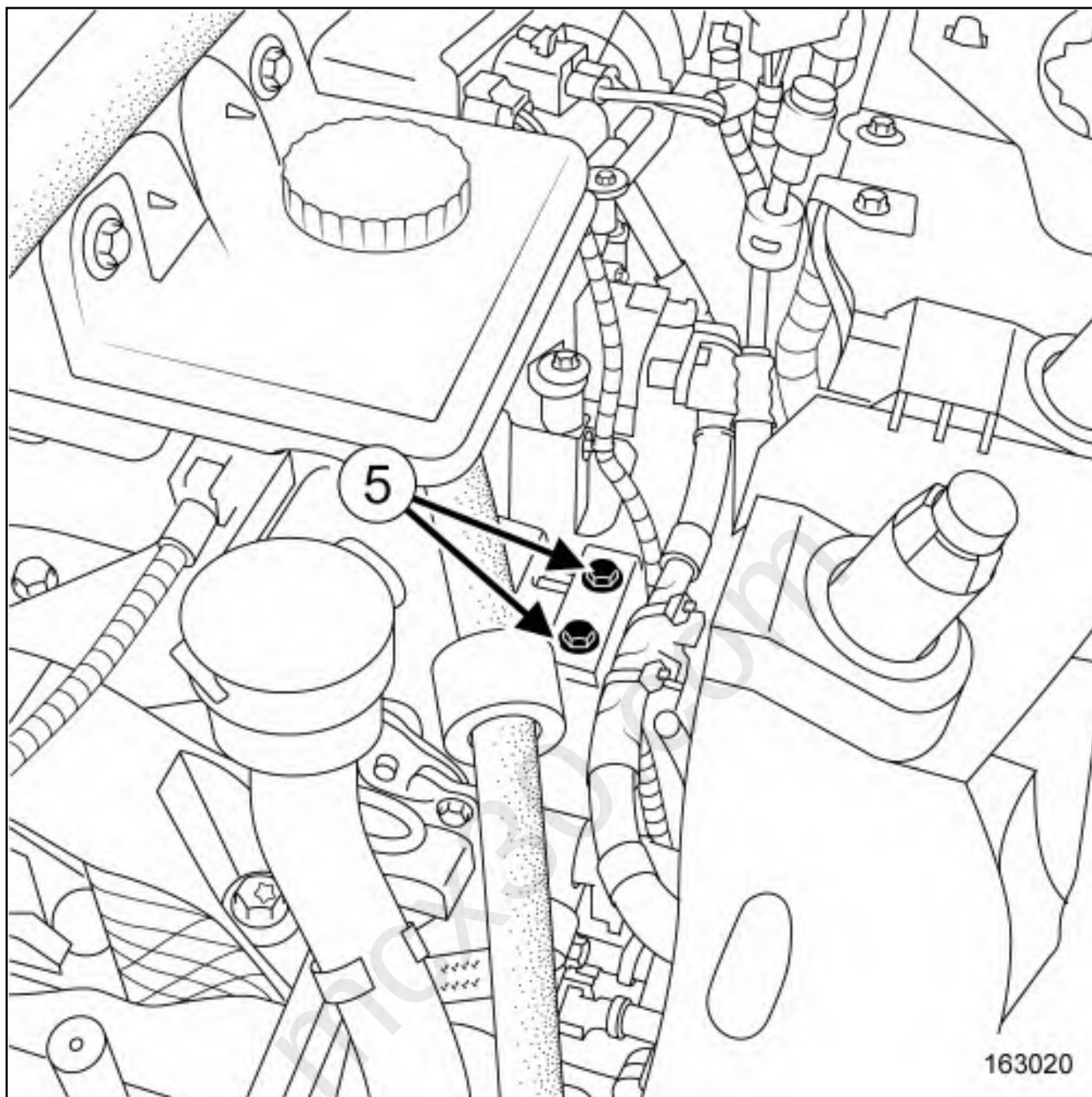
■ Protect the traction battery connector sockets [Wiring: Precautions for the repair](#) .

■ Remove the headlights [Headlight assembly: Exploded view](#) .

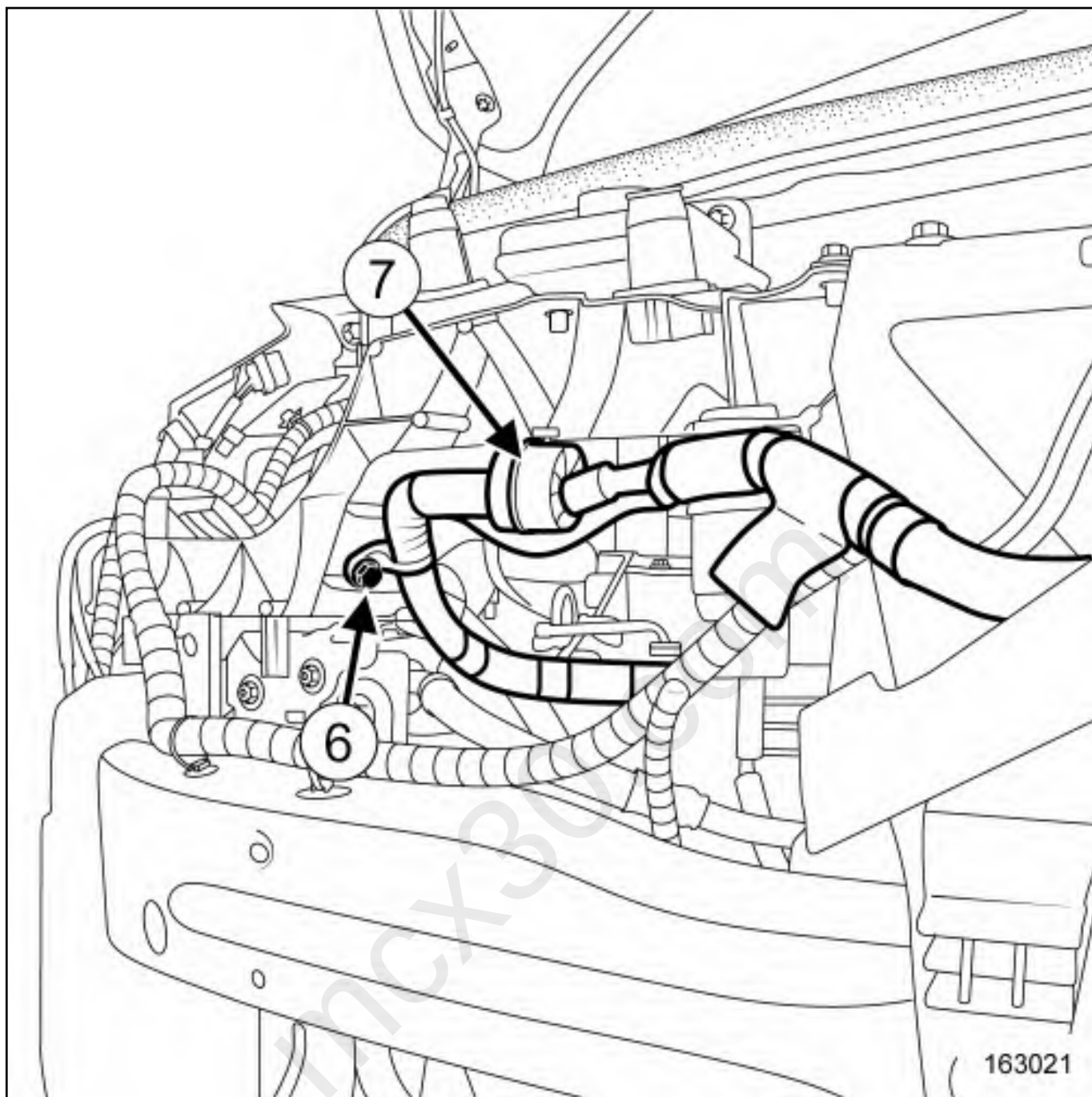


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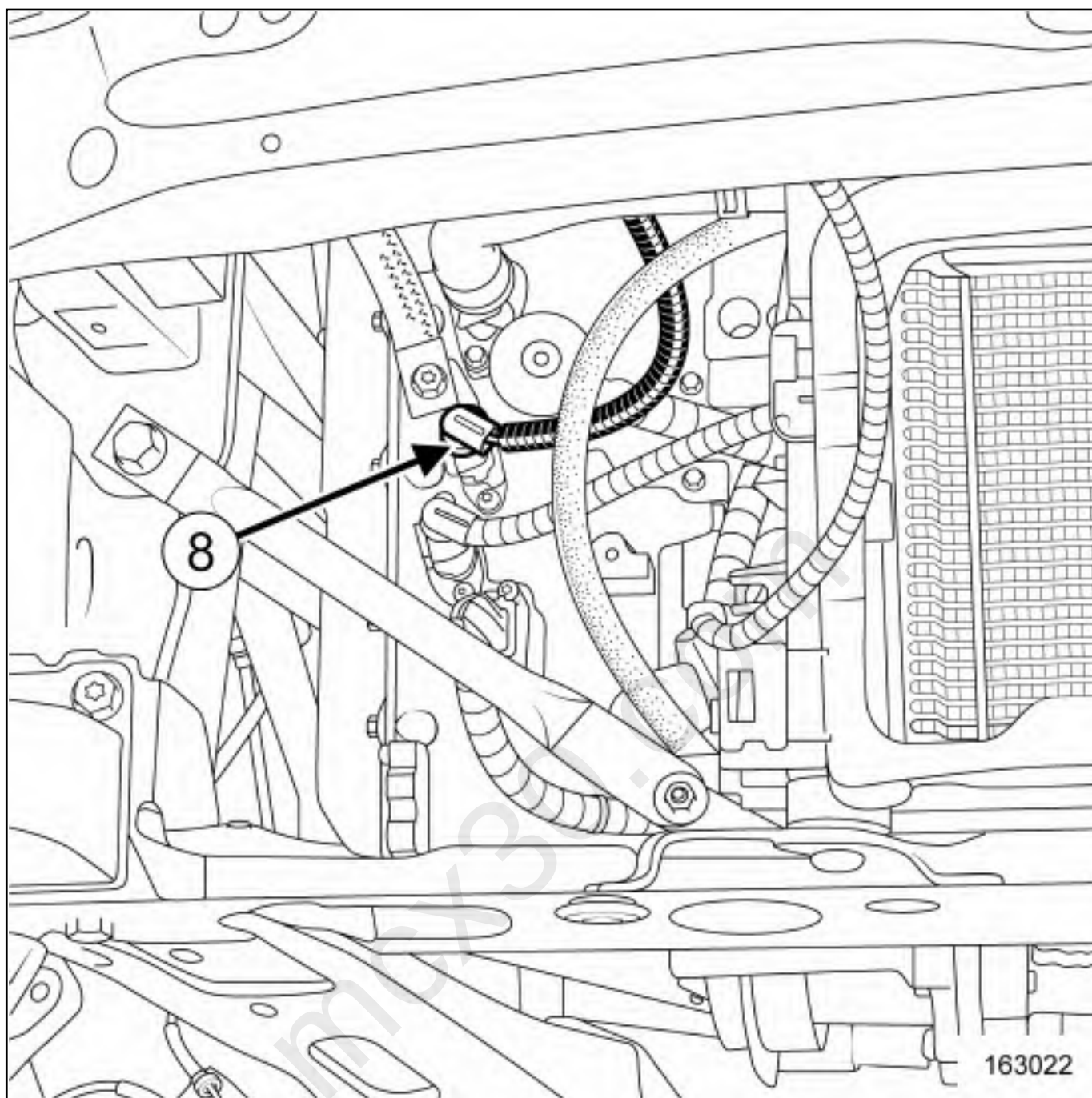
■ Remove the air deflector(4) .



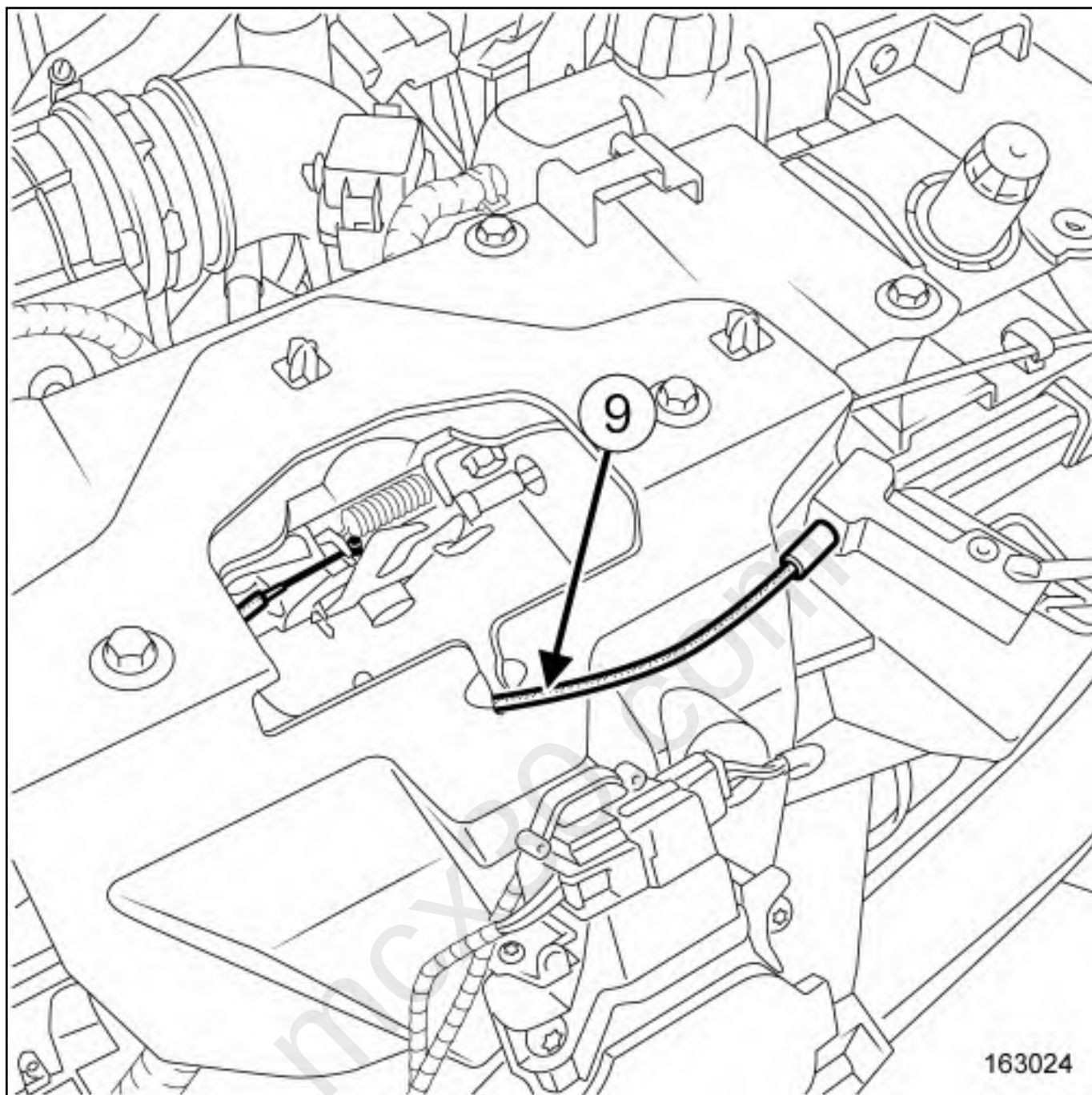
- Remove the screws(5) of the wiring between charger and electric vehicle charging socket.



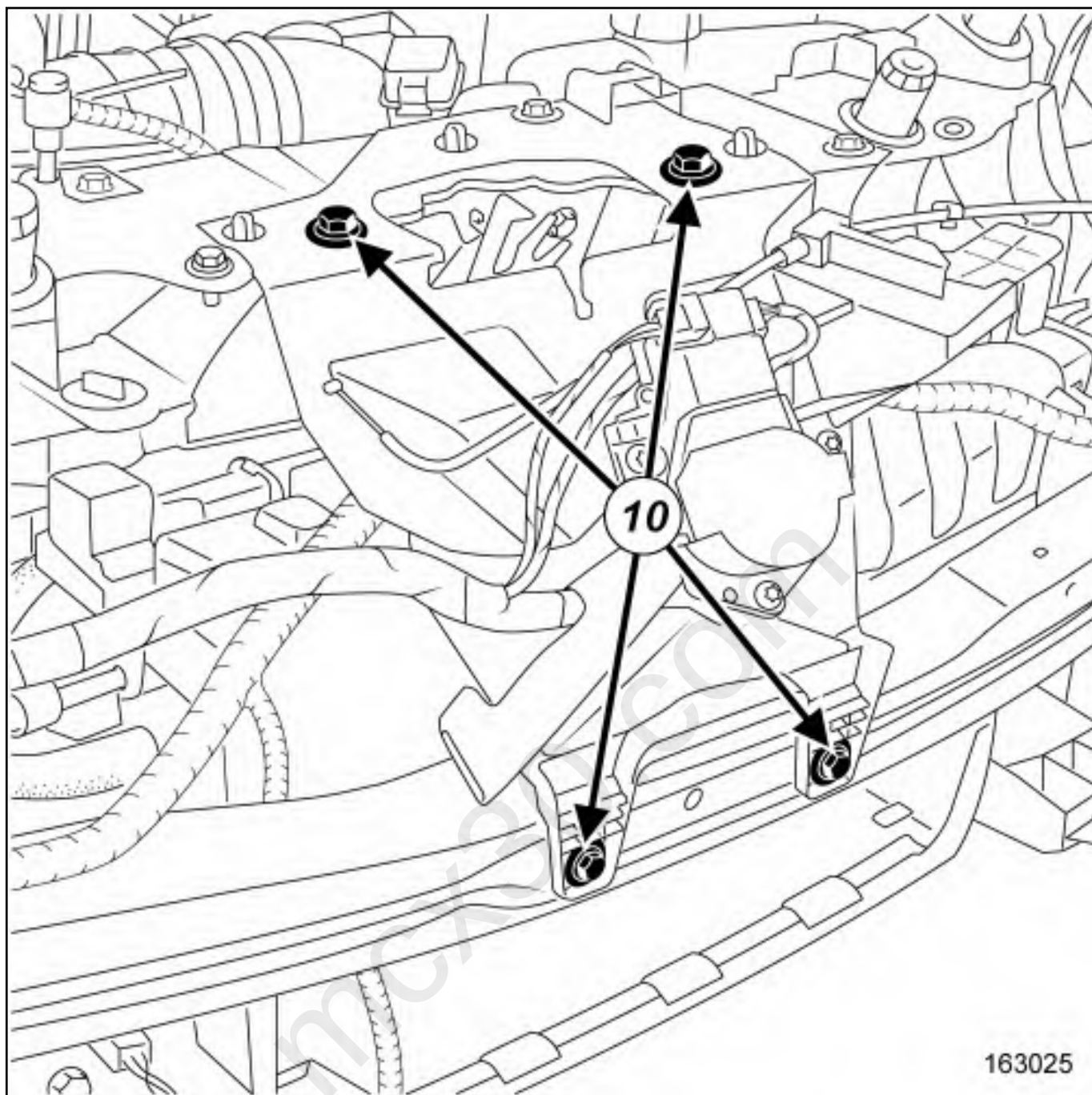
- Remove the screw(6) of the wiring between charger and electric vehicle charging socket from the front upper cross member.
- Unclip the clip(7) of the wiring between charger and electric vehicle charging socket from the front upper cross member.



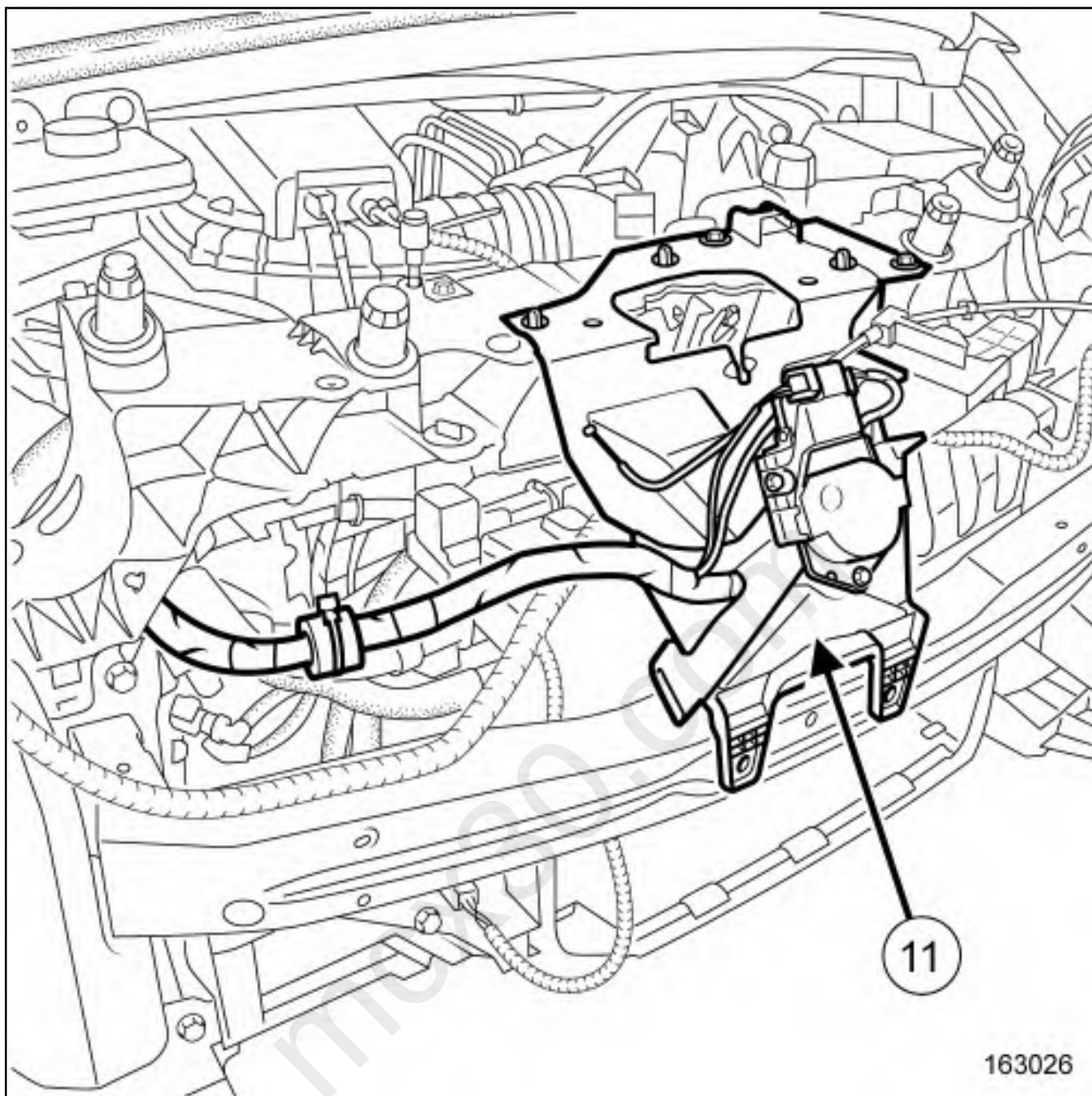
■ Disconnect the charging plug signal connector socket(8) ([see 17E, Power electronics, Electric vehicle charger and converter assembly : Exploded view](#)) .



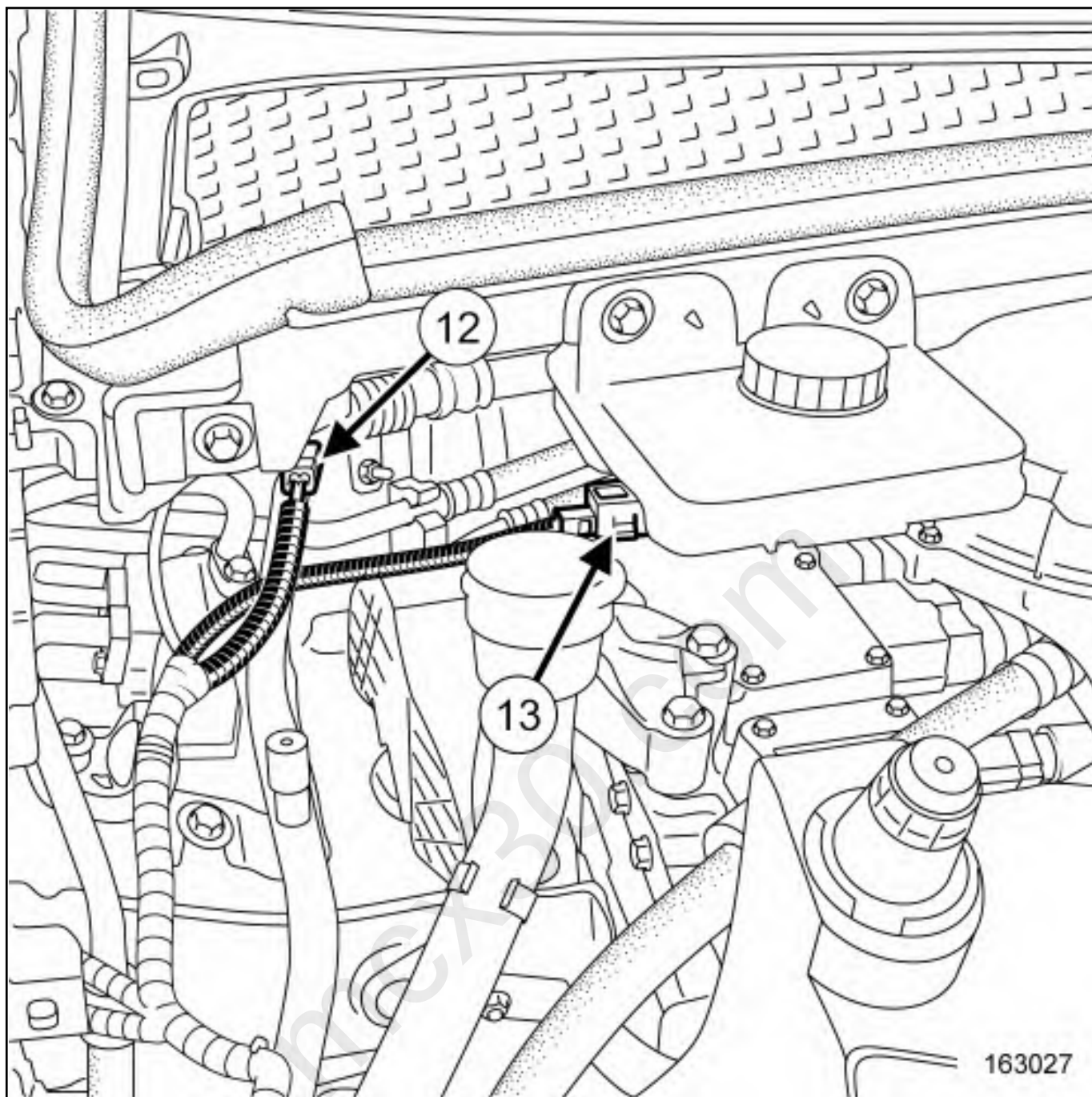
- Unclip the bonnet opening cable(9) from the electric vehicle charging socket support.
- Move aside the bonnet opening cable.



- Remove the four mounting screws(10) of the electric vehicle charging socket support.

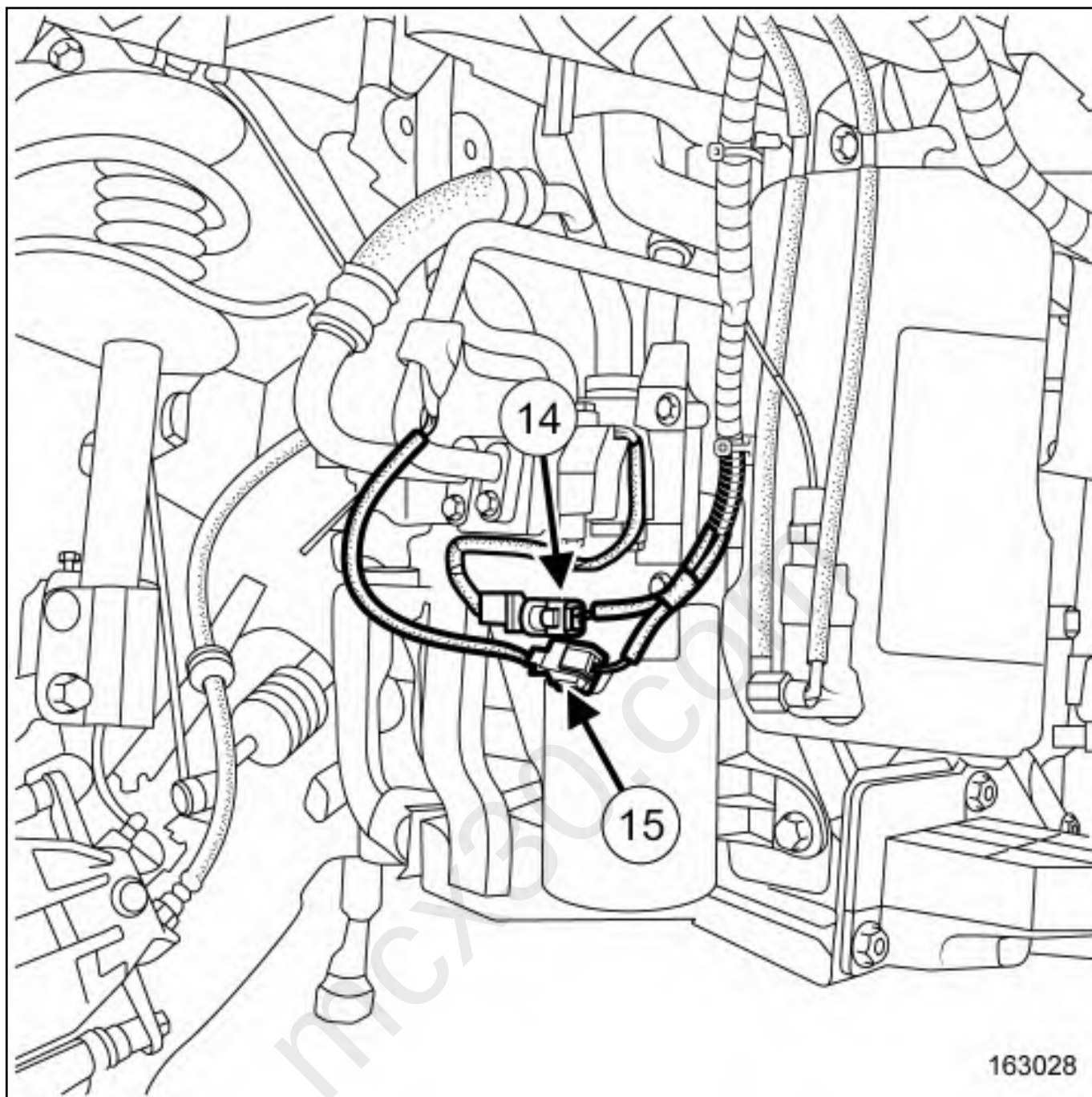


■ Remove "the wiring between charger and electric vehicle charging socket - the electric vehicle charging socket support assembly"(11) .



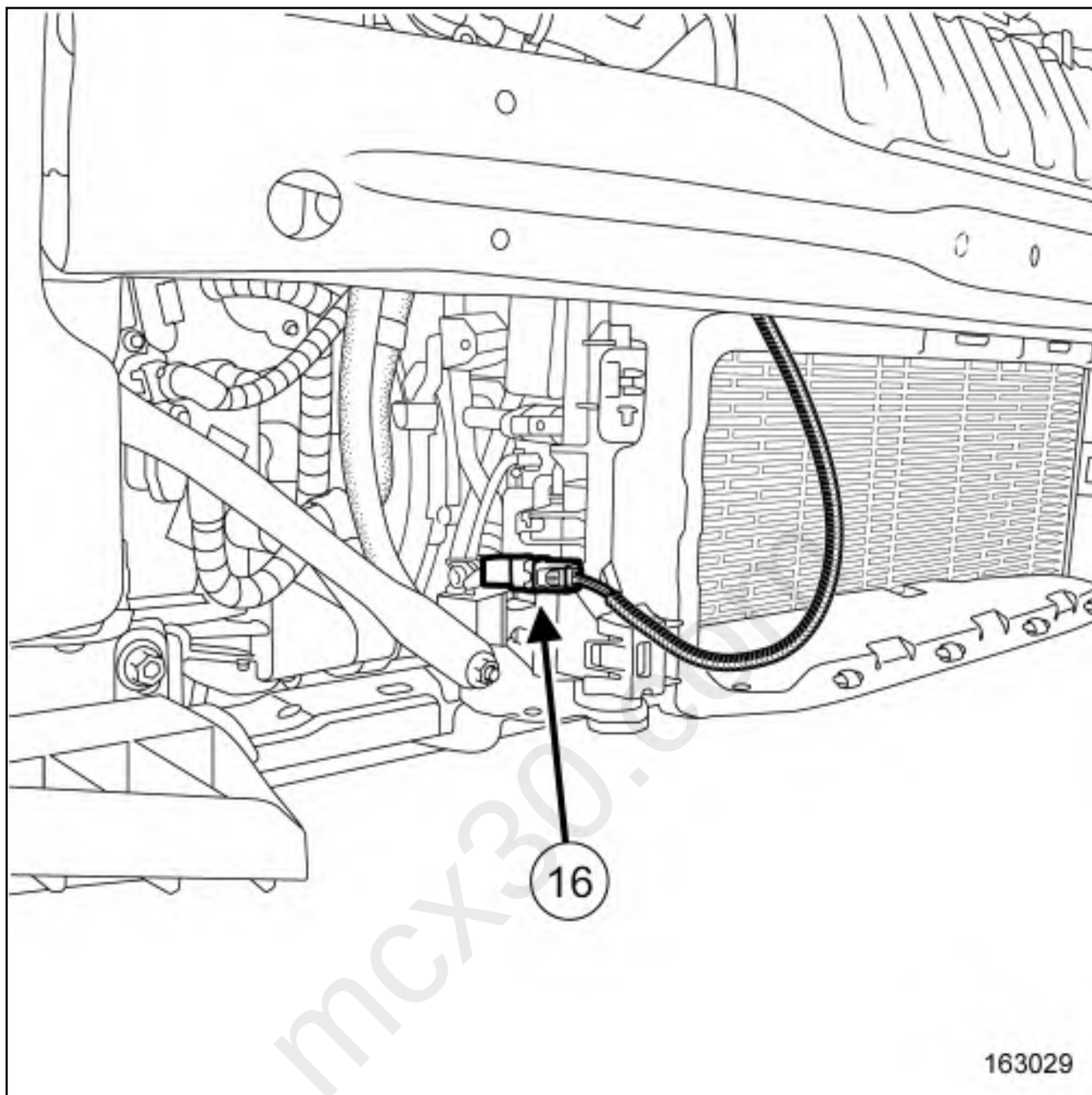
■ Disconnect :

- the refrigerant circuit solenoid valve connector(12) ,
- the brake fluid reservoir level connector(13) .

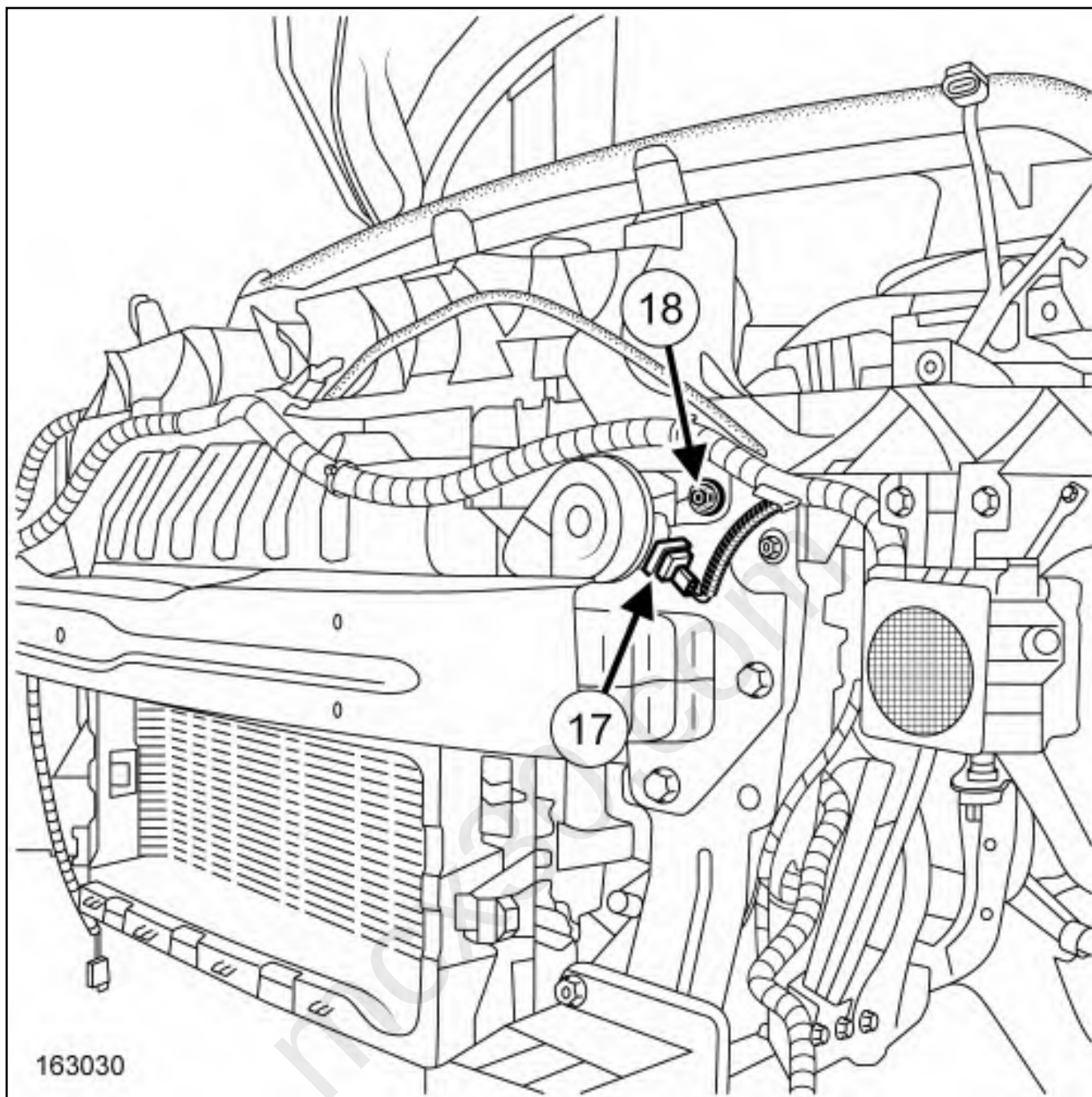


■ Disconnect :

- the refrigerant circuit solenoid valve connector(14) on the dehydrator reservoir side,
- the refrigerant circuit temperature sensor connector(15) .



- Disconnect the refrigerant circuit solenoid valve connector(16) on the condenser side.
- Remove the windscreen washer reservoir(see **Windscreen washer reservoir: Removal - Refitting**) .

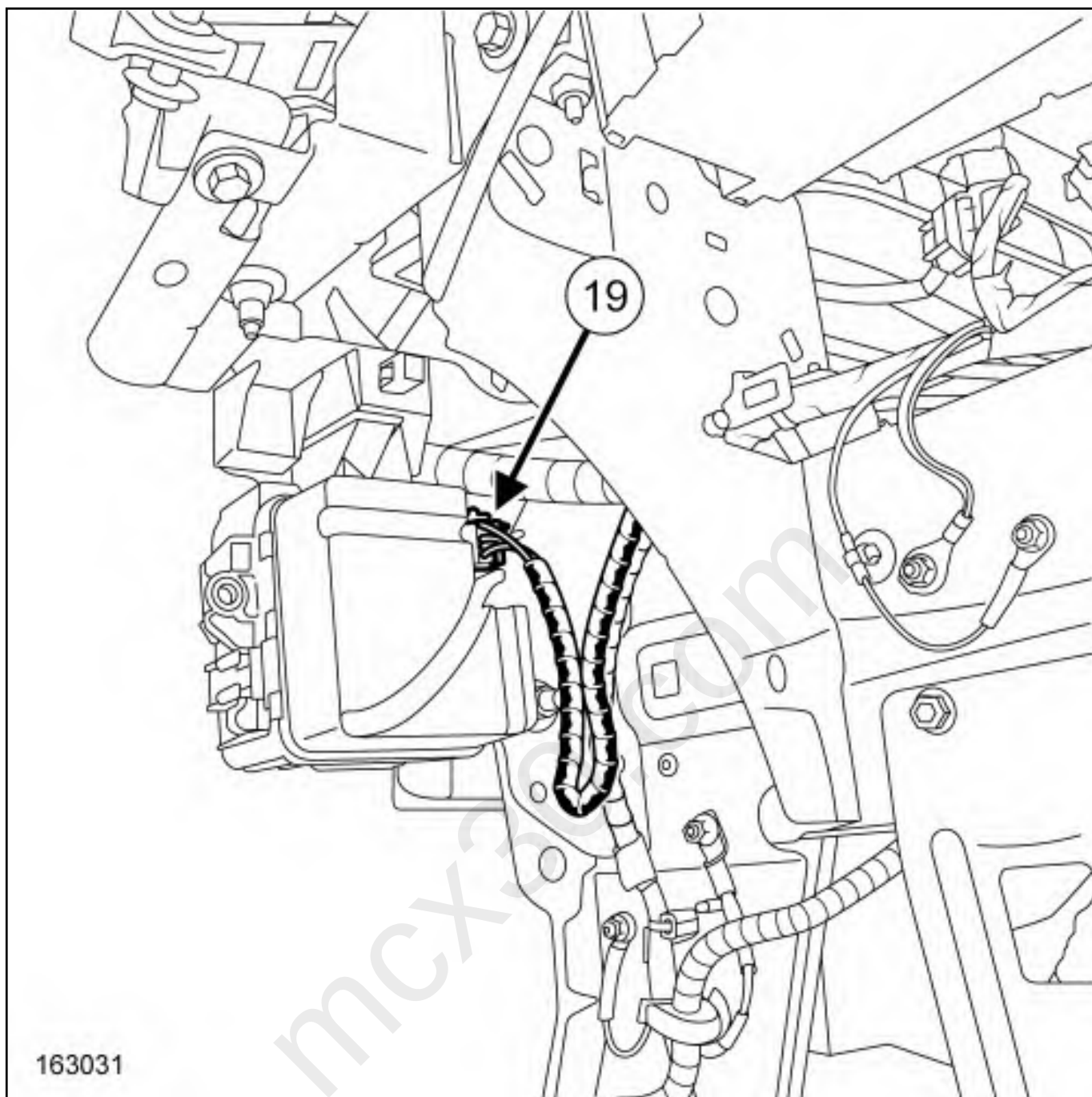


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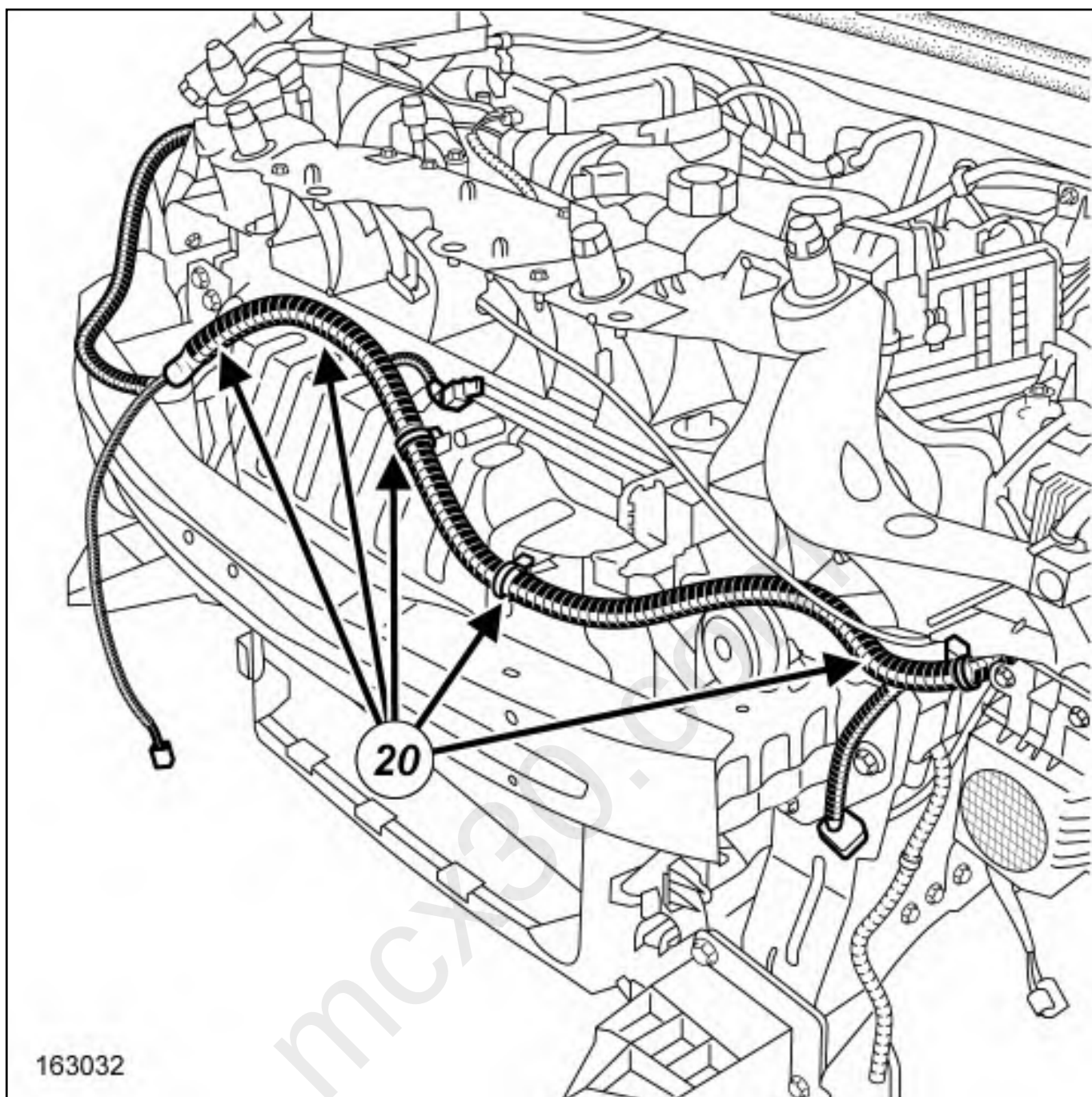
■ Disconnect the horn connector(17) .

■ Remove :

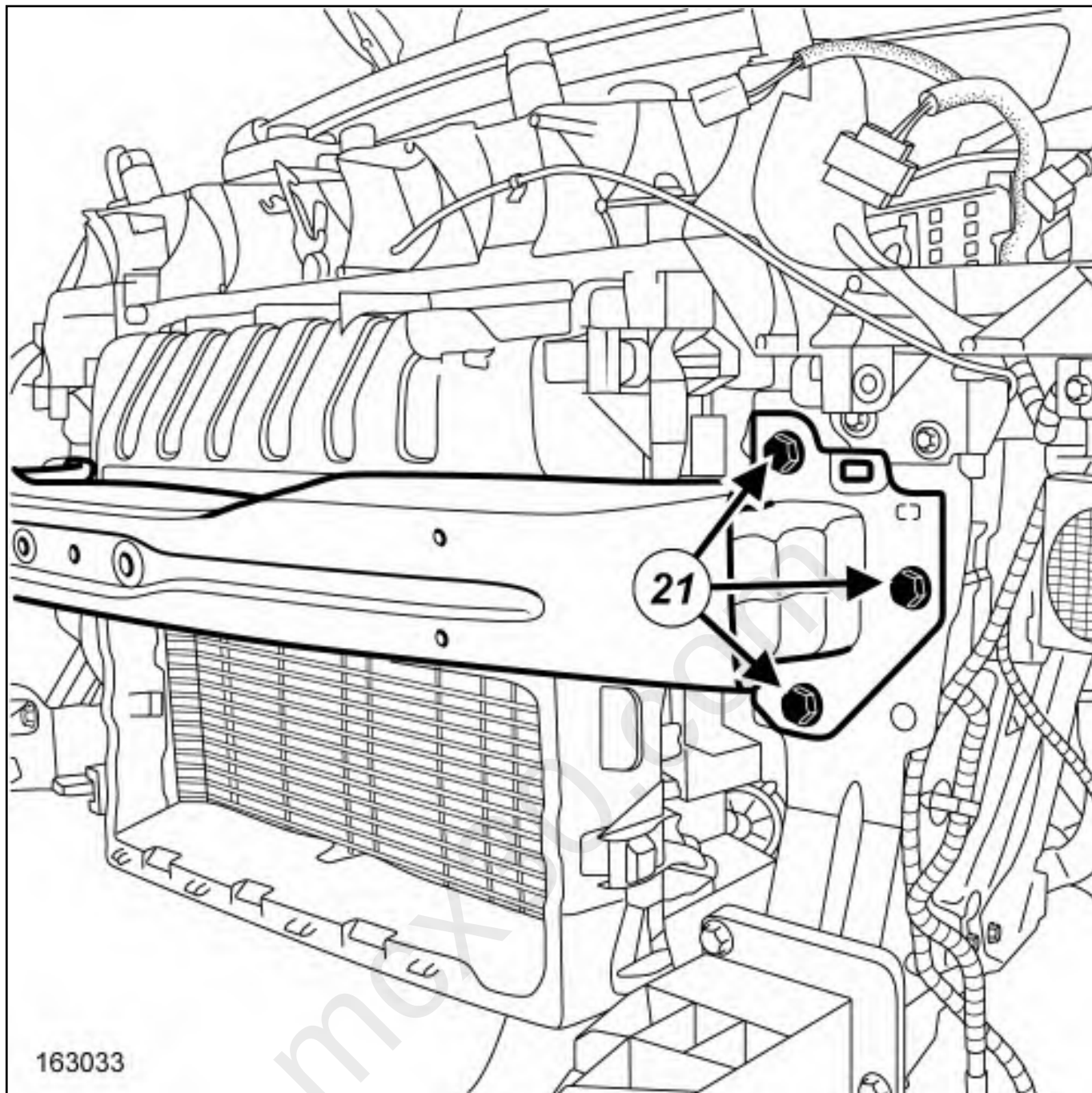
- the horn screw(18) ,
- the horn.



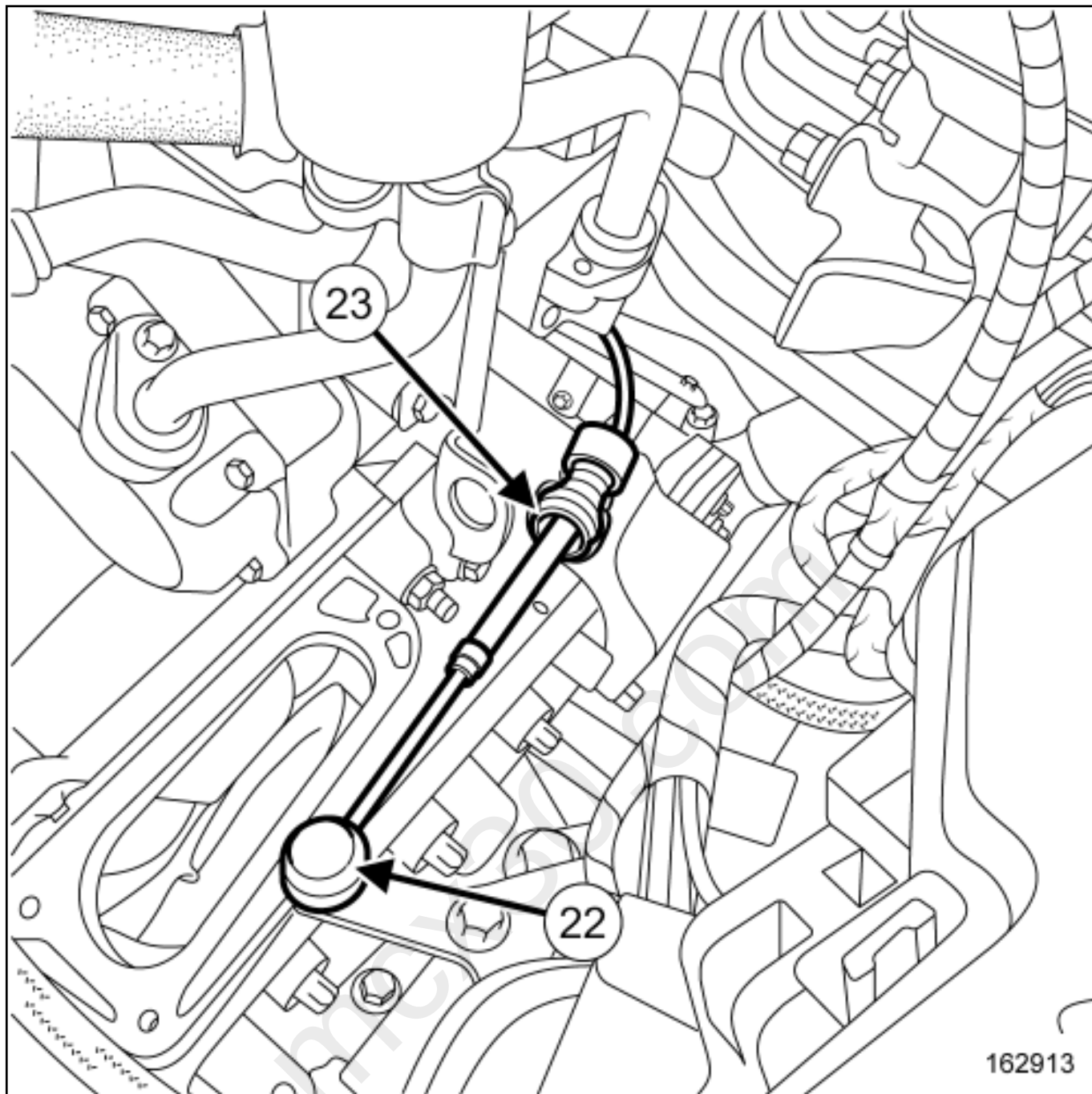
- Disconnect the buzzer pedestrian connector(19) .



- Unclip the wiring(20) .
- Remove the reinforcing bar of the front impact cross member.



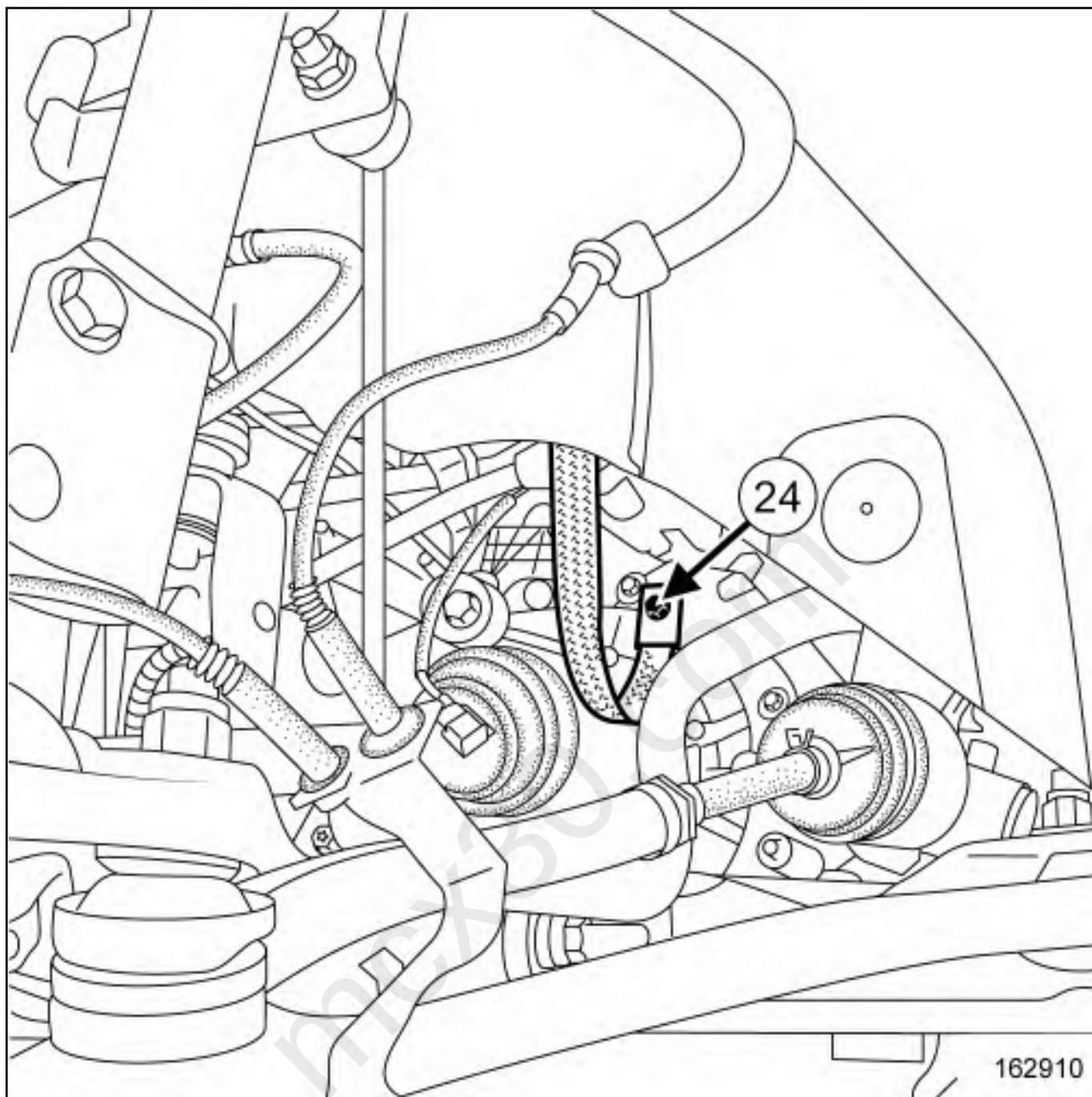
- Remove :
 - the front impact cross member screws(21) ,
 - the front impact cross member.
- Remove the 12V battery [Battery: Removal - Refitting](#) .
- Remove the 12V battery tray [Battery tray: Removal - Refitting](#) .



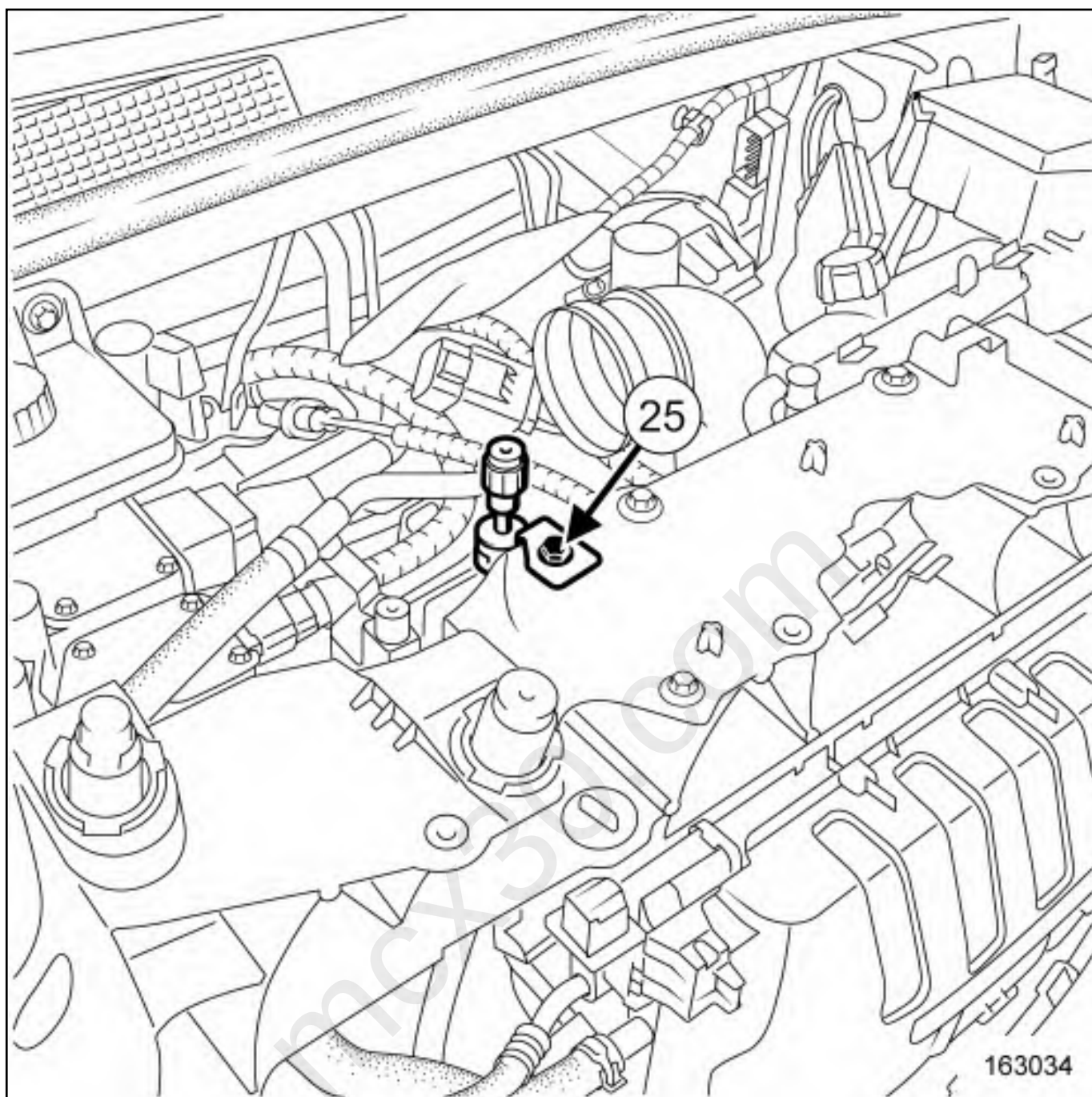
■ Unclip the anchoring ball joint(22) using an open-jawed spanner.

■ Unclip the cheath stop from the gear shift cable:

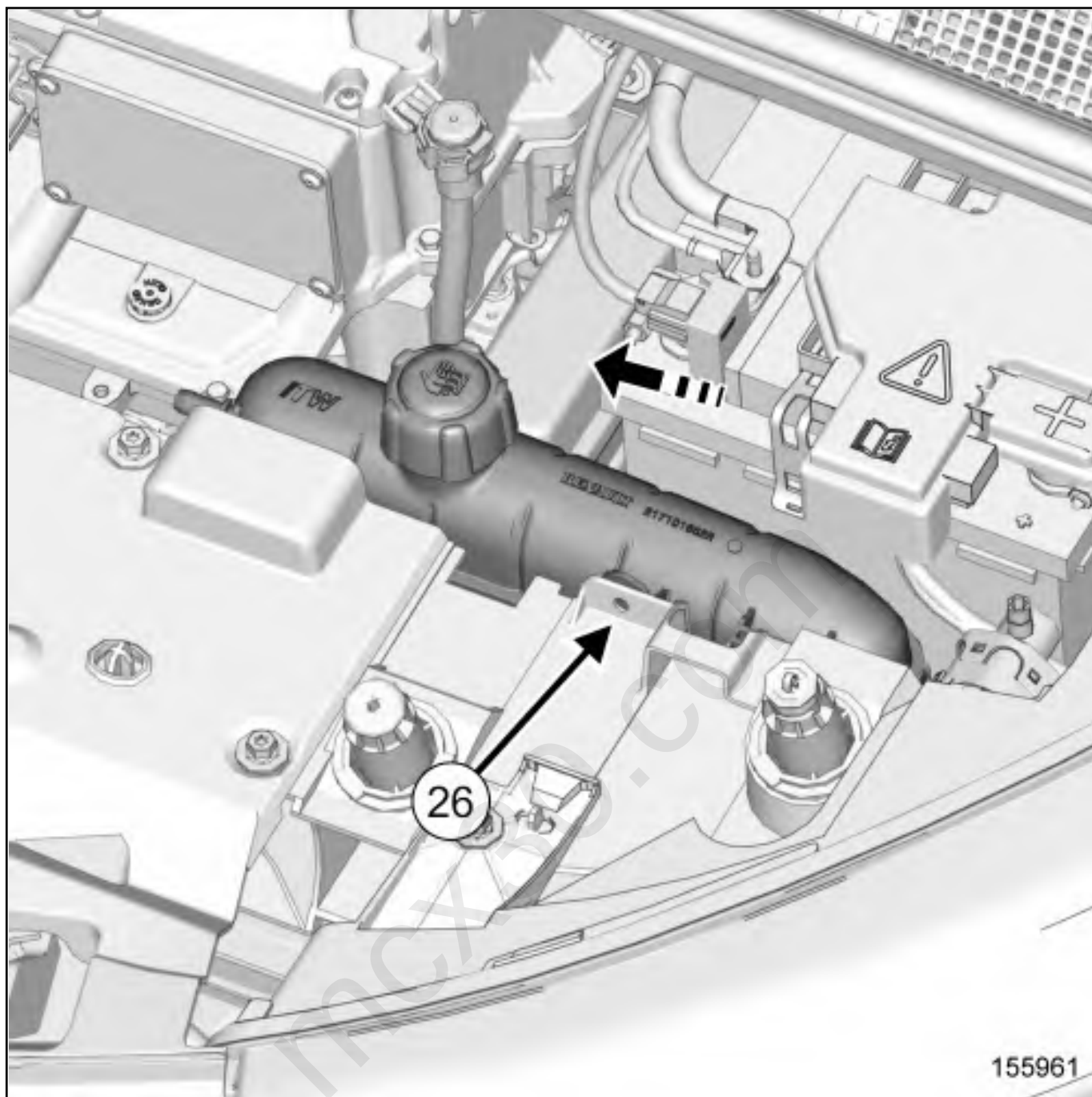
- by pressing the tab(23) ,
- by pulling the gear shift cable.



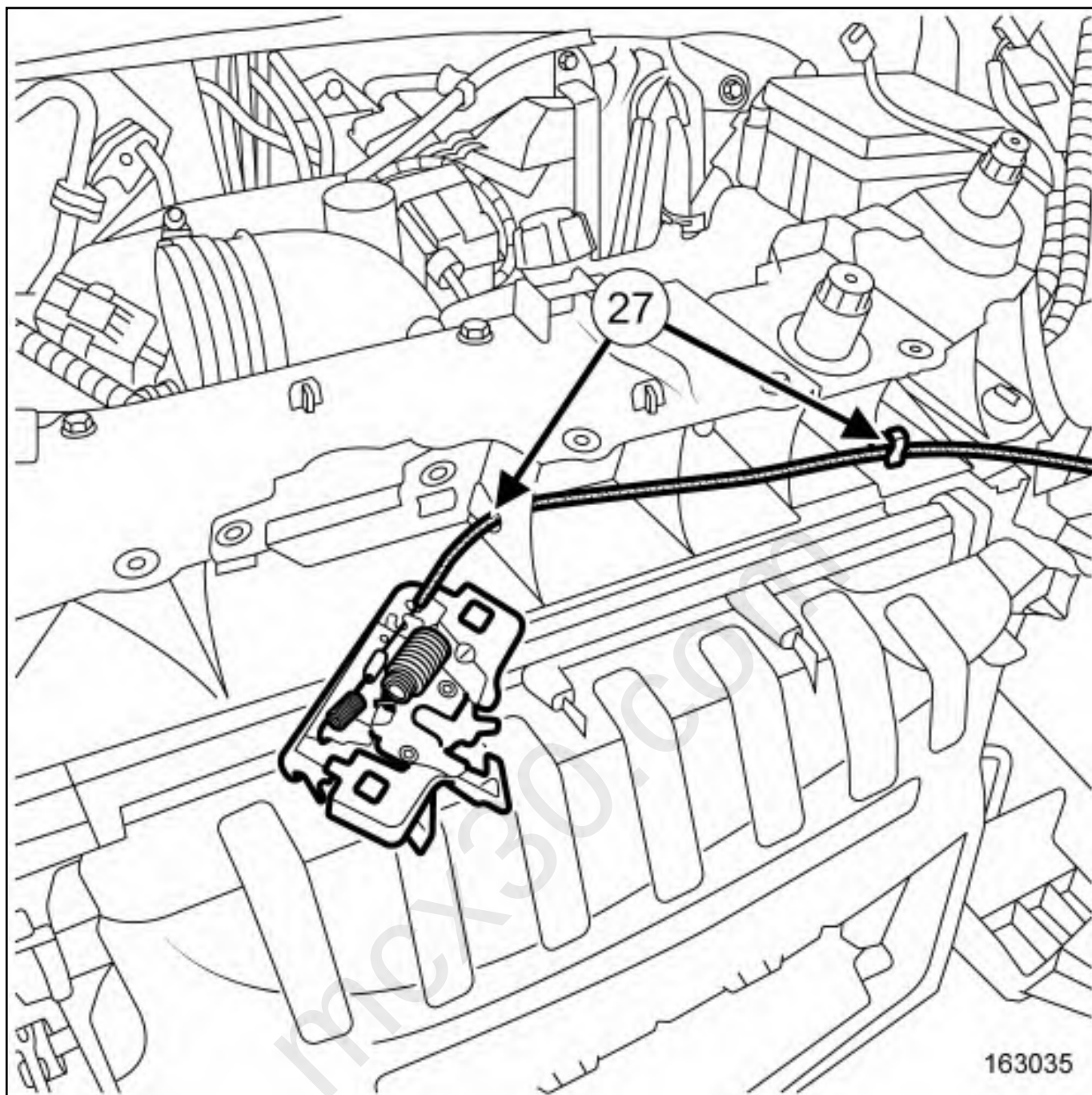
- Remove the earth strap screw(24) of electric traction reducer assembly.
- Remove the electric traction motor fan assembly [Electric traction motor fan assembly : Removal - Refitting](#) .



- Remove the bracket screw(25) of the Intermediate pipe - condenser connecting pipe [Passenger compartment cooling assembly: Exploded view](#) from the front upper cross member.



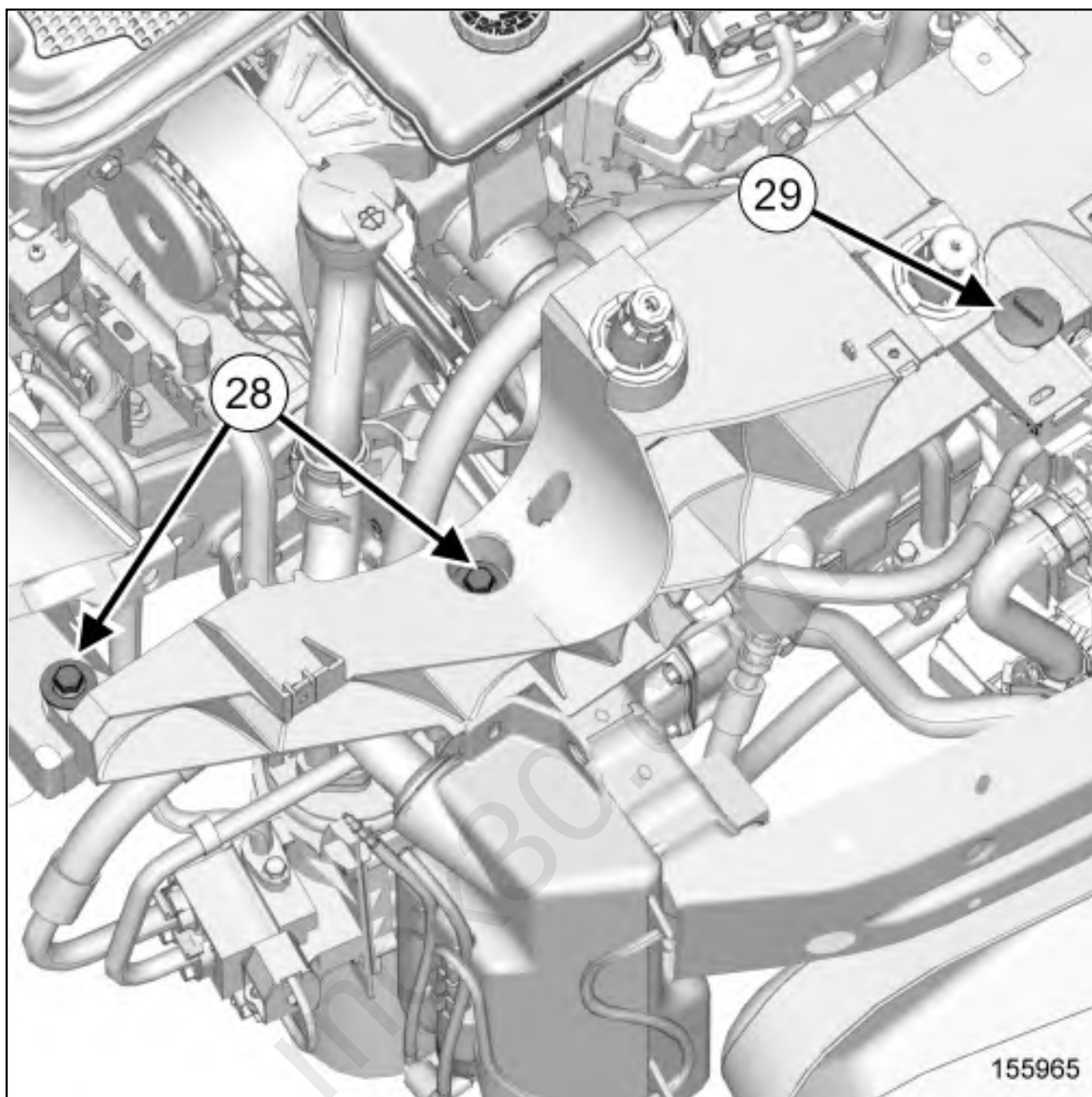
- Remove the expansion bottle clip(26) .
- Unclip the expansion bottle in the direction of arrow.



■ Remove :

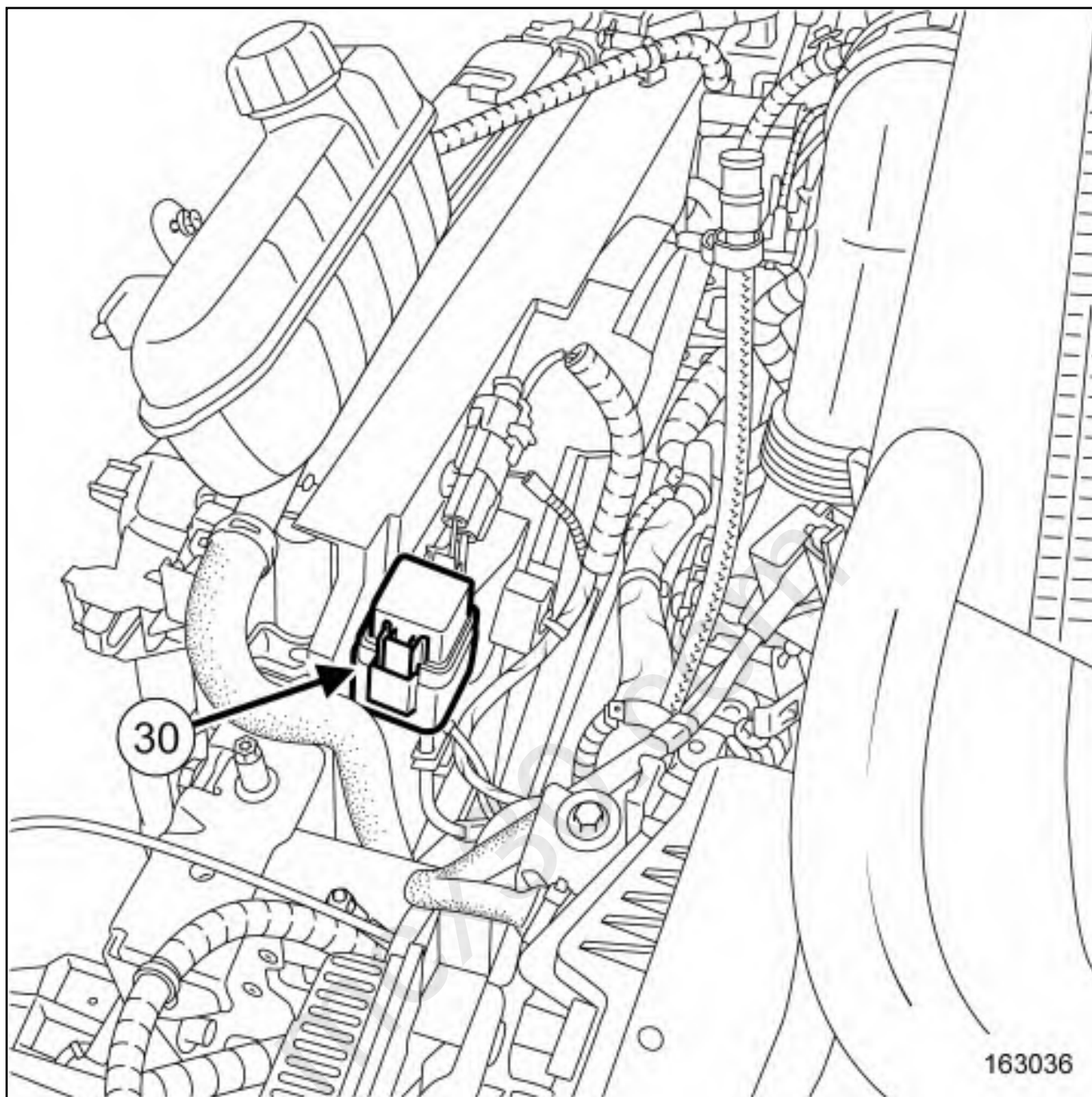
- the screws of the bonnet catch,
- the bonnet catch.

■ Unclip the bonnet release cable(27) from the front upper cross member,

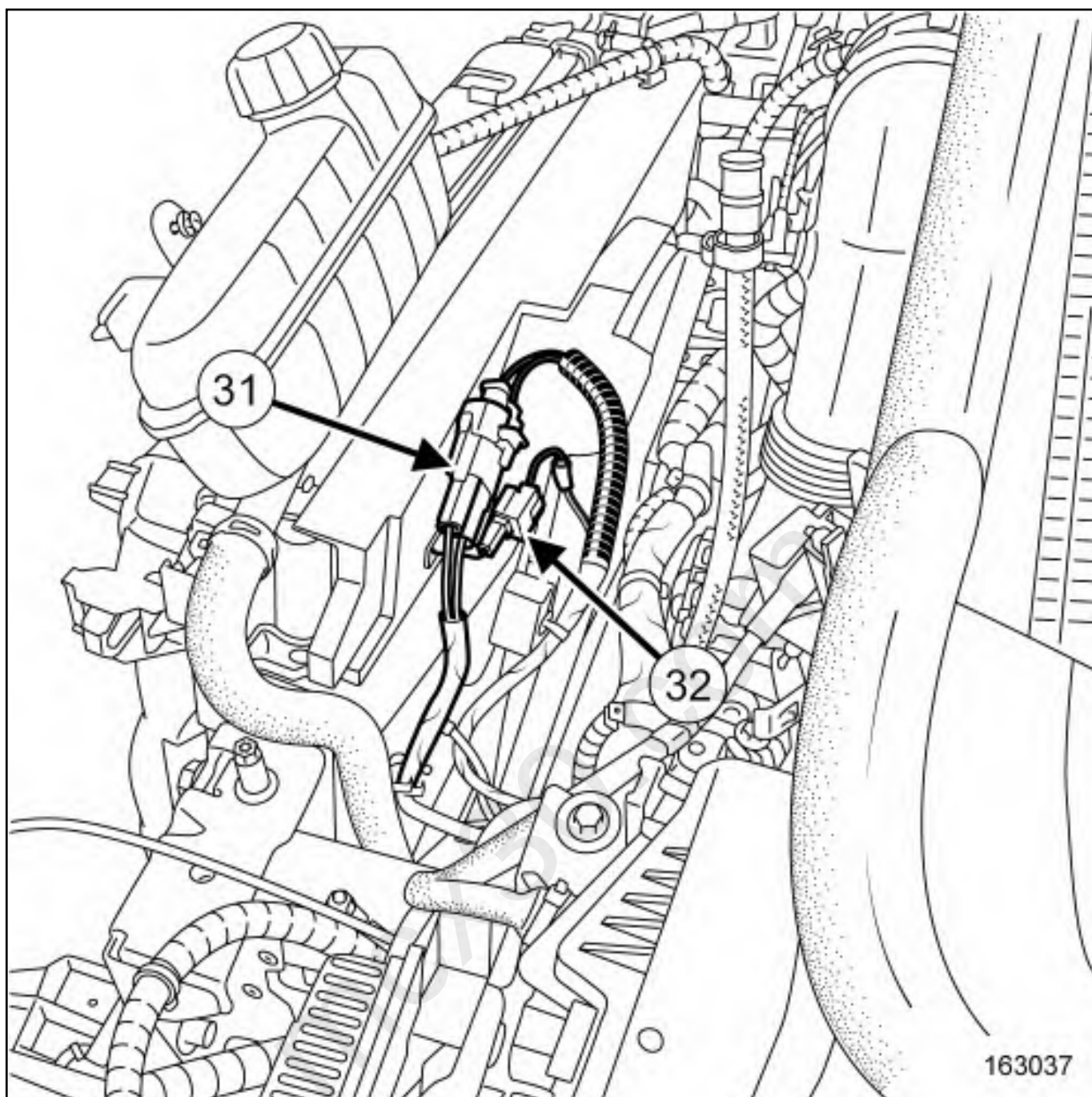


 Remove :

- the front upper cross member bolts(28) ,
- the front upper cross member pins(29) ,
- the front upper cross member.



Unclip the relay unit(30) .



Unclip :

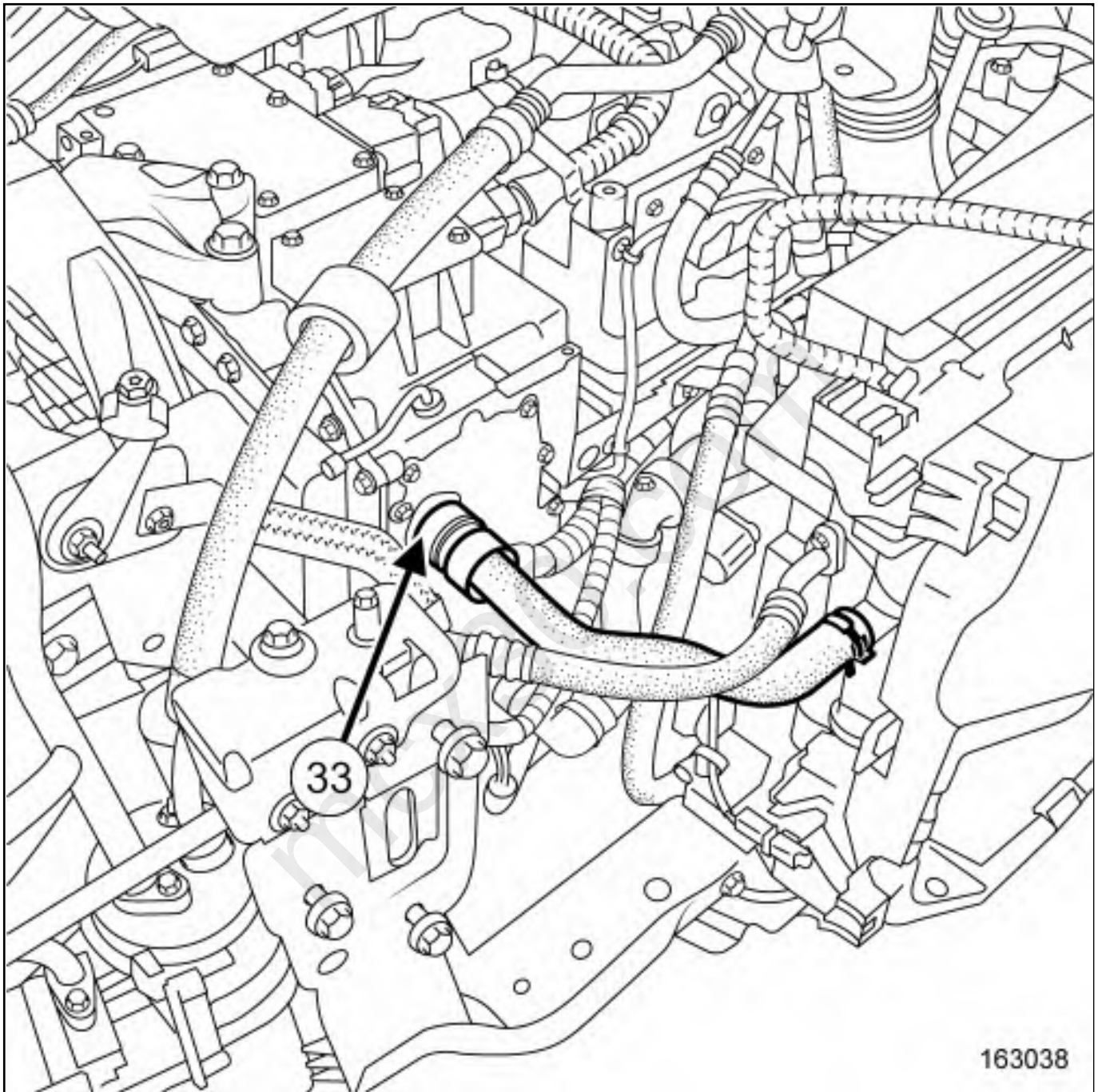
the engine cooling fan assembly connector(31) ,

the signal connector(32) .

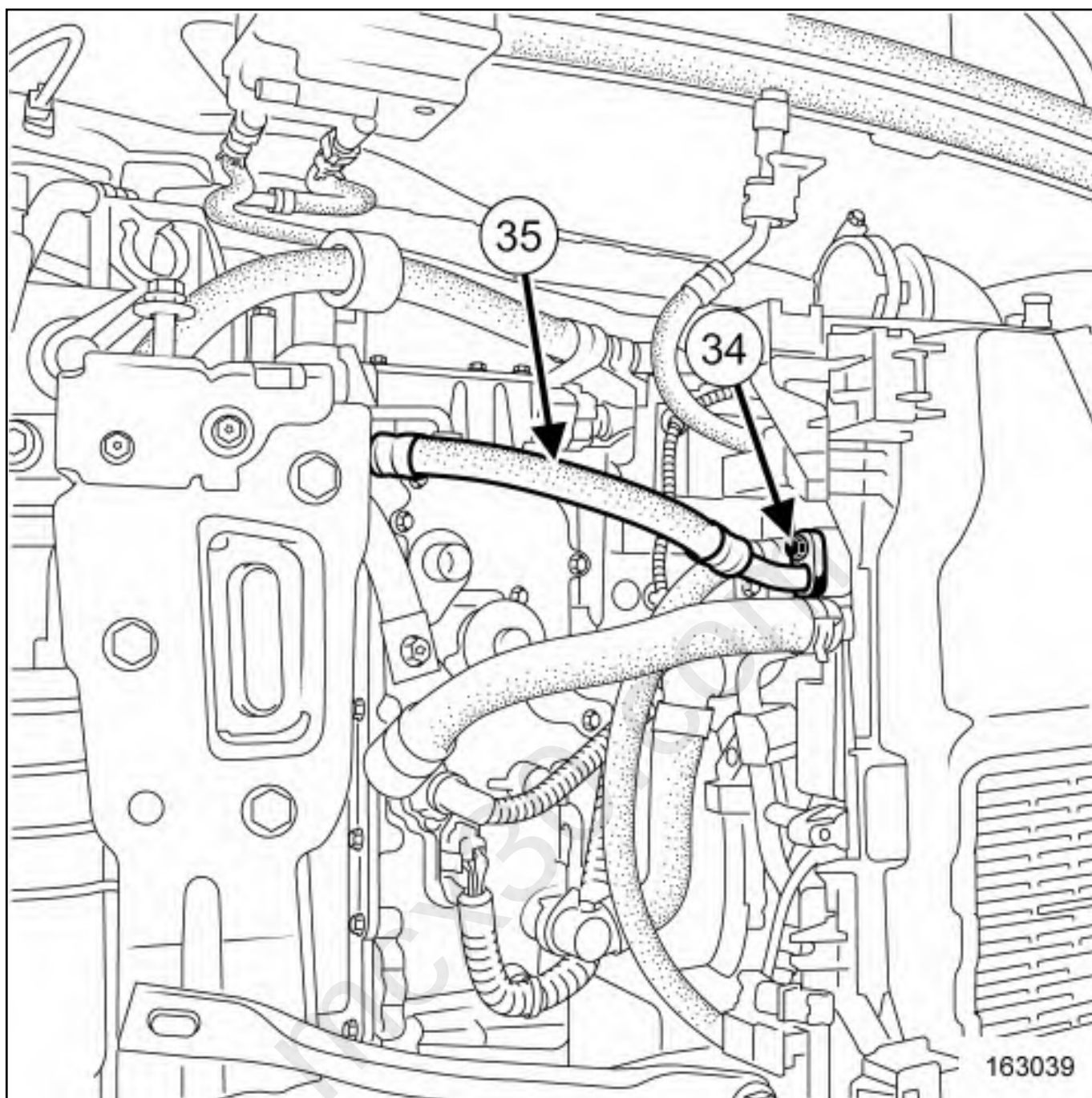
Disconnect :

the engine cooling fan assembly connector,

the signal connector.



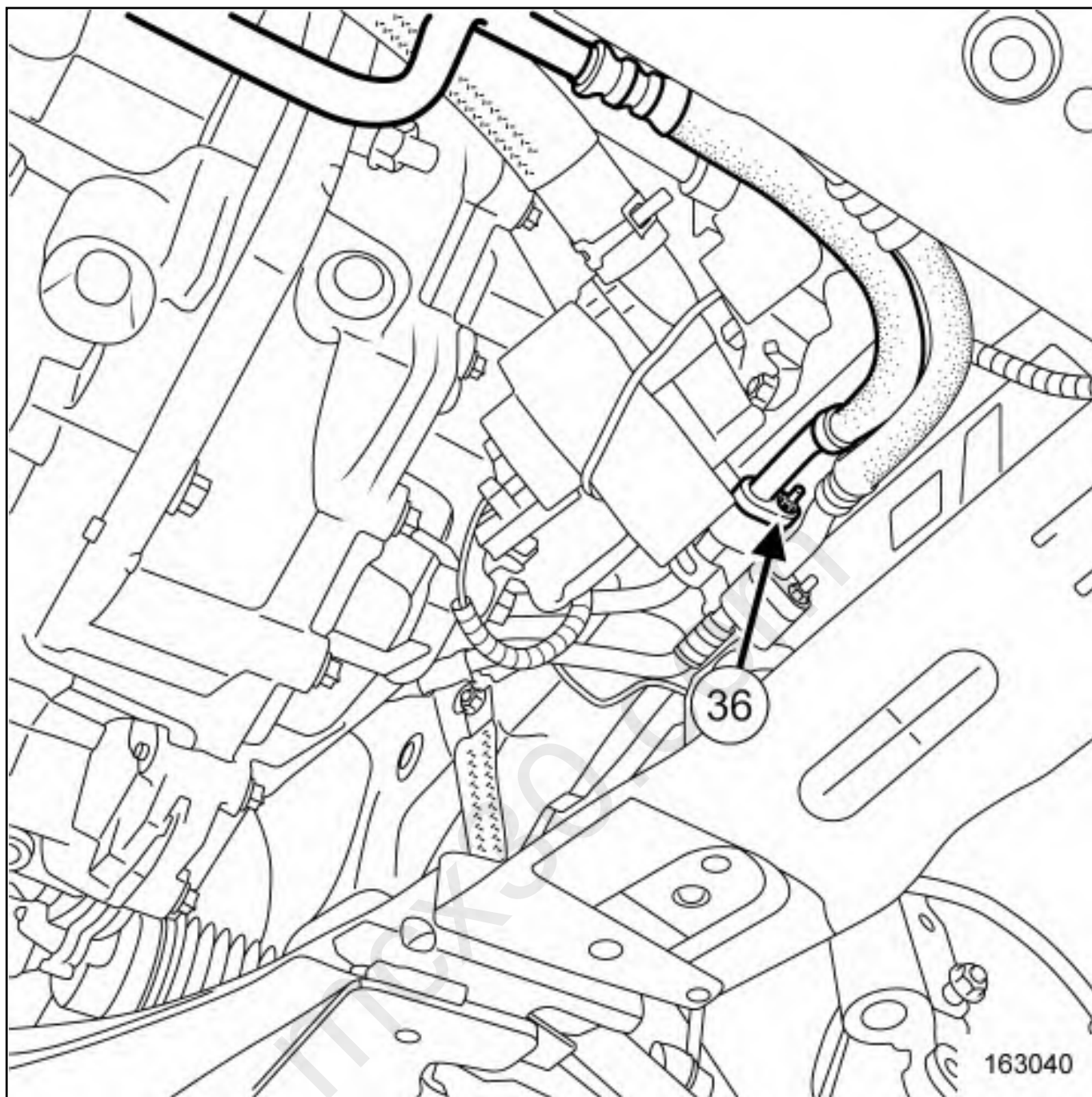
Disconnect the cooling radiator inlet pipe(33) [Coolant circuit assembly: Exploded view](#) from the electric vehicle charger and converter.



Remove the screw(34) of the condenser - intermediate pipe connecting pipe [Passenger compartment cooling assembly: Exploded view](#) on the condenser.

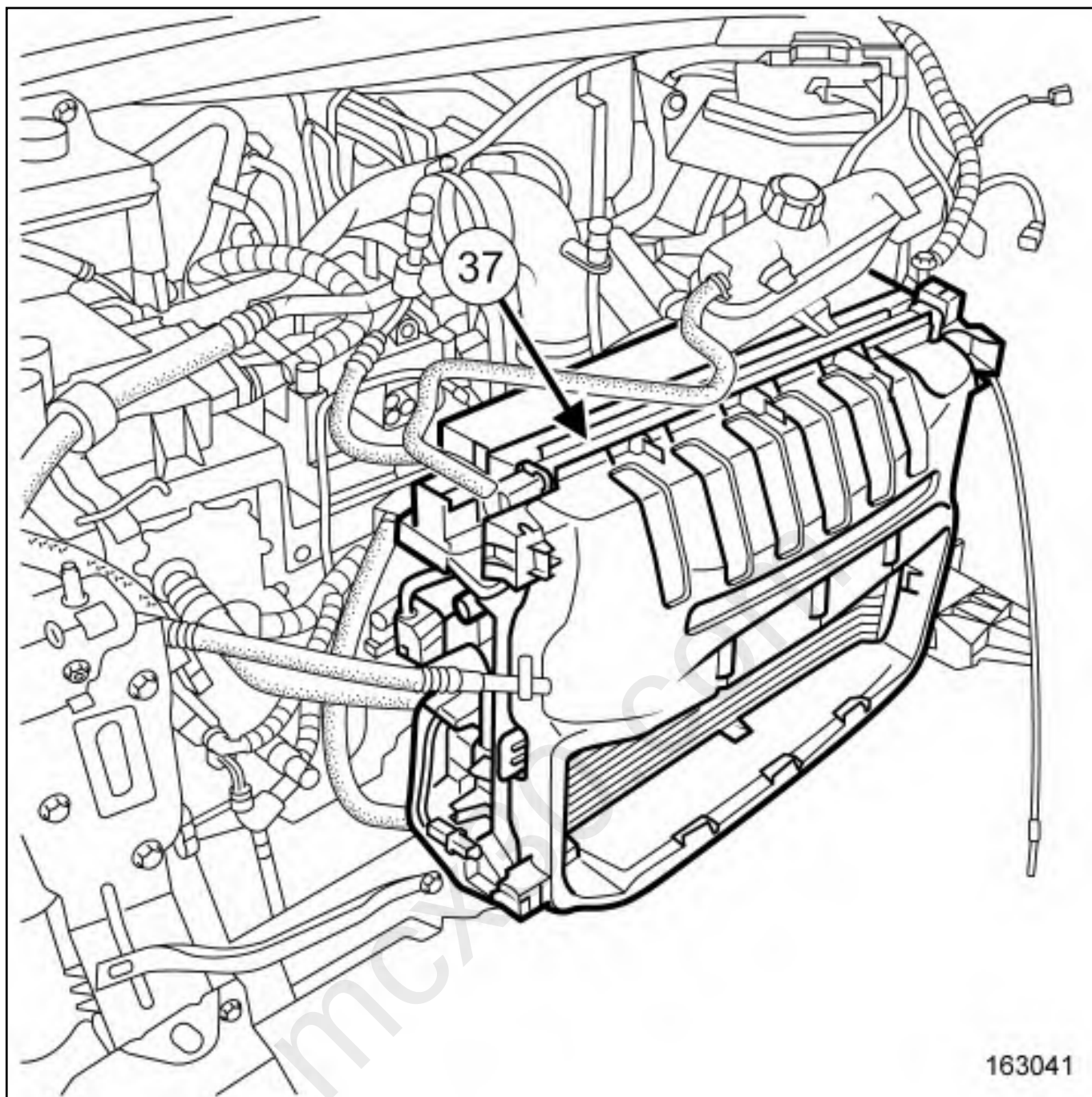


Disconnect the condenser - intermediate pipe connecting pipe(35) [Passenger compartment cooling assembly: Exploded view](#) from the condenser.

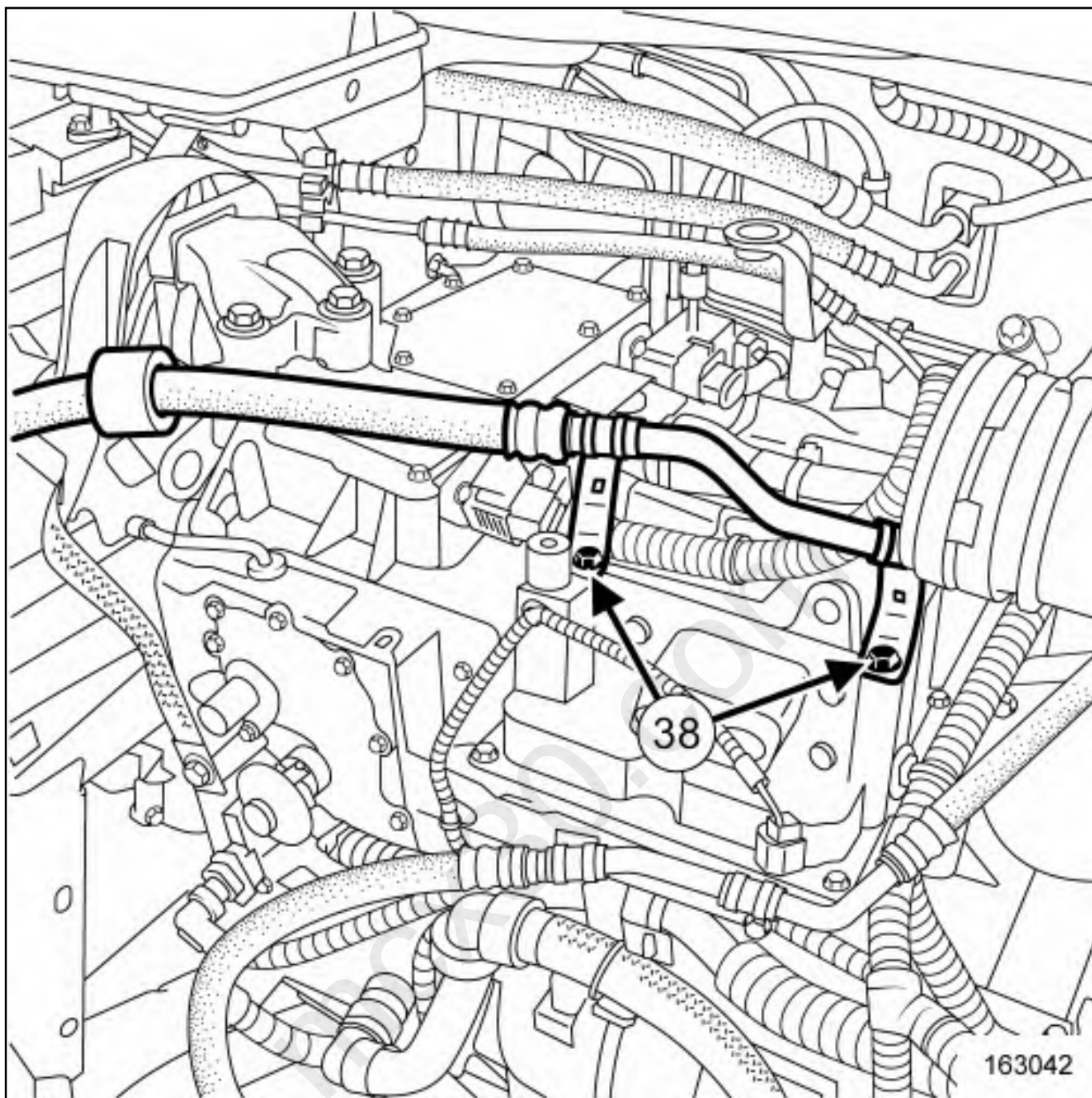


Remove the nut(36) of the intermediate pipe [Passenger compartment cooling assembly: Exploded view](#) .

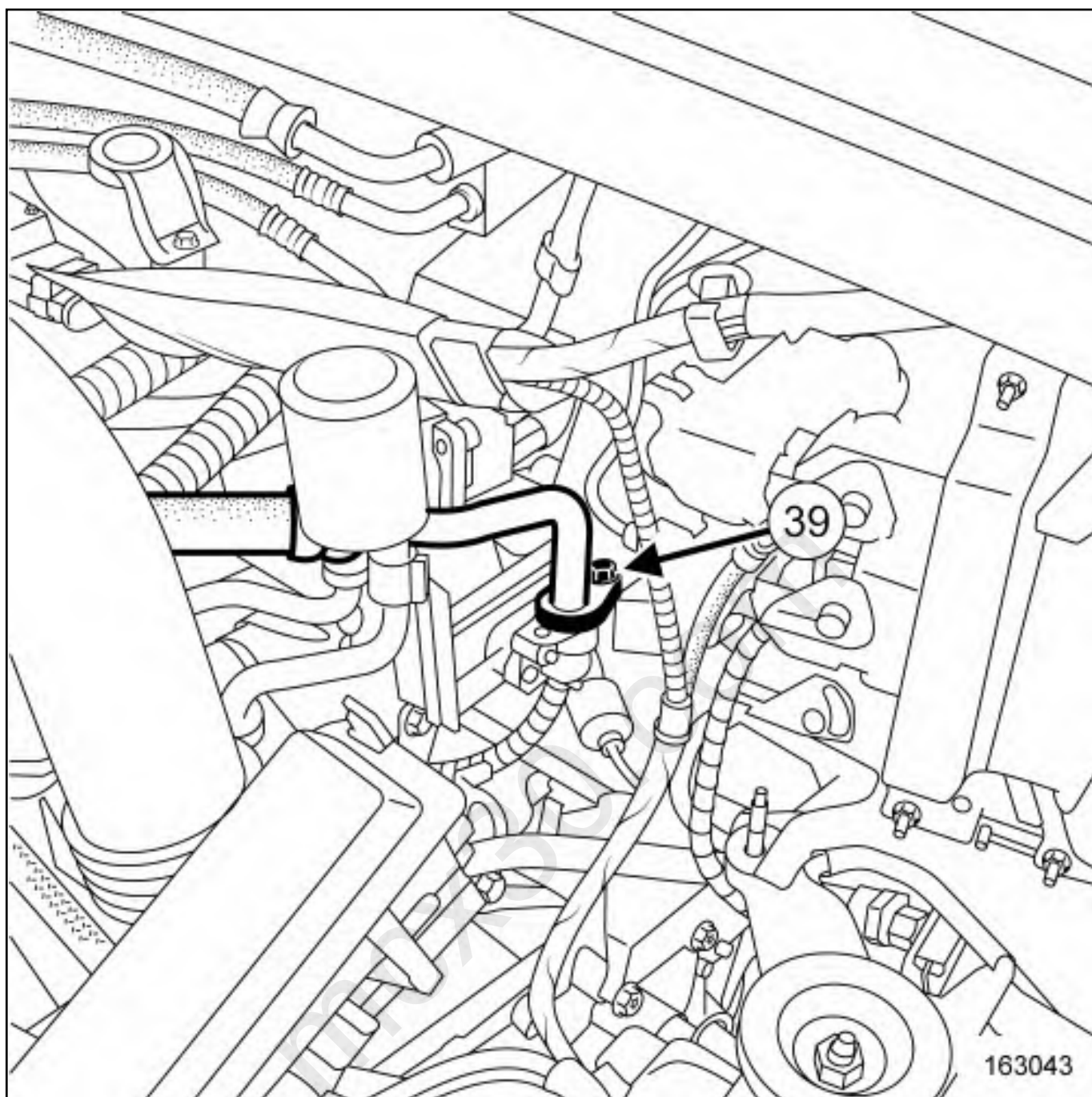
Disconnect the intermediate pipe.



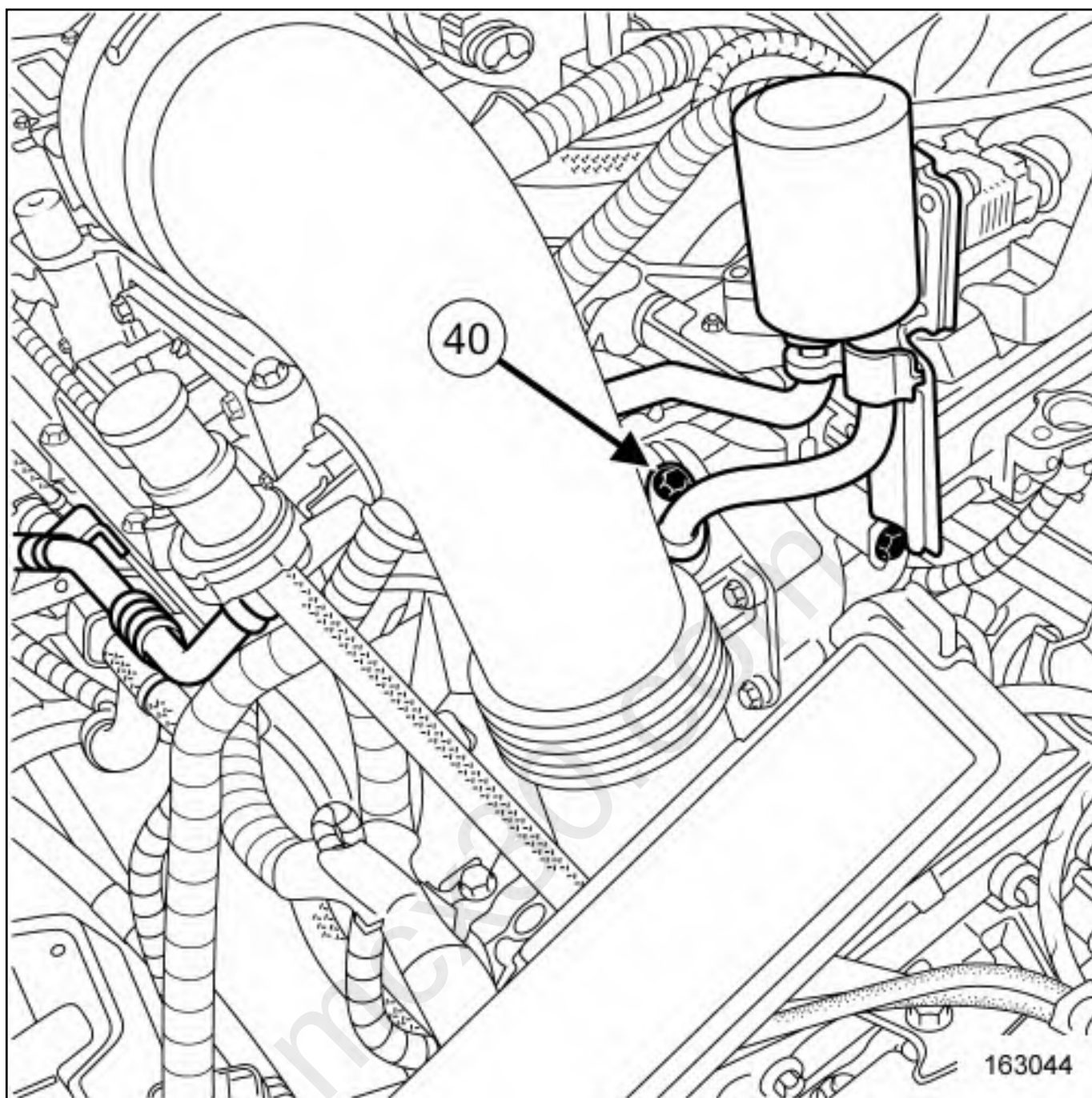
Remove the engine cooling fan assembly(37) .



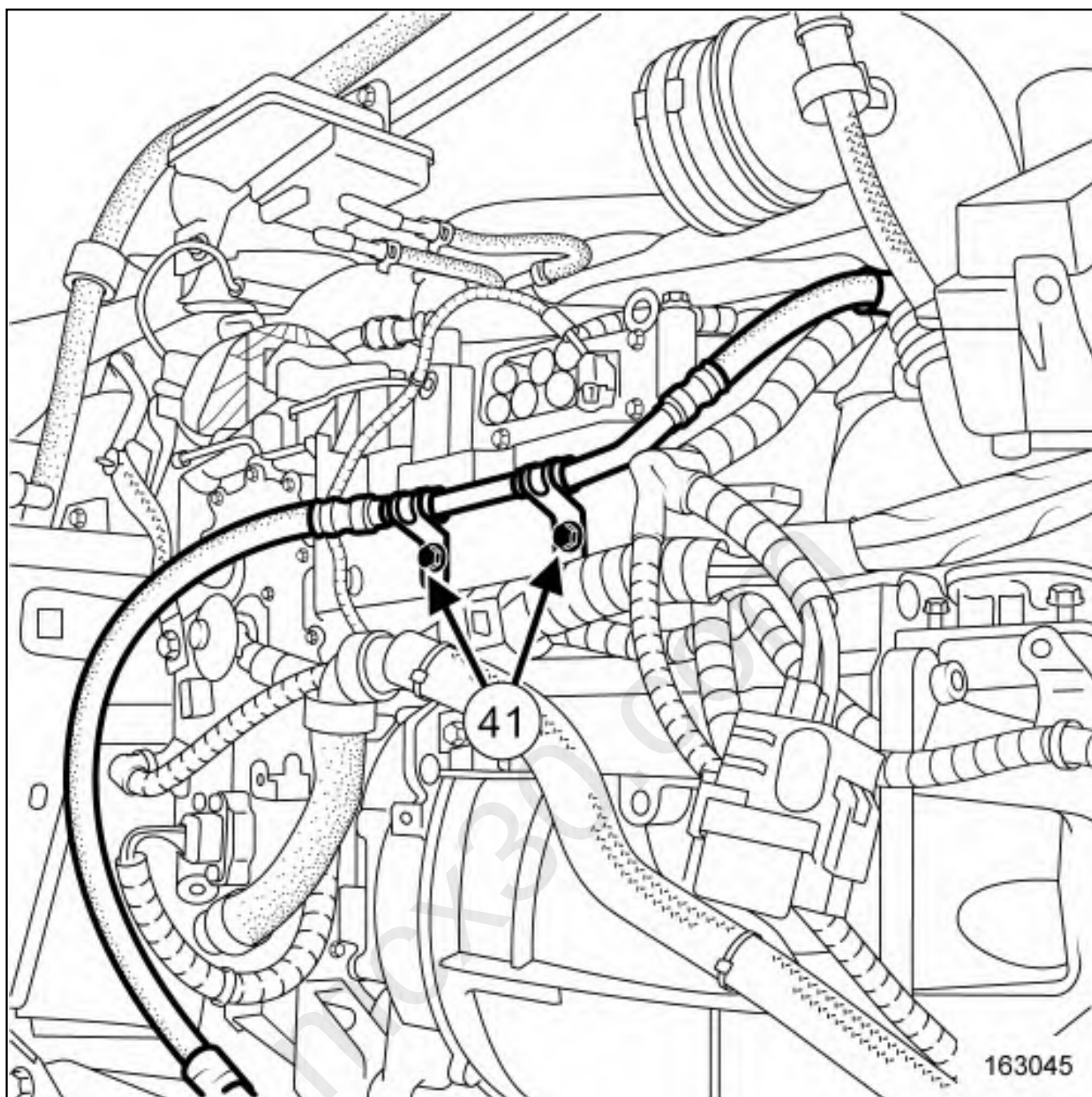
Remove the bracket screws(38) of the "compressor - dehydrator reservoir connecting pipe"
[Passenger compartment cooling assembly: Exploded view](#) of the electric vehicle charger and converter.



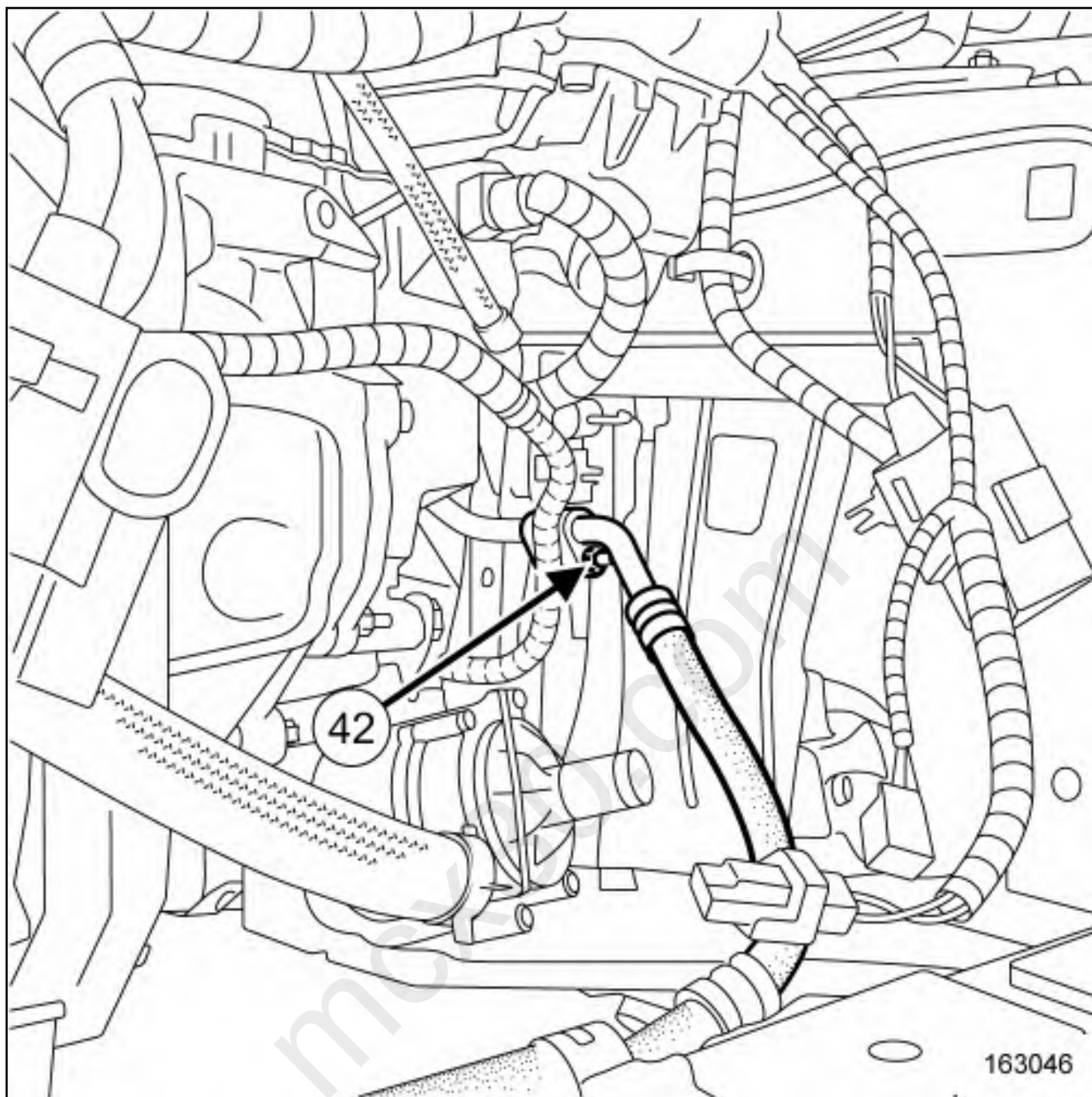
Remove the "compressor - dehydrator reservoir connecting pipe" screw(39) [Passenger compartment cooling assembly: Exploded view](#) of the compressor.



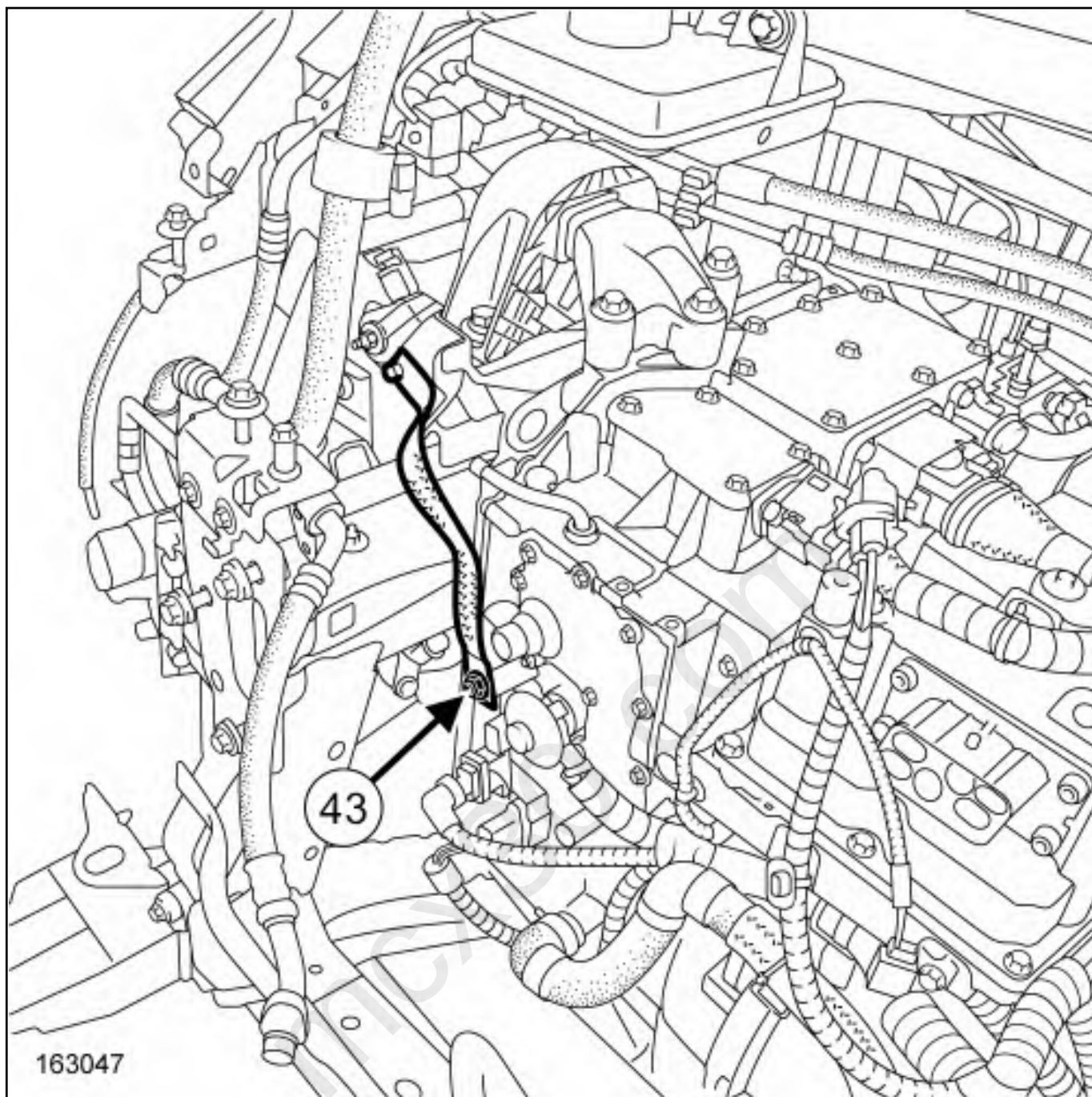
Remove the "intermediate pipe - compressor connecting pipe" screw(40) [Passenger compartment cooling assembly: Exploded view](#) of the compressor.



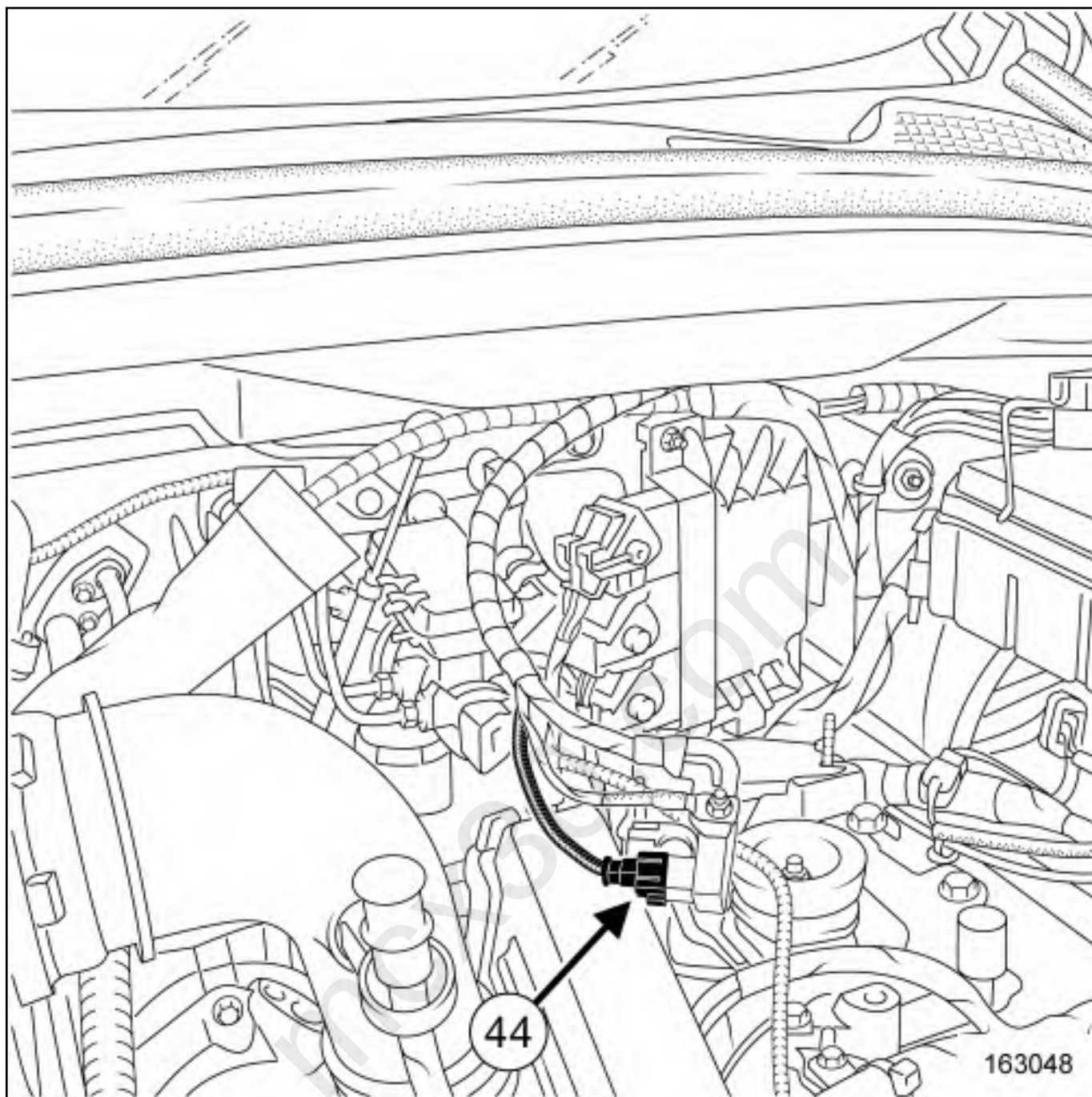
Remove the bracket screws(41) of the "intermediate pipe - compressor connecting pipe"[Passenger compartment cooling assembly: Exploded view](#) of the electric vehicle charger and converter.



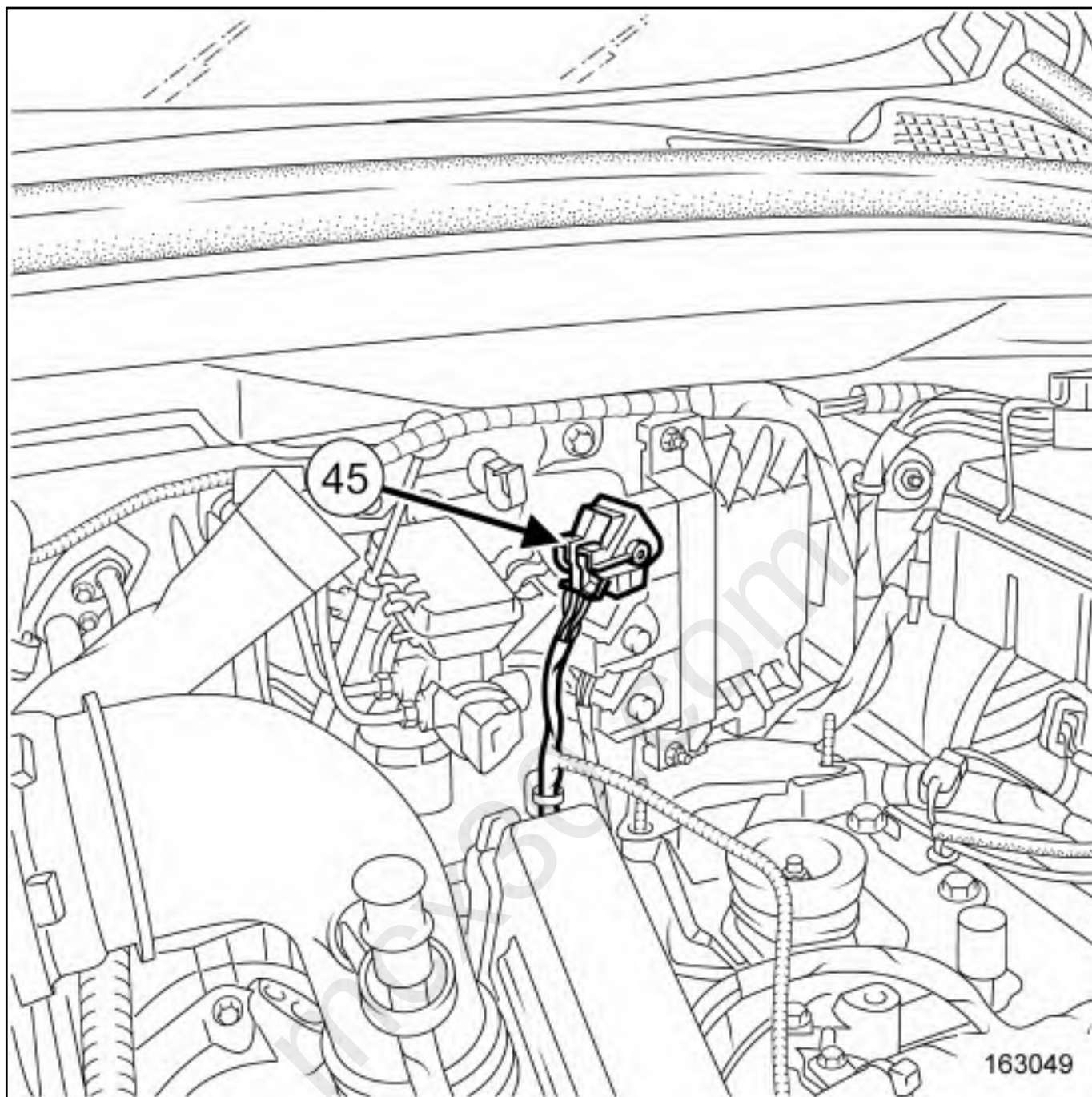
Remove the nut(42) of the "intermediate pipe - compressor connecting pipe"[Passenger compartment cooling assembly: Exploded view](#) .



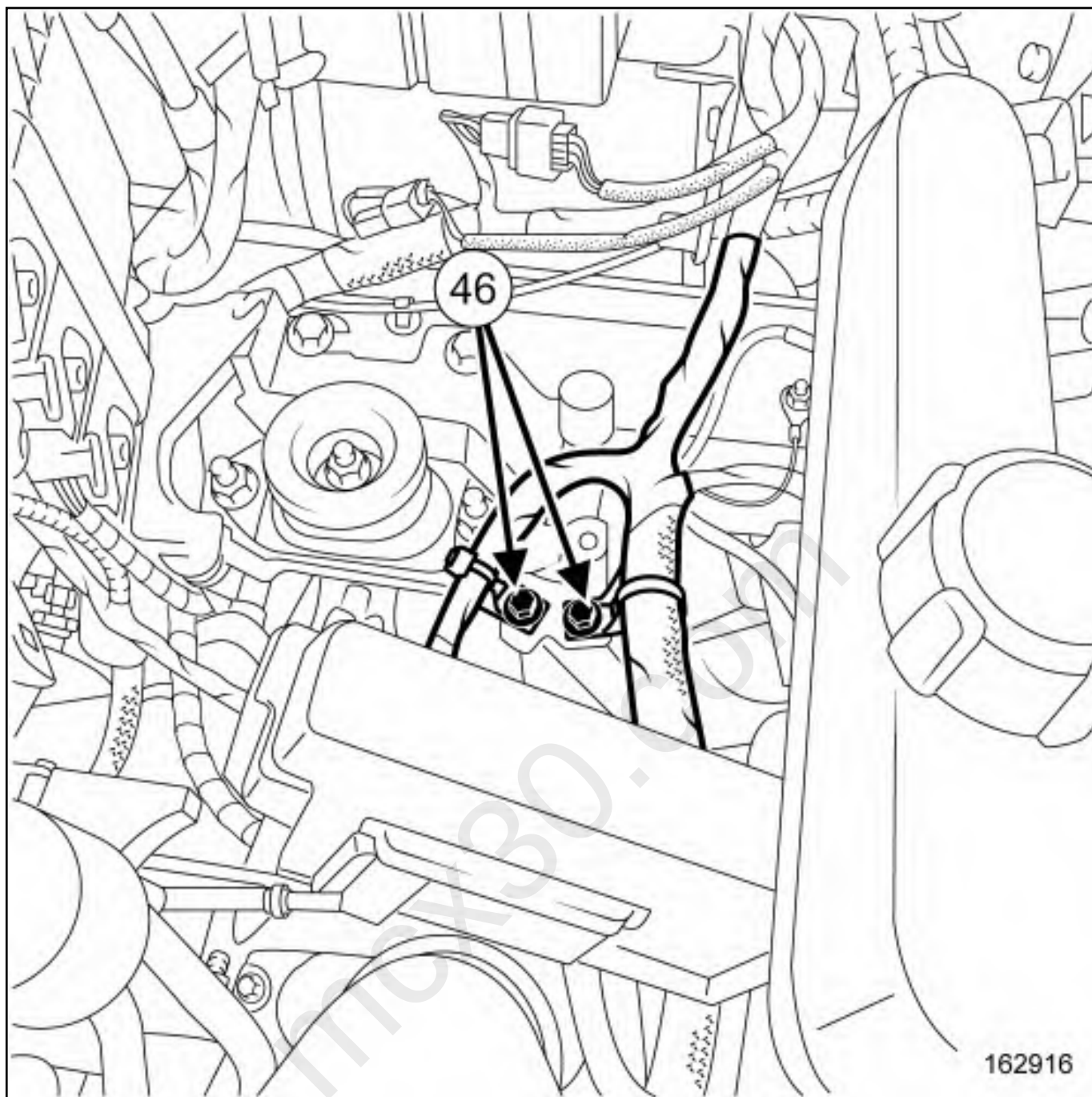
the earth strap screw(43) of the electric vehicle charger and converter.



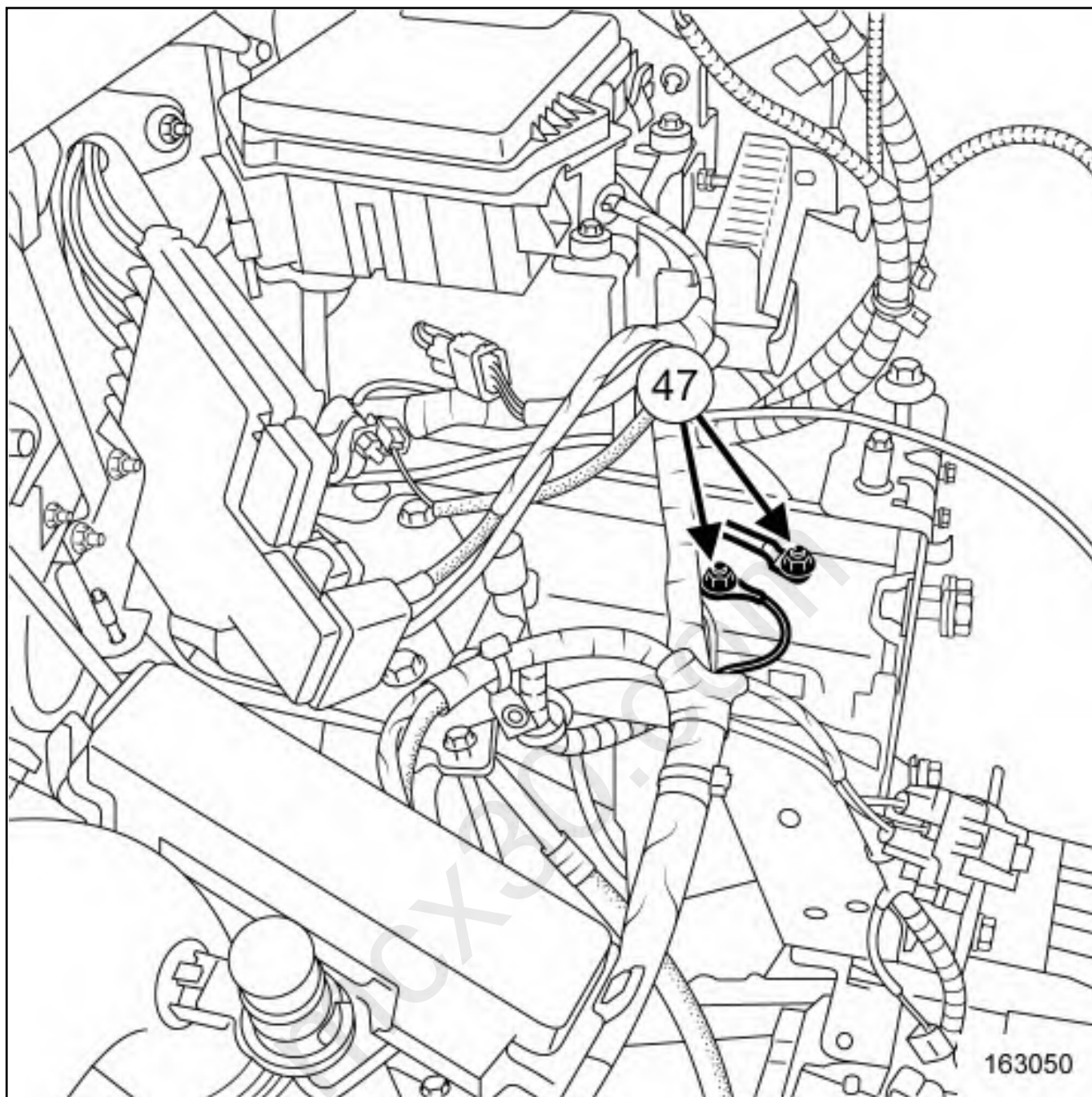
Disconnect Current sensor connector(44) .



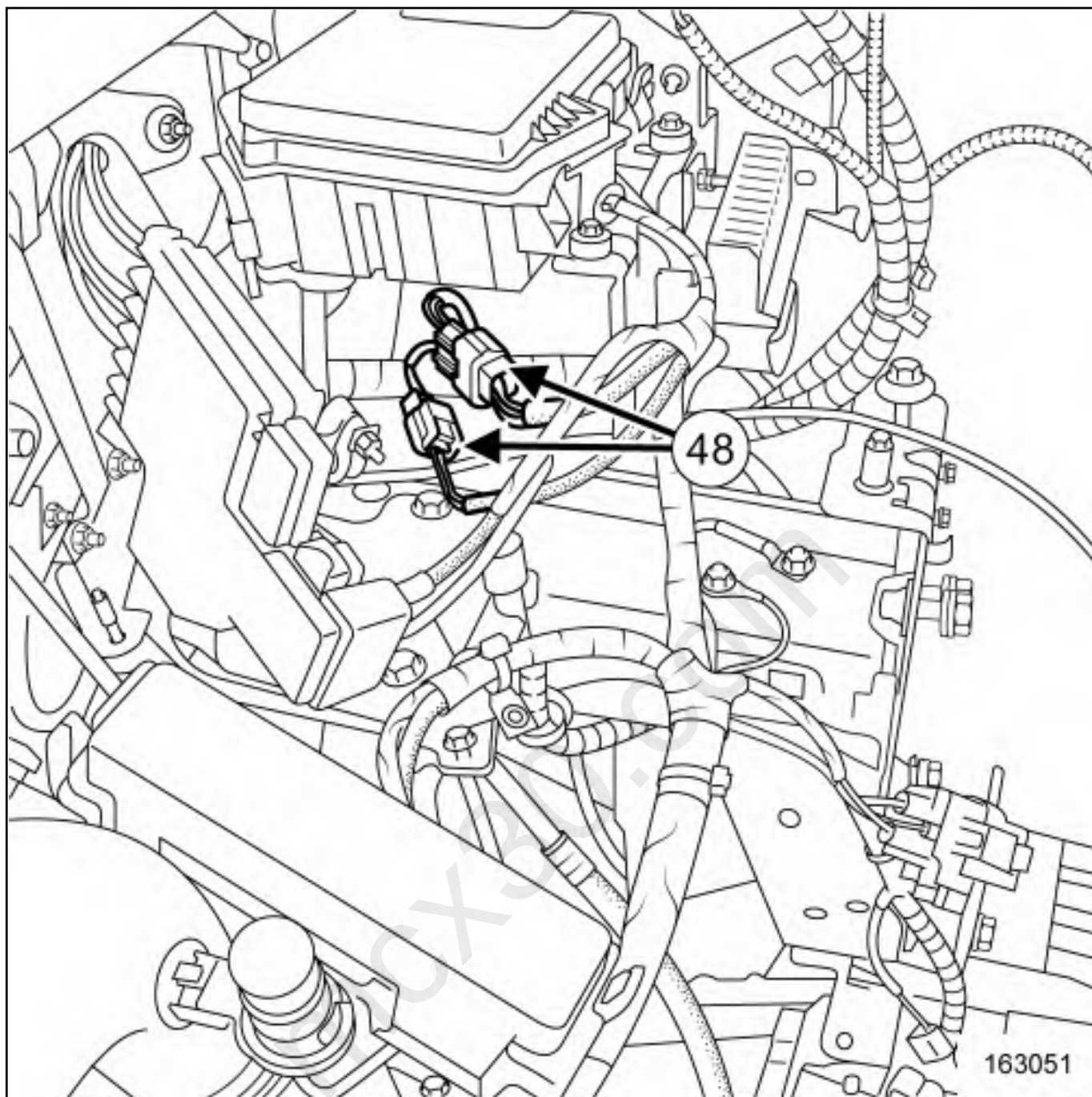
Disconnect the computer connector(45) .



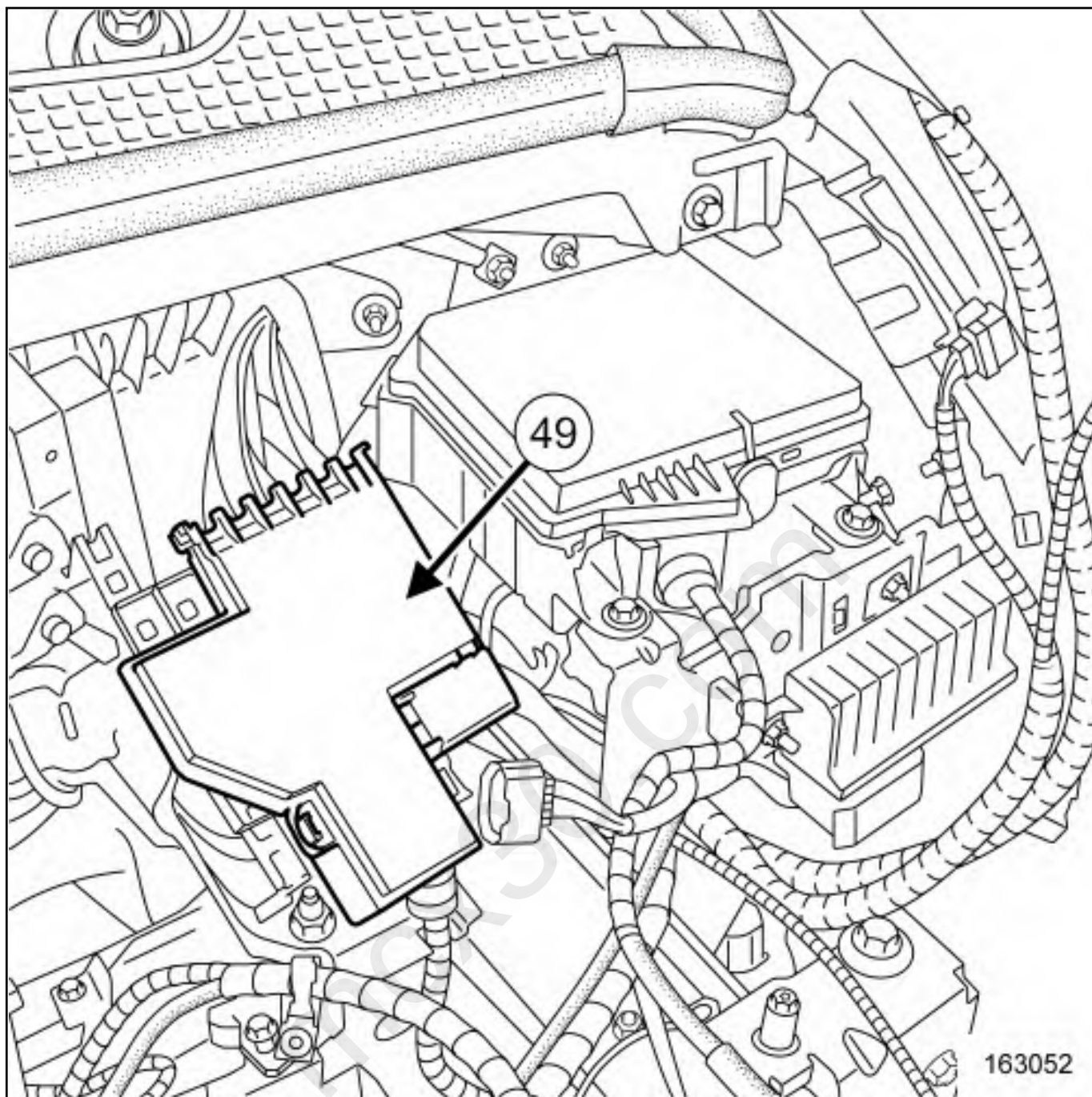
Remove the screws(46) of the wiring on the of the support of the left-hand suspended engine mounting.



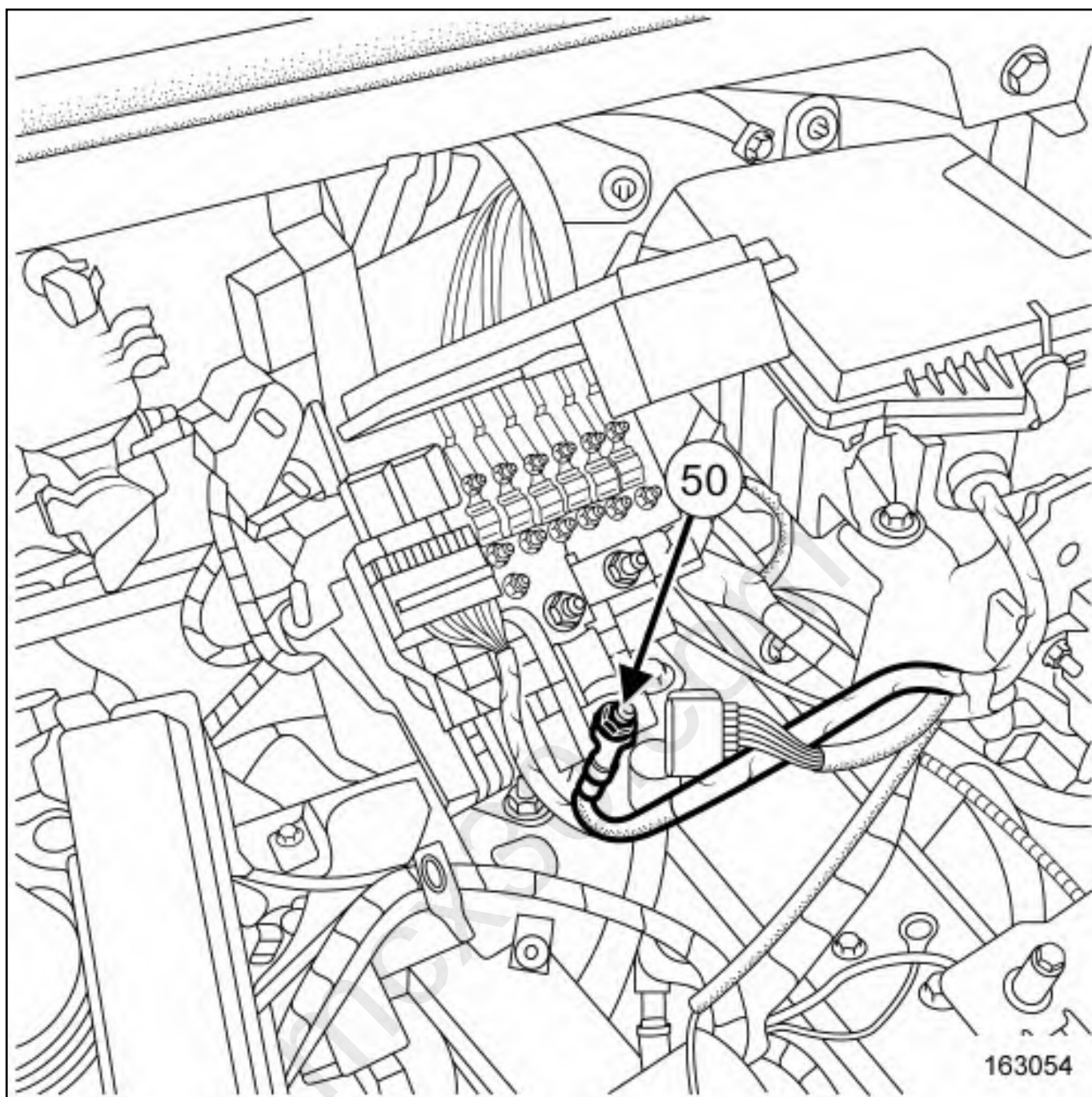
Remove the earth nuts(47) from the front left-hand side member.



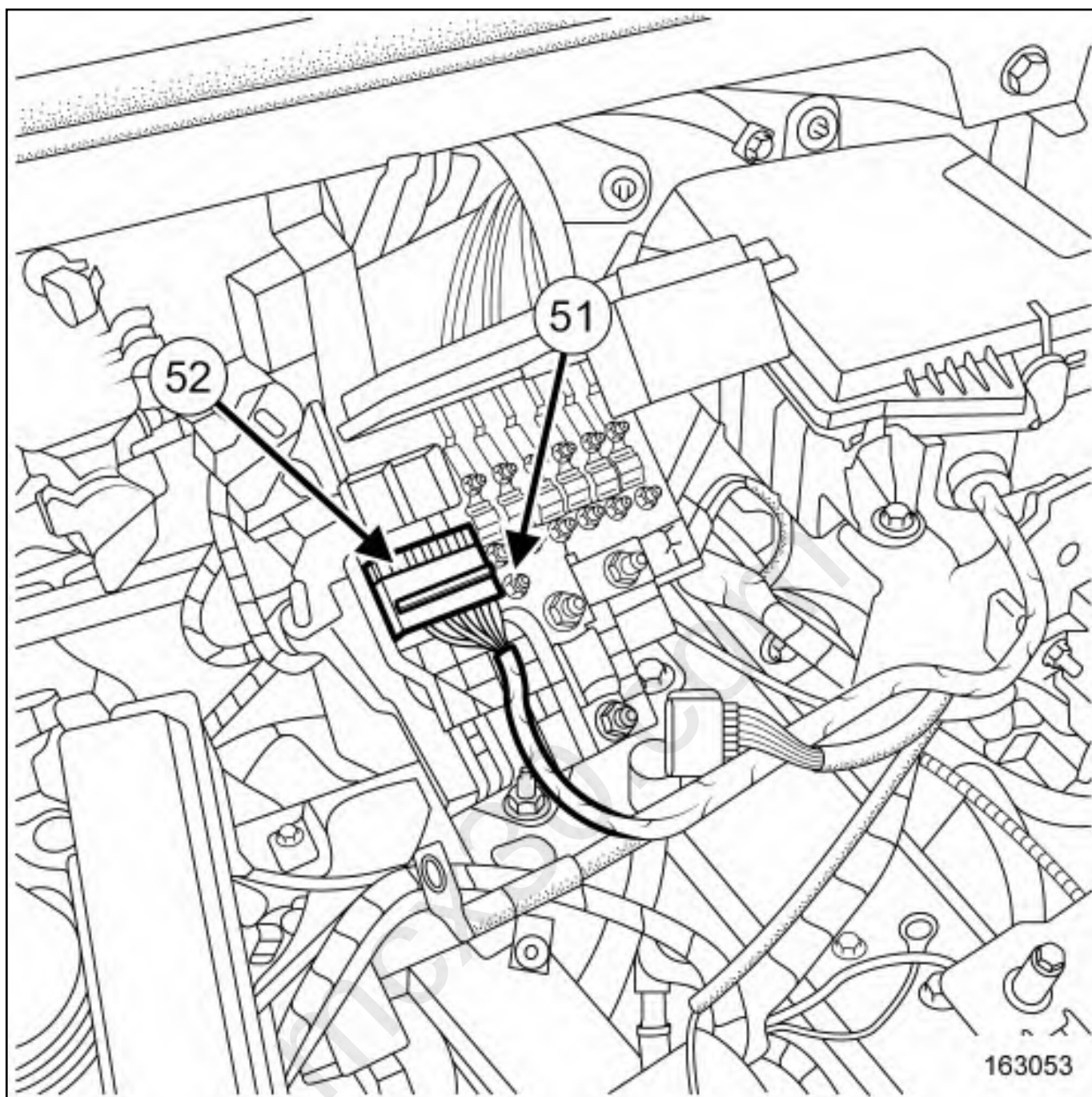
Disconnect the connectors(48) at the front left-hand side member.



Unclip the cover(49) of the positive battery terminal.

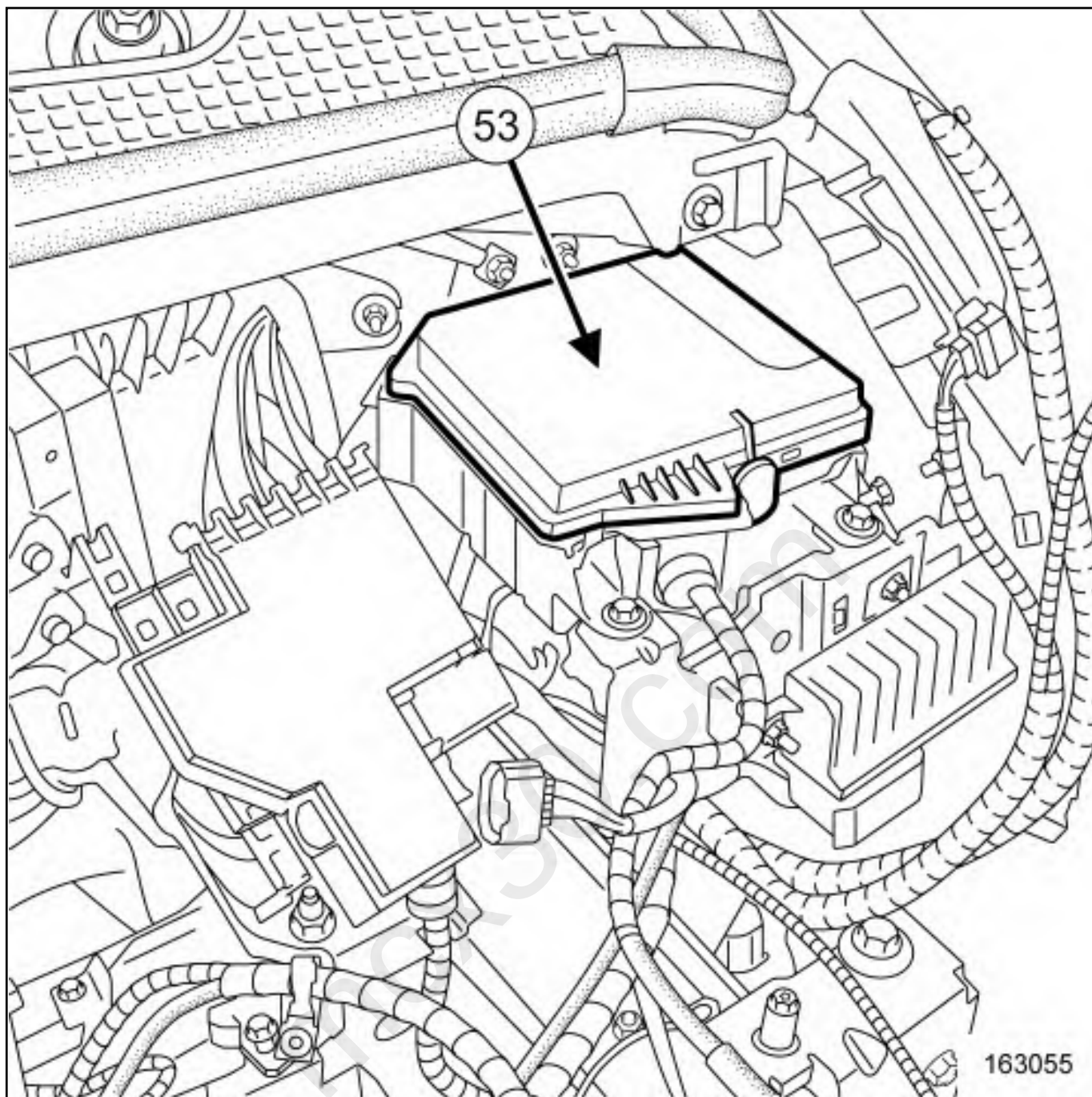


Remove the nut(50) of 12 V supply cable.

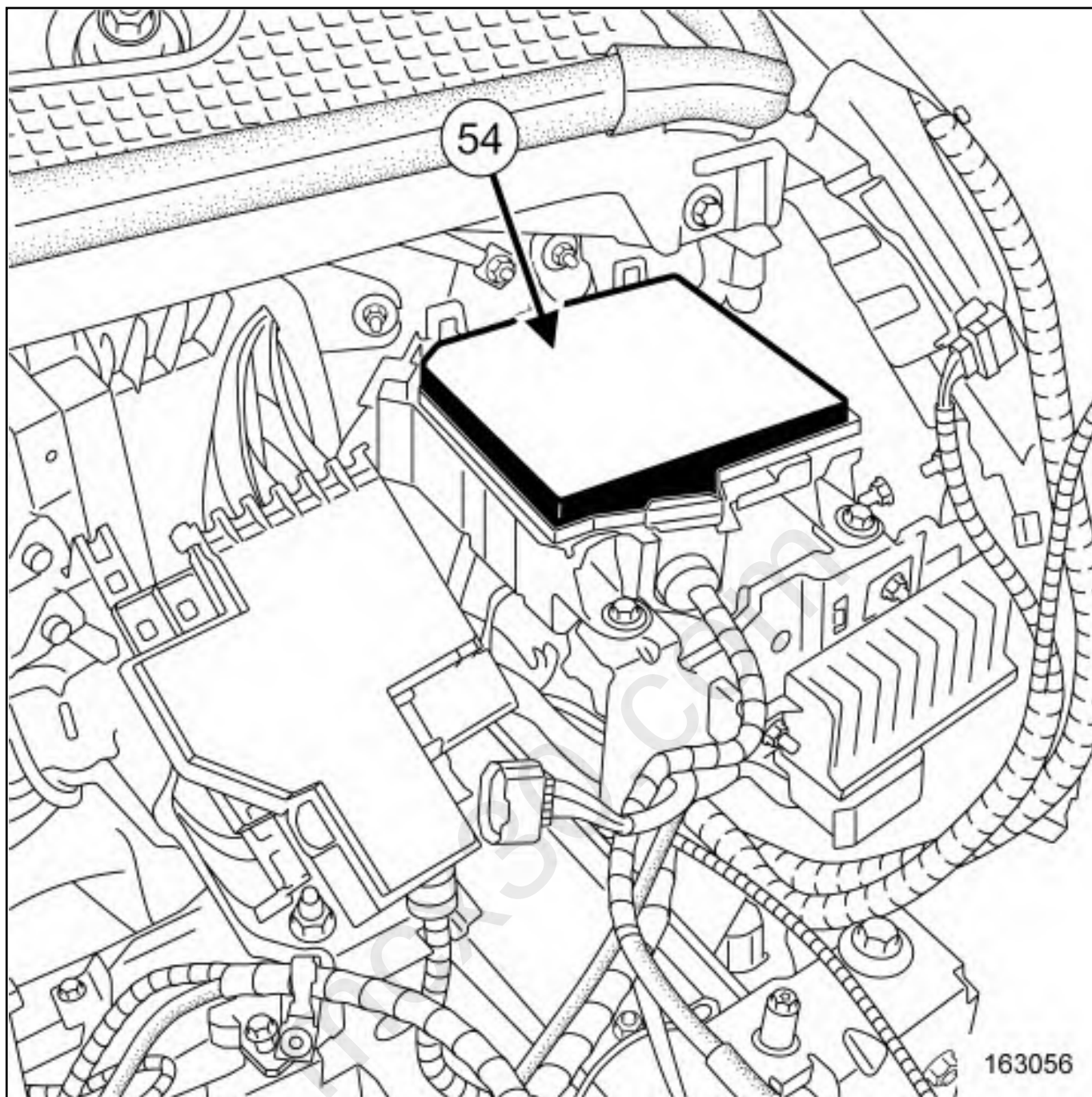


Remove the nut(51) of the connector of the positive battery terminal.

Disconnect the connector(52) of the positive battery terminal.

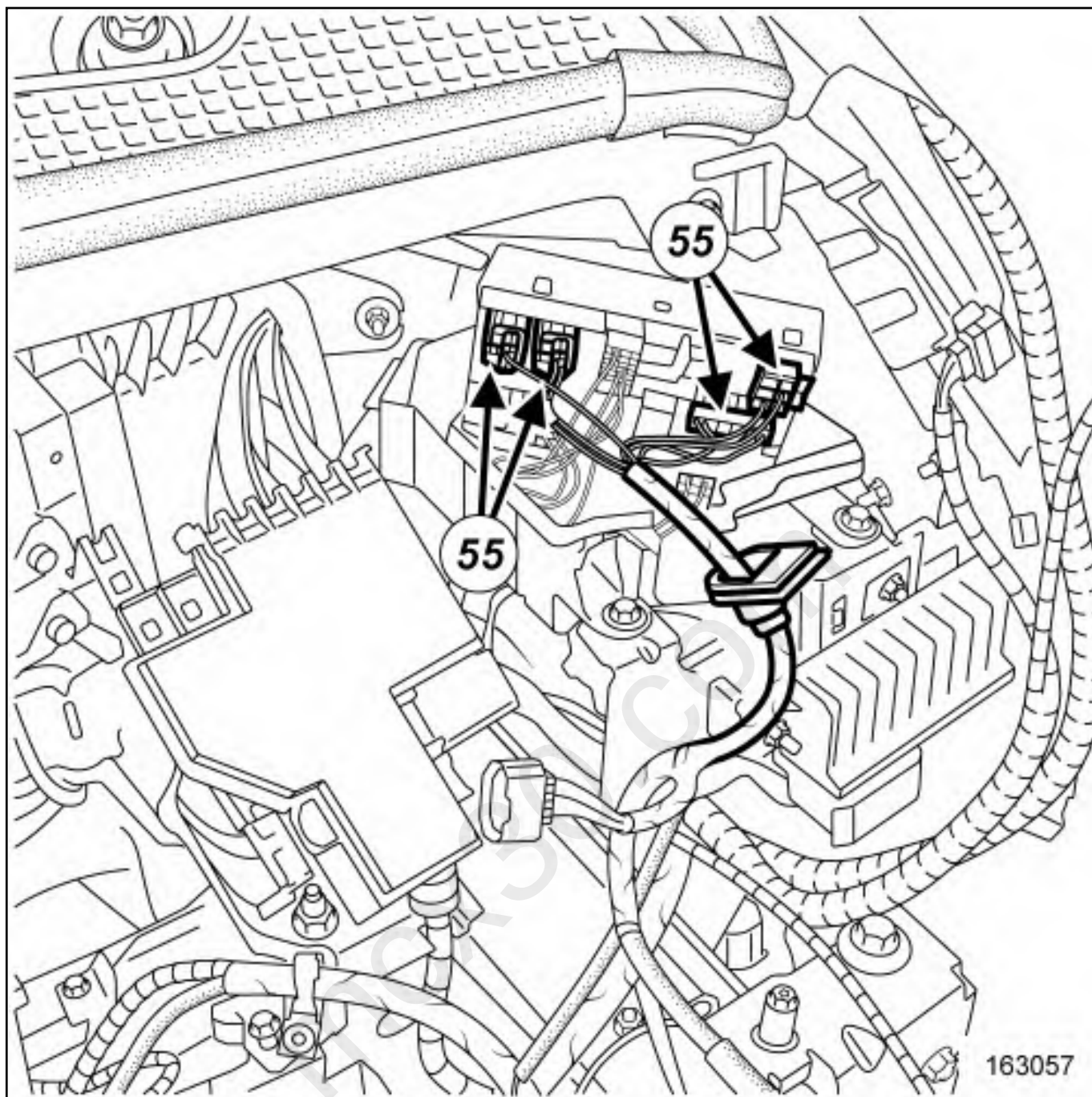


Remove the Protection and Switching Unit cover(53) .

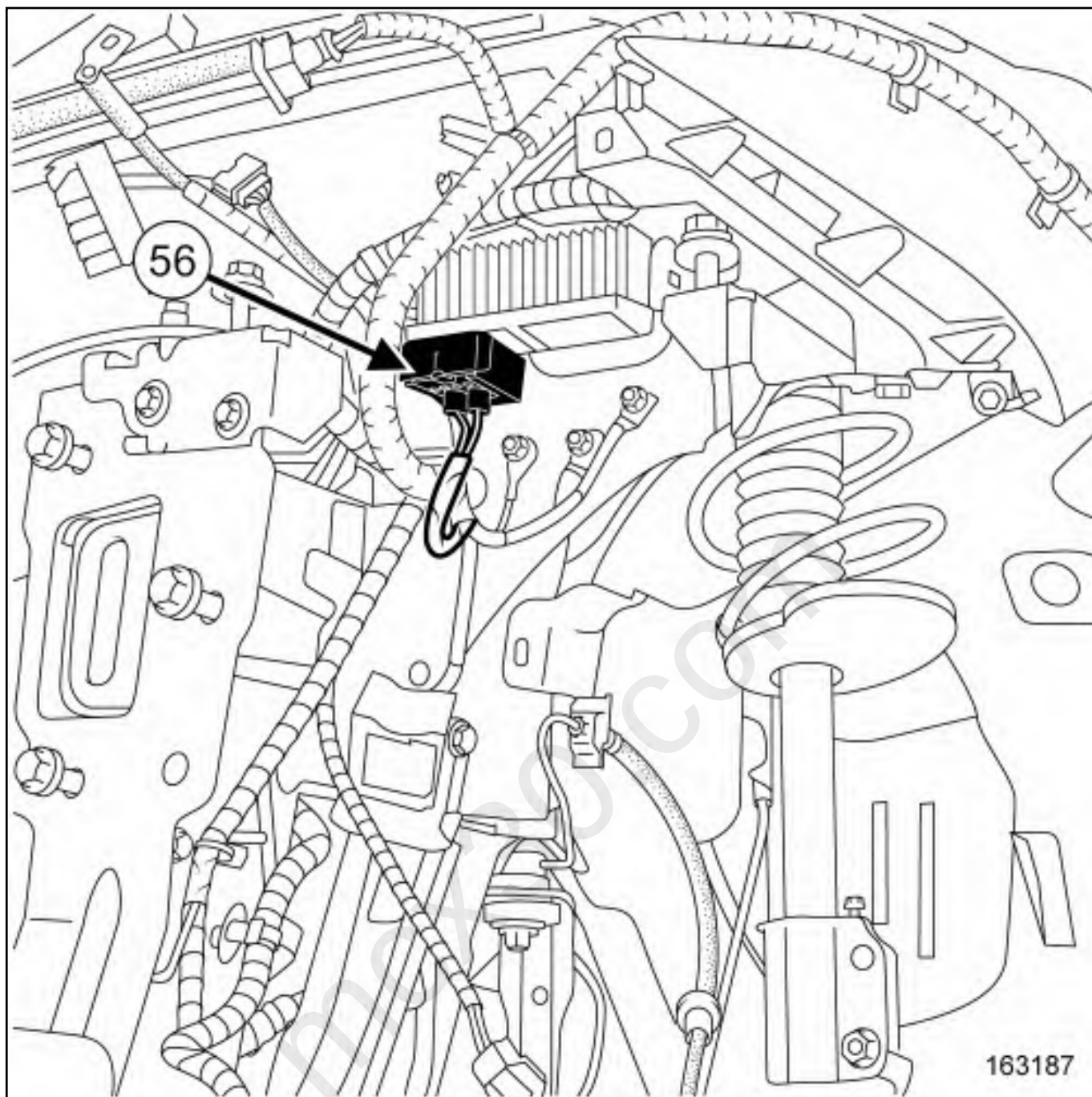


Unclip the Protection and Switching Unit(54) .

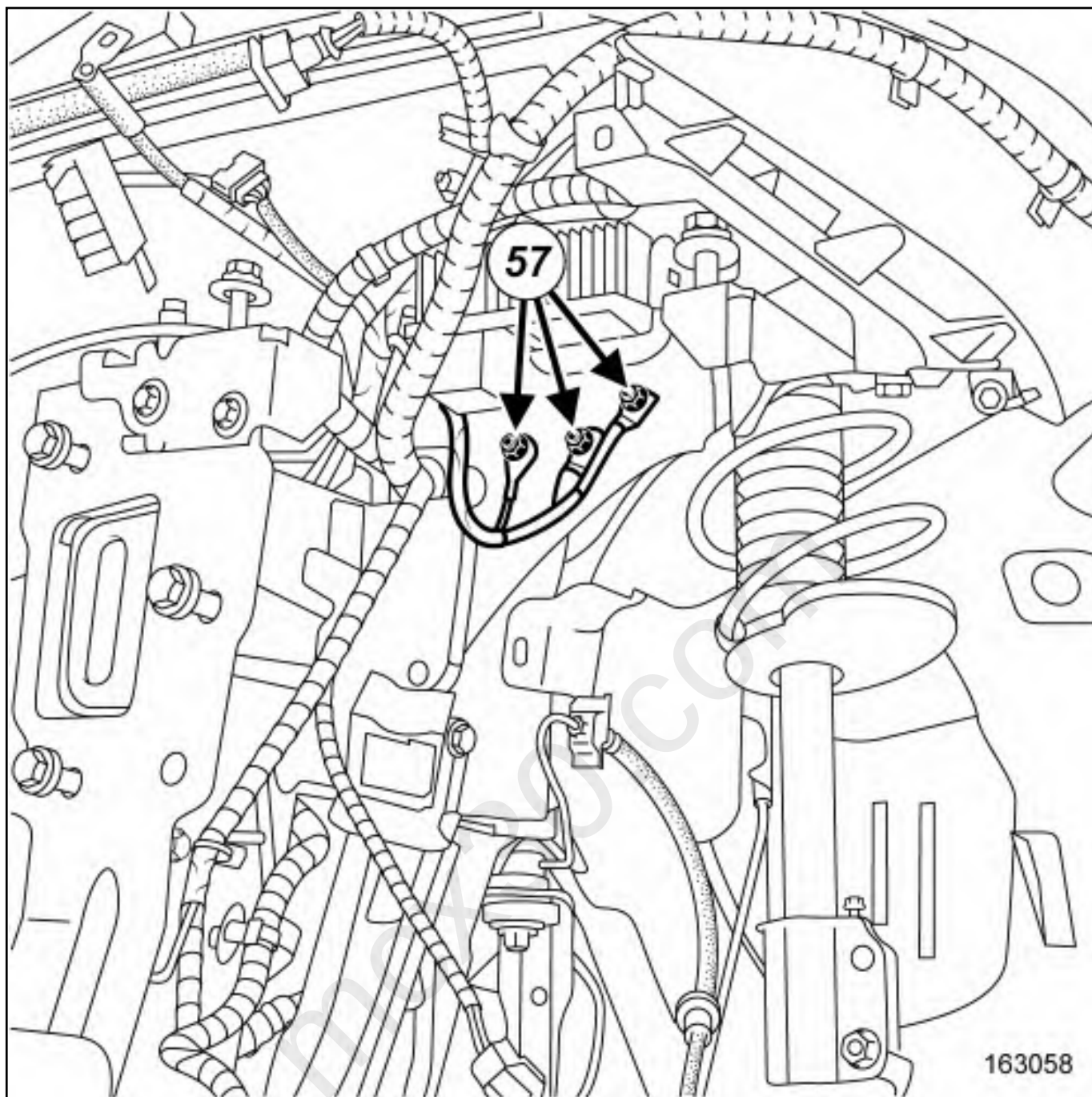
Move aside the Protection and Switching Unit.



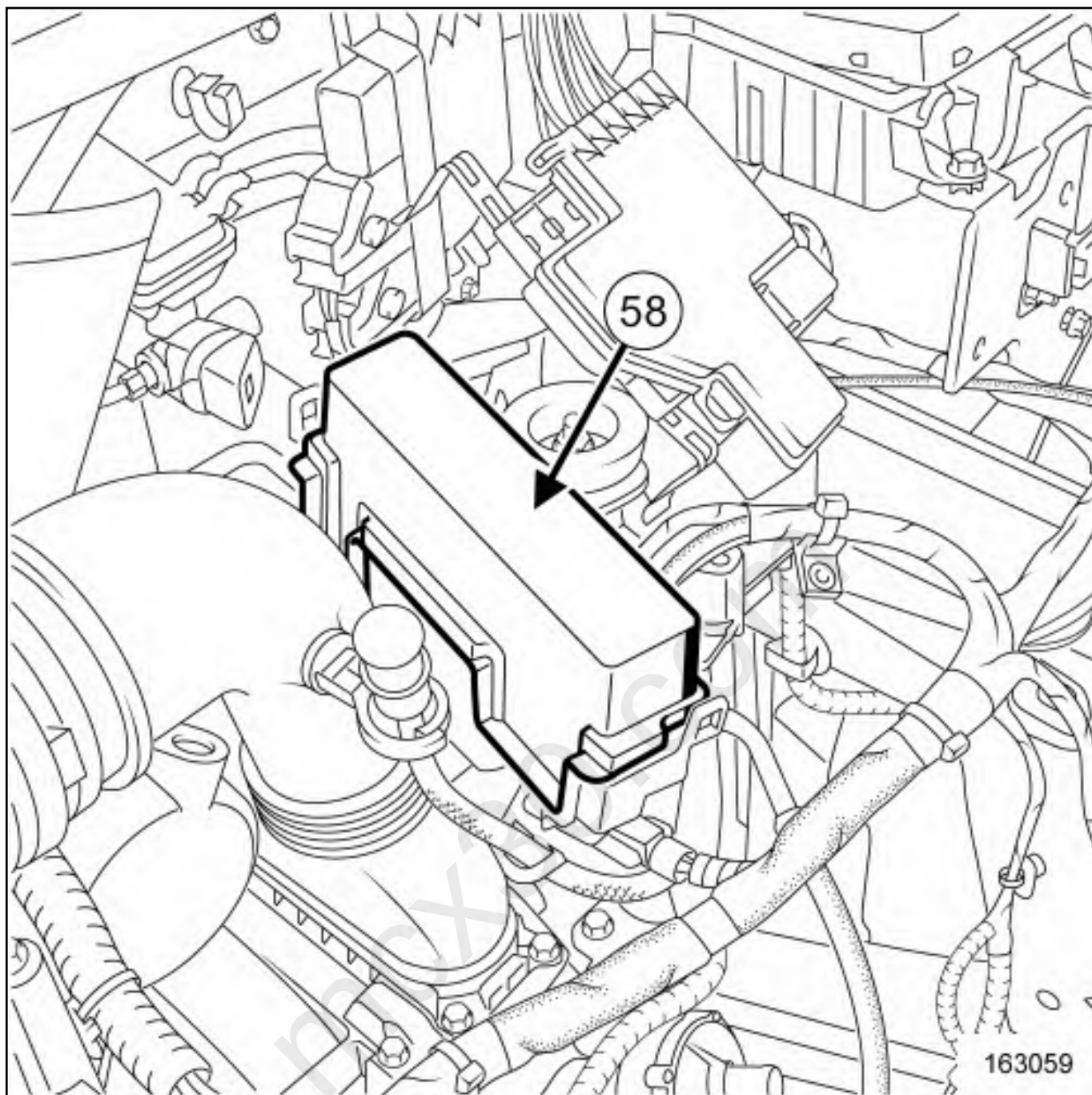
Disconnect the connectors(55) from the Protection and Switching Unit.



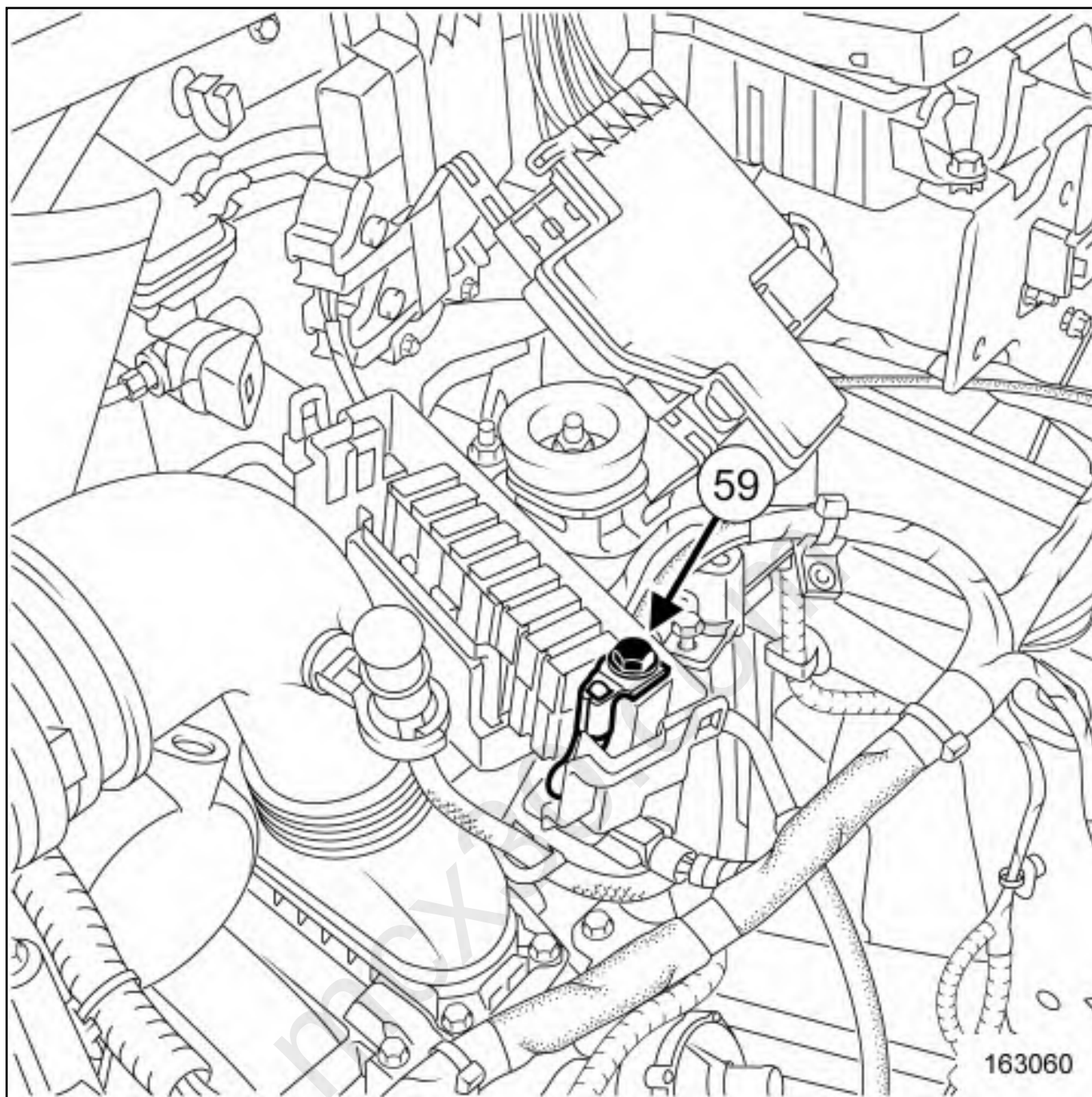
Disconnect the 12 V battery charge control unit connector(56) .



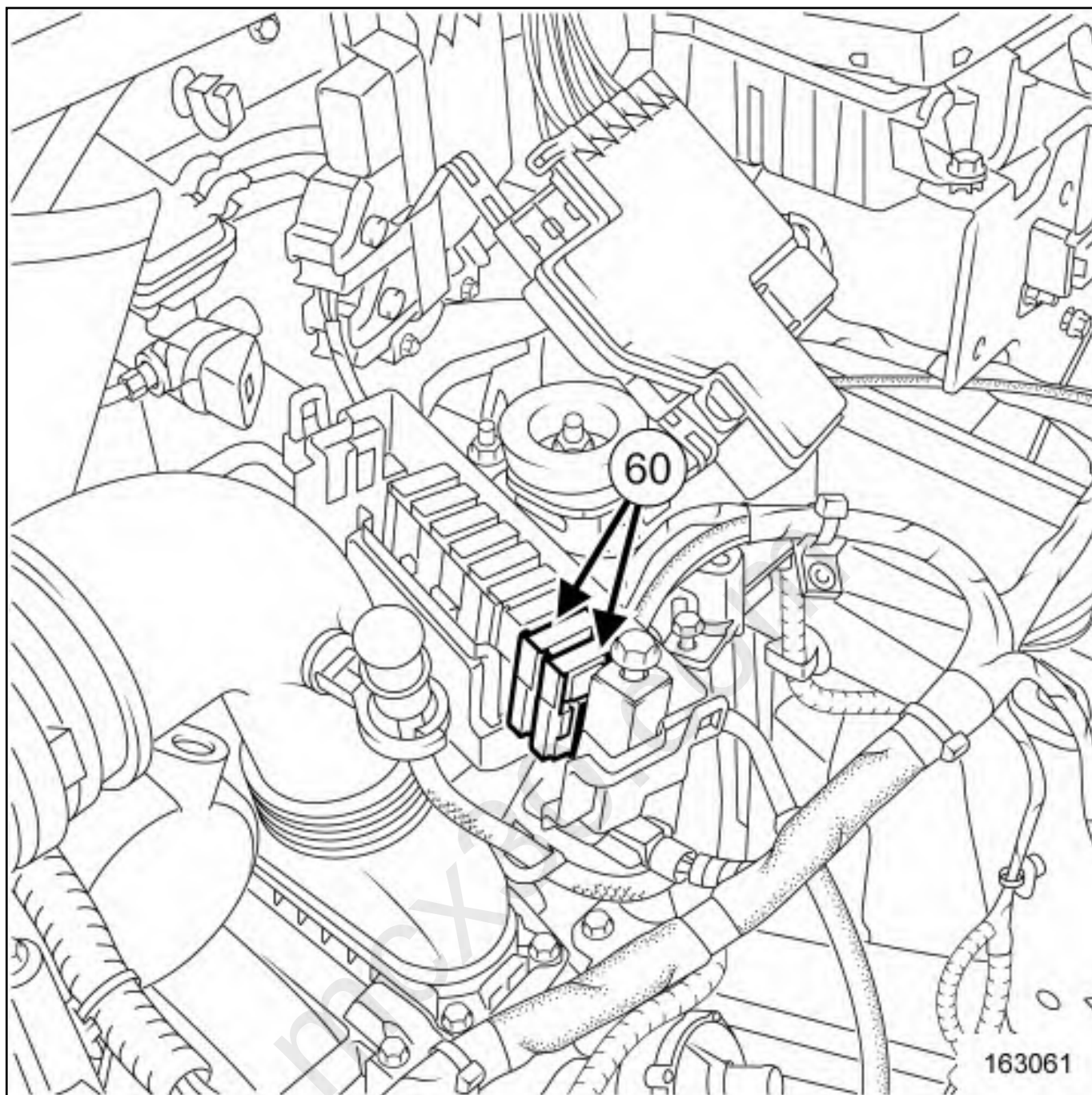
Remove the earth nuts(57) from the front left-hand side member.



Remove the fuse box cover(58) .



Remove the screw(59) of the supply cable of the fuse box.



Remove the fuses(60) .

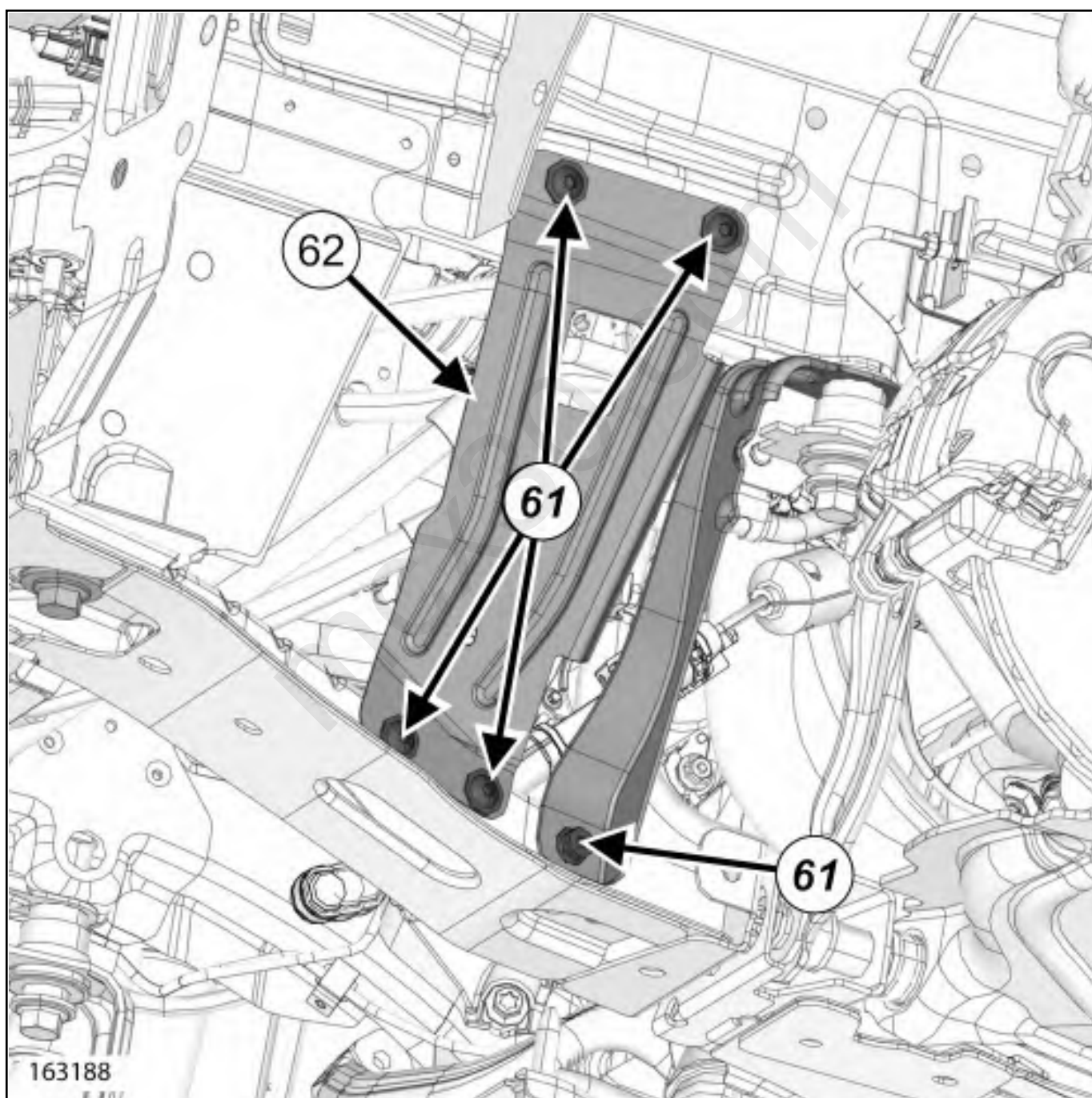
Unclip the wiring from the fuses box.

Note:



For not to loose the fuses :

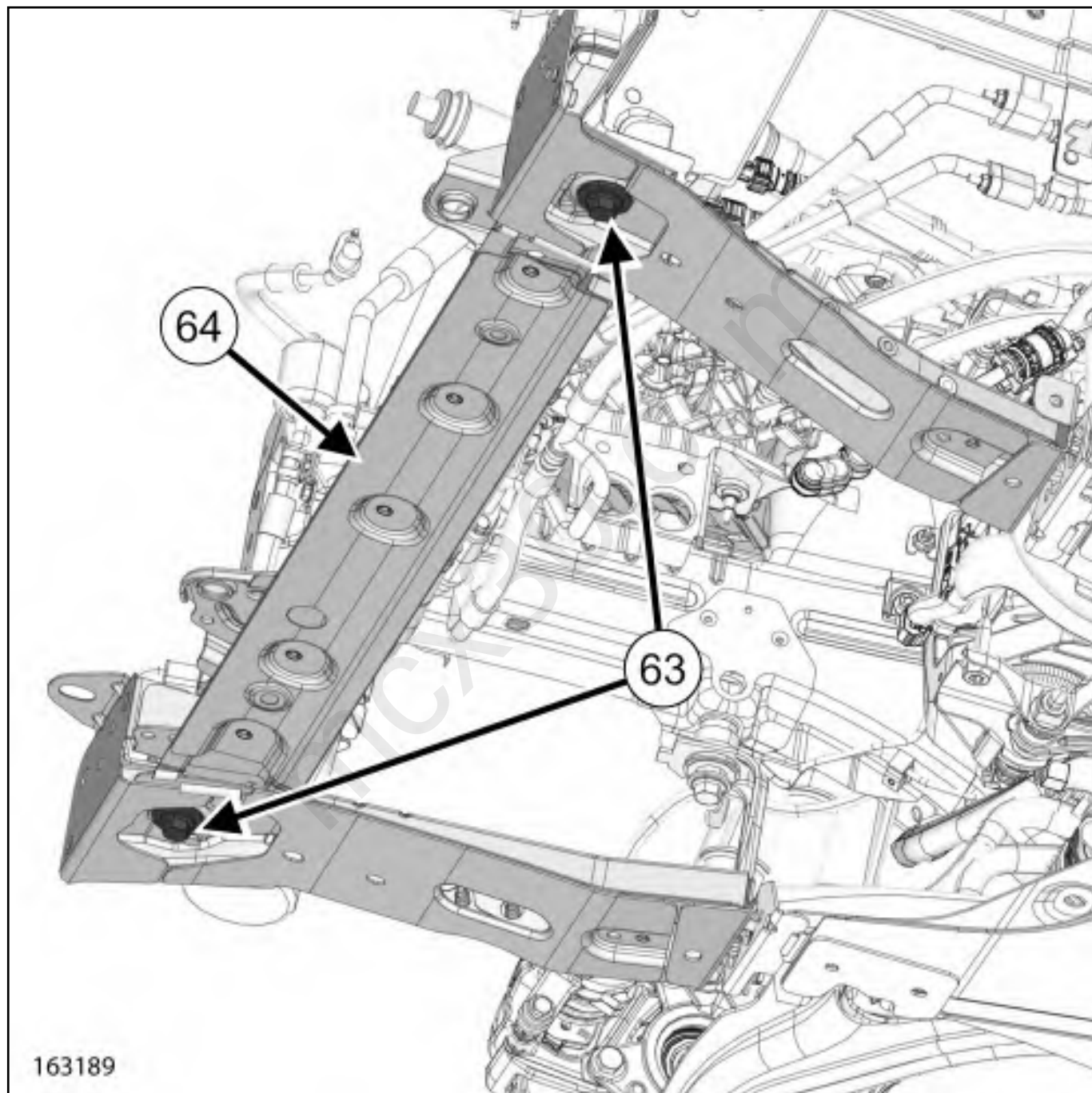
Refit the fuses on the fuses box.



Remove [Front axle assembly: Exploded view](#) :

the screw(61) of the tirant of the lower support cooling radiator,

the tirant of lower support cooling radiator(62) .



Remove [Front axle assembly: Exploded view](#) :

the screw(63) of the lower support cooling radiator,

the lower support cooling radiator(64) .

2. REMOVAL OPERATION



Support the electric powertrain assembly using the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) .



Remove Engine-gearbox unit support assembly: Exploded view :



the nuts of the left-hand suspended engine mounting,



the left-hand suspended engine mounting,



the screws of the support of the left-hand suspended engine mounting,



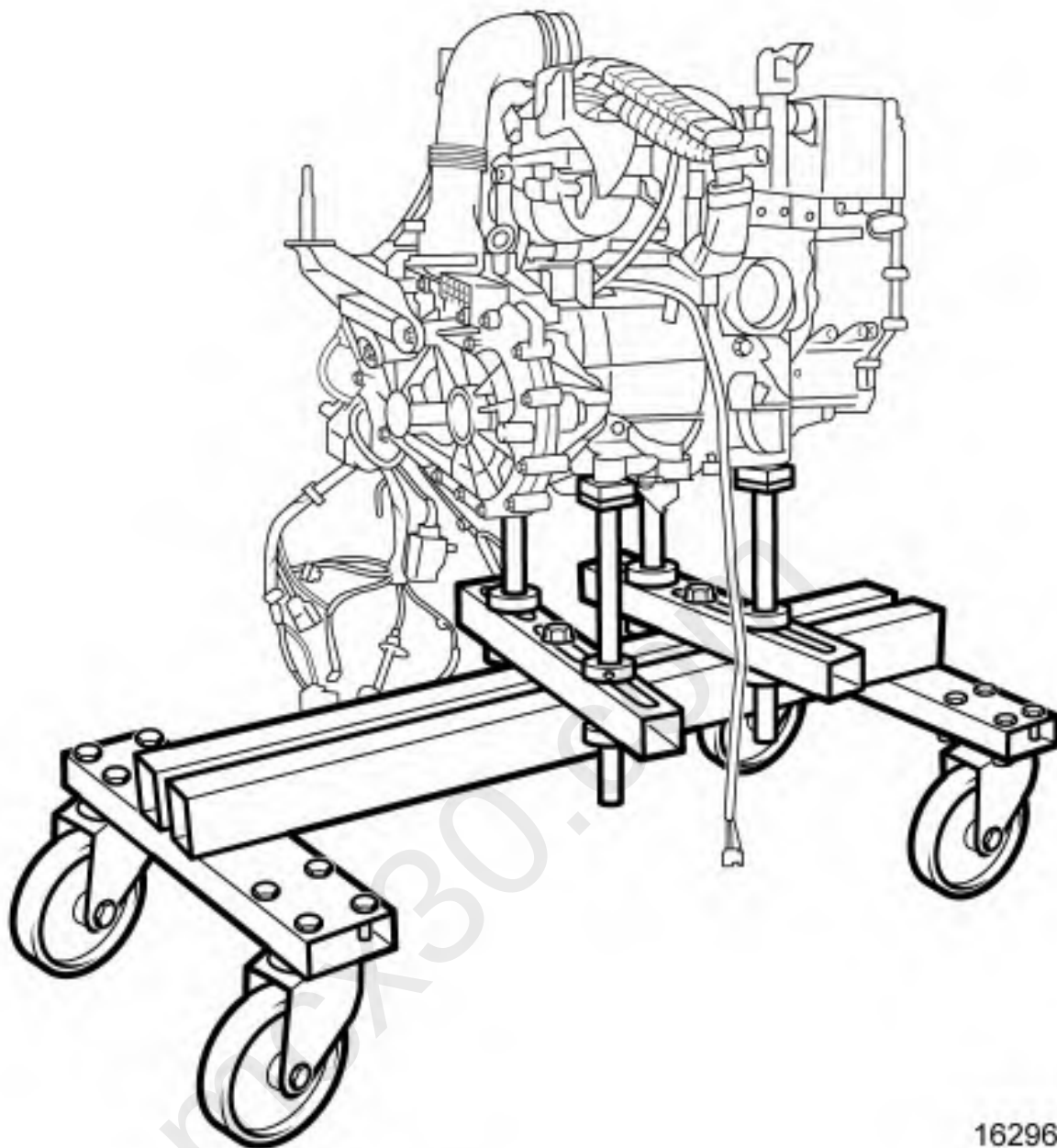
the support of the left-hand suspended engine mounting,



the screws of the right-hand suspended engine mounting,



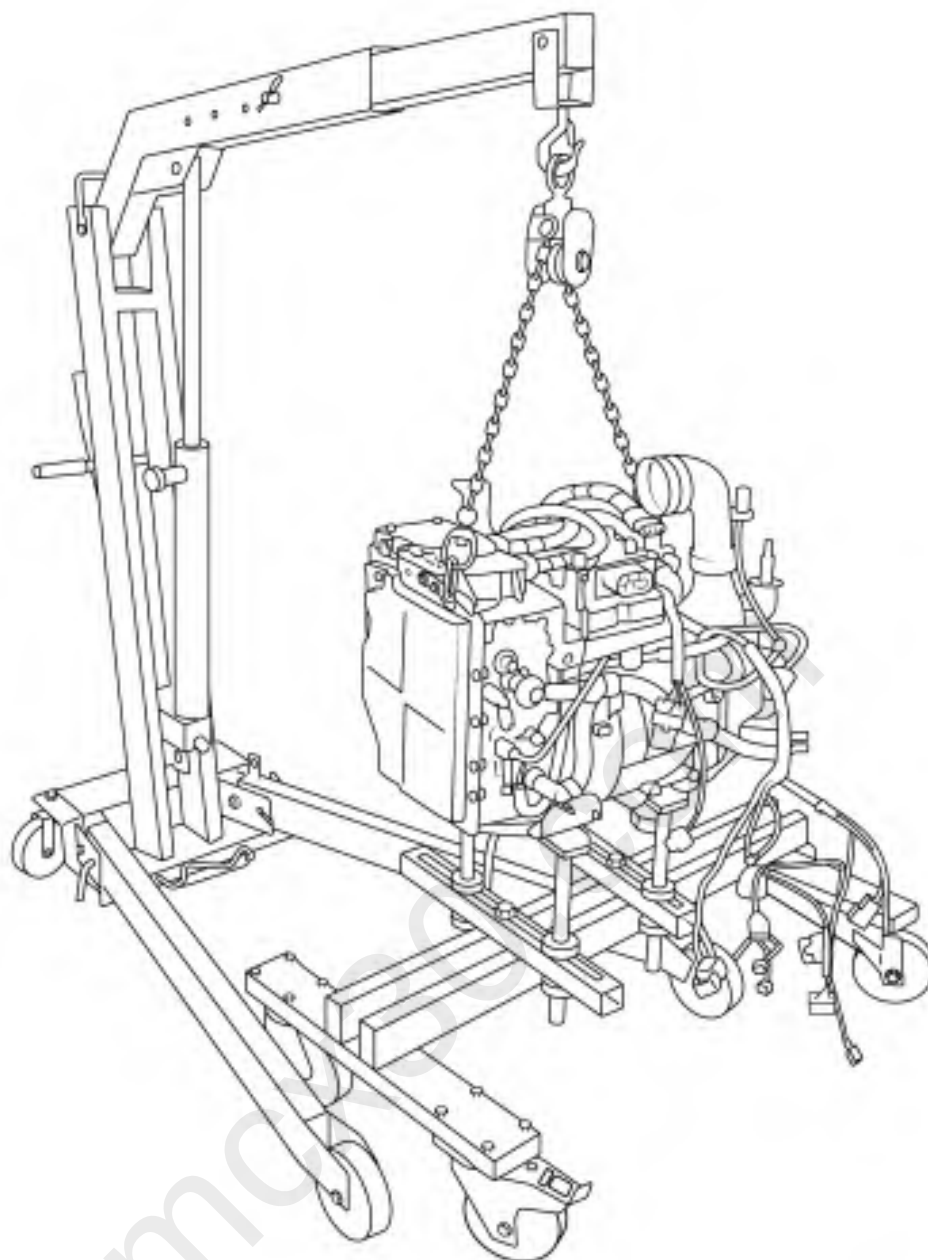
the right-hand suspended engine mounting.



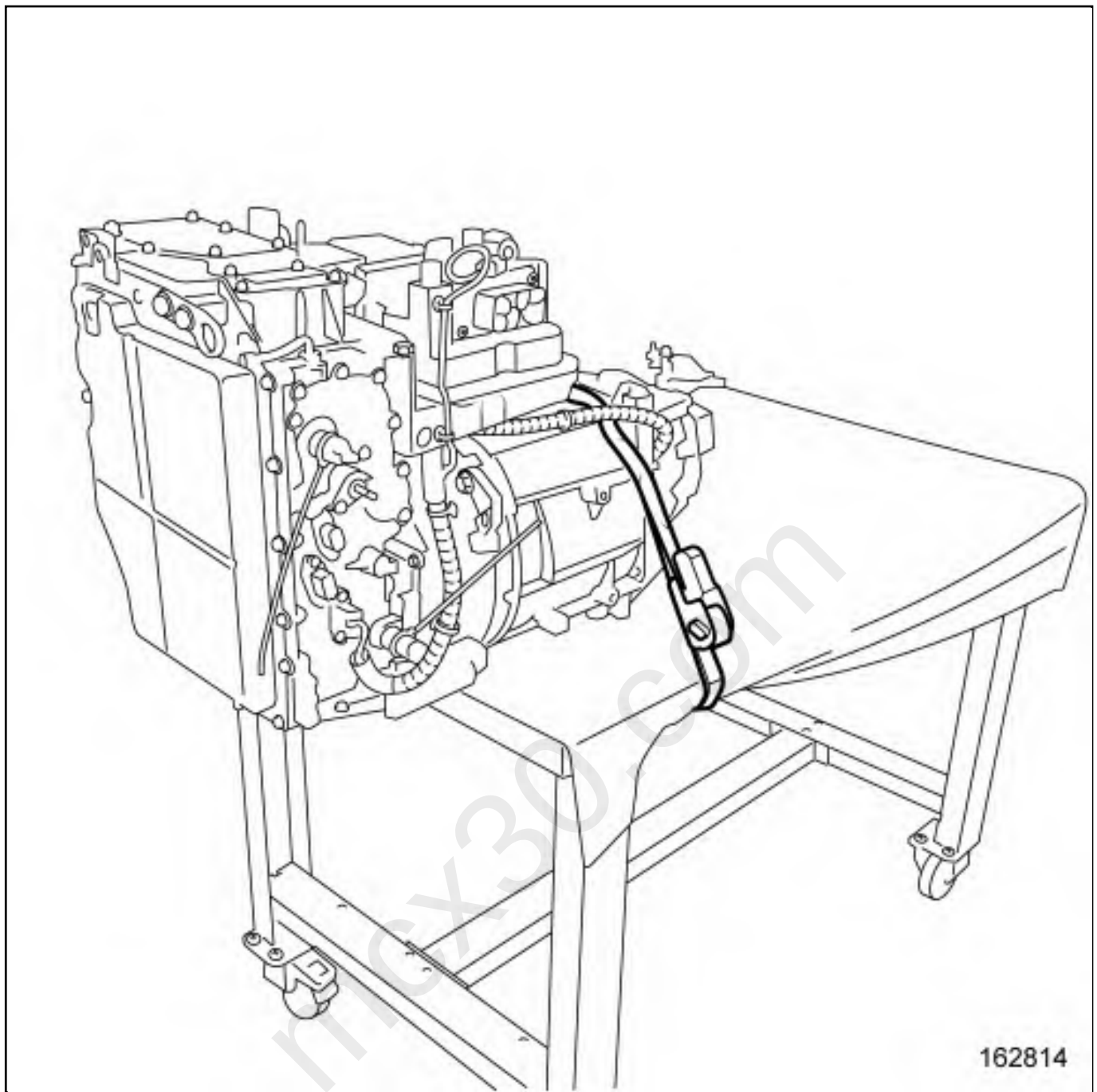
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Remove the electric powertrain assembly.

3. STRIPPING OF THE ELECTRIC POWERTRAIN ASSEMBLY

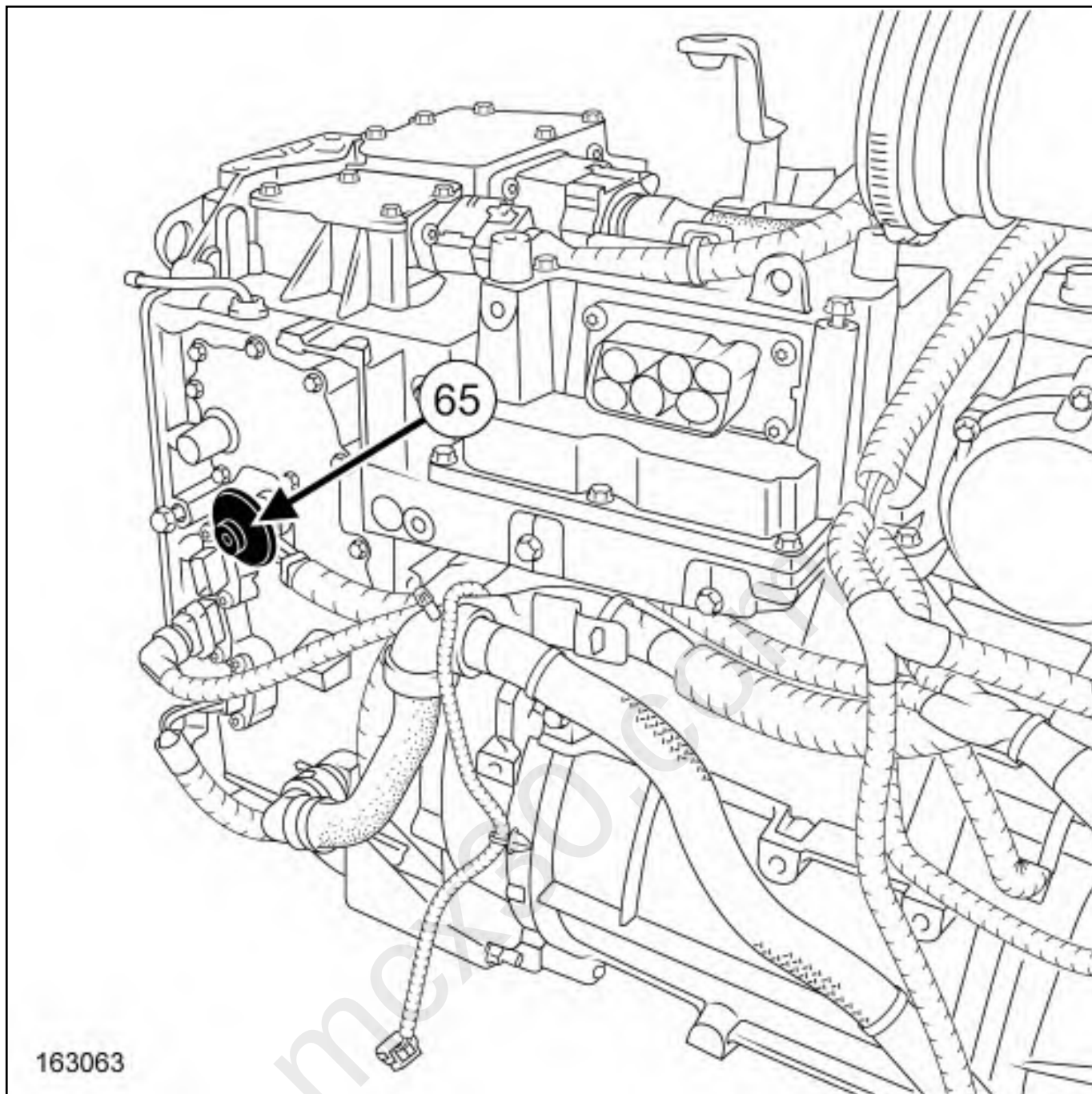


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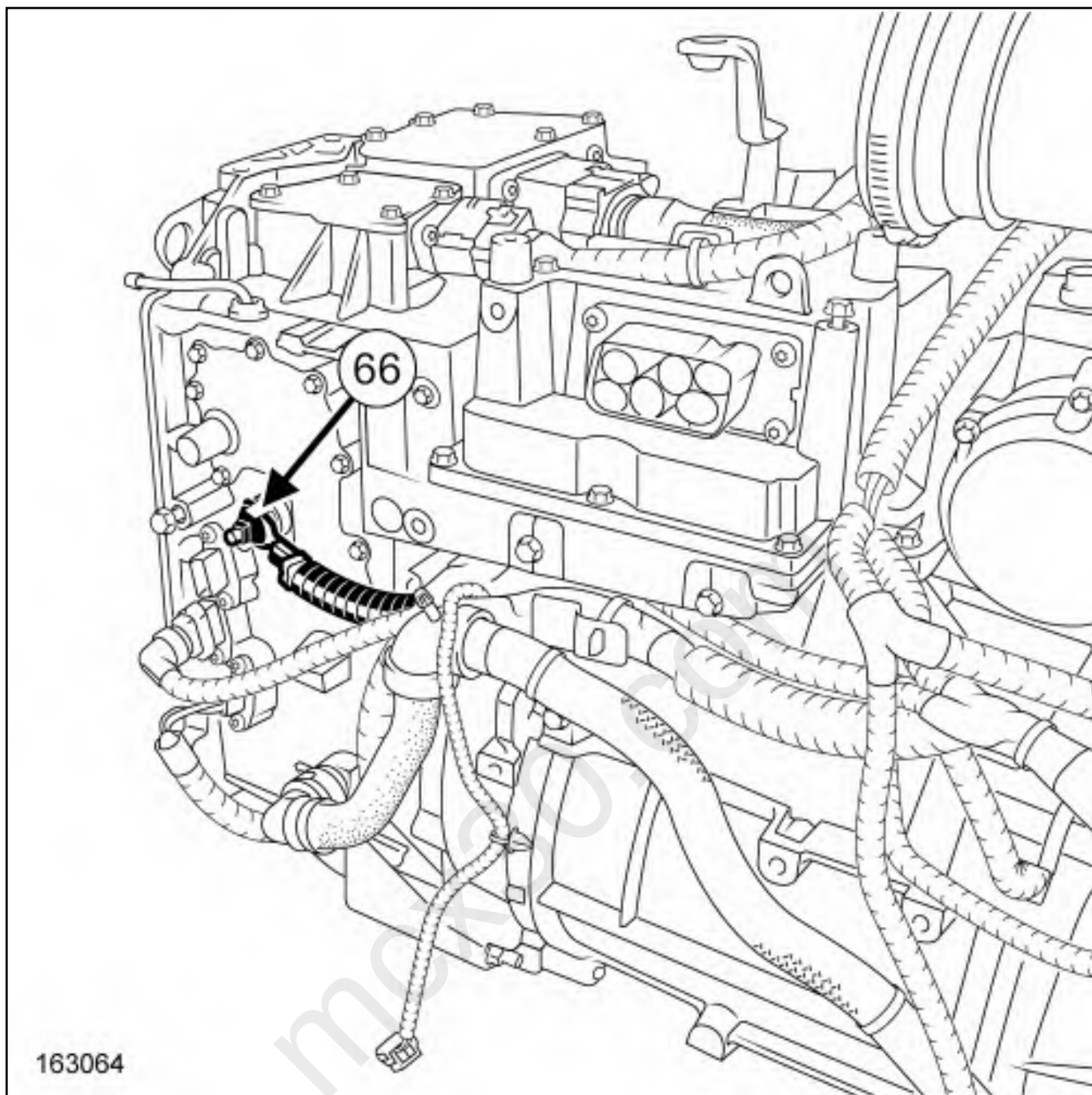
Fit the electric powertrain assembly on a table using a workshop hoist.

Strap the traction motor assembly on the table by using a lashing belt.



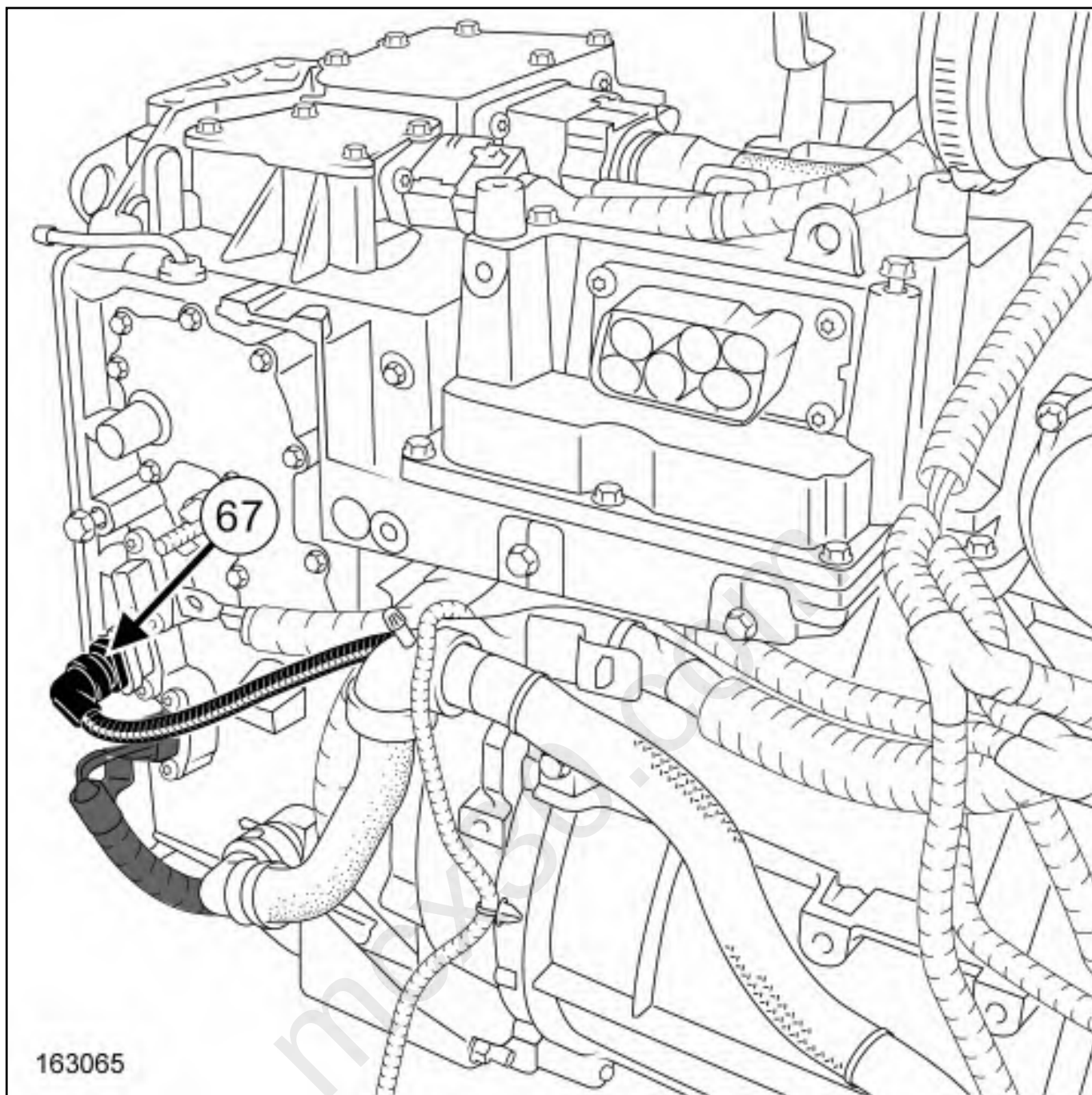
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Remove the nut cover(65) of the positive wiring.

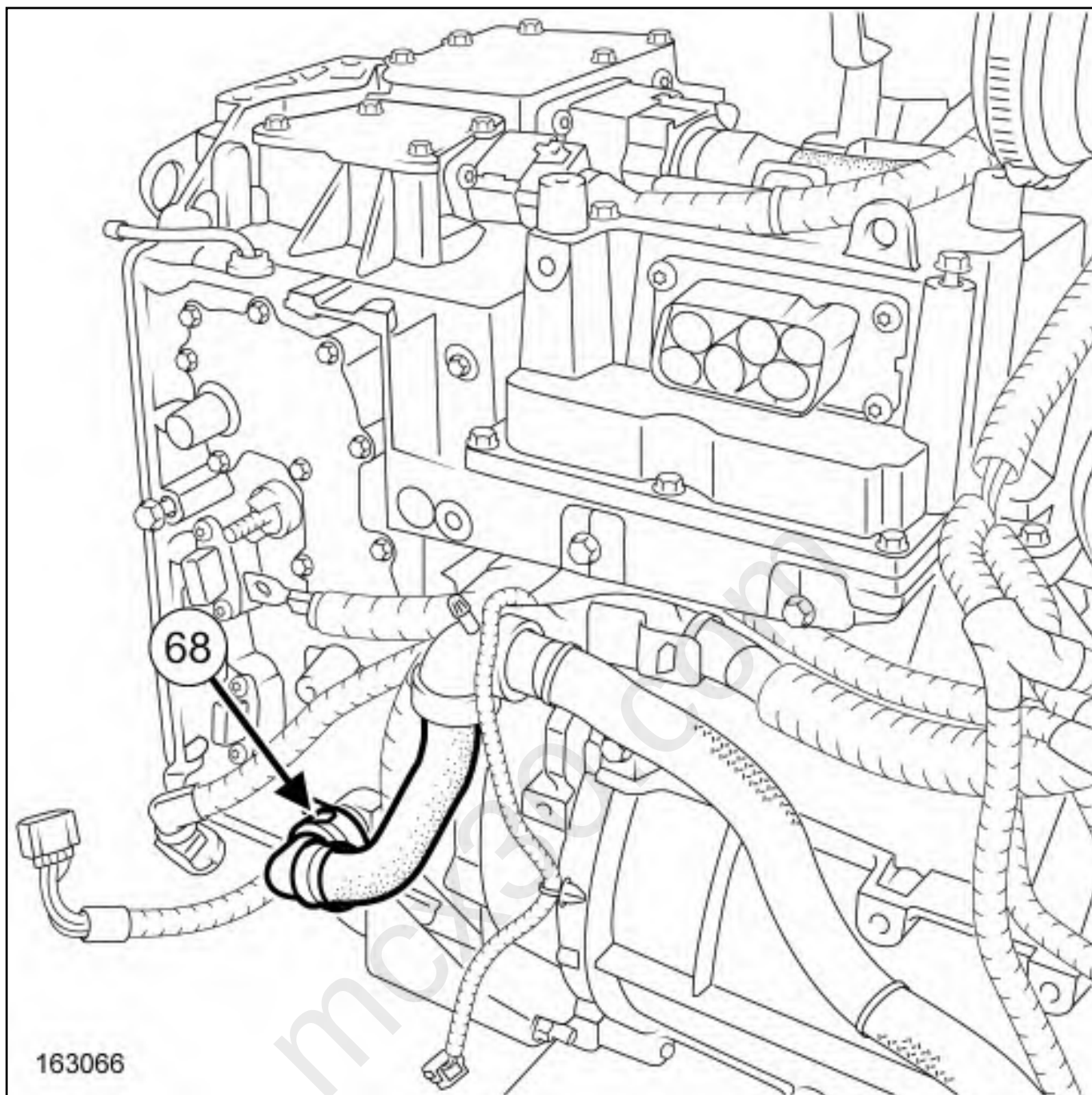


Remove the nut(66) of the positive wiring from the electric vehicle charger and converter.

Move aside the positive wiring from the electric vehicle charger and converter.



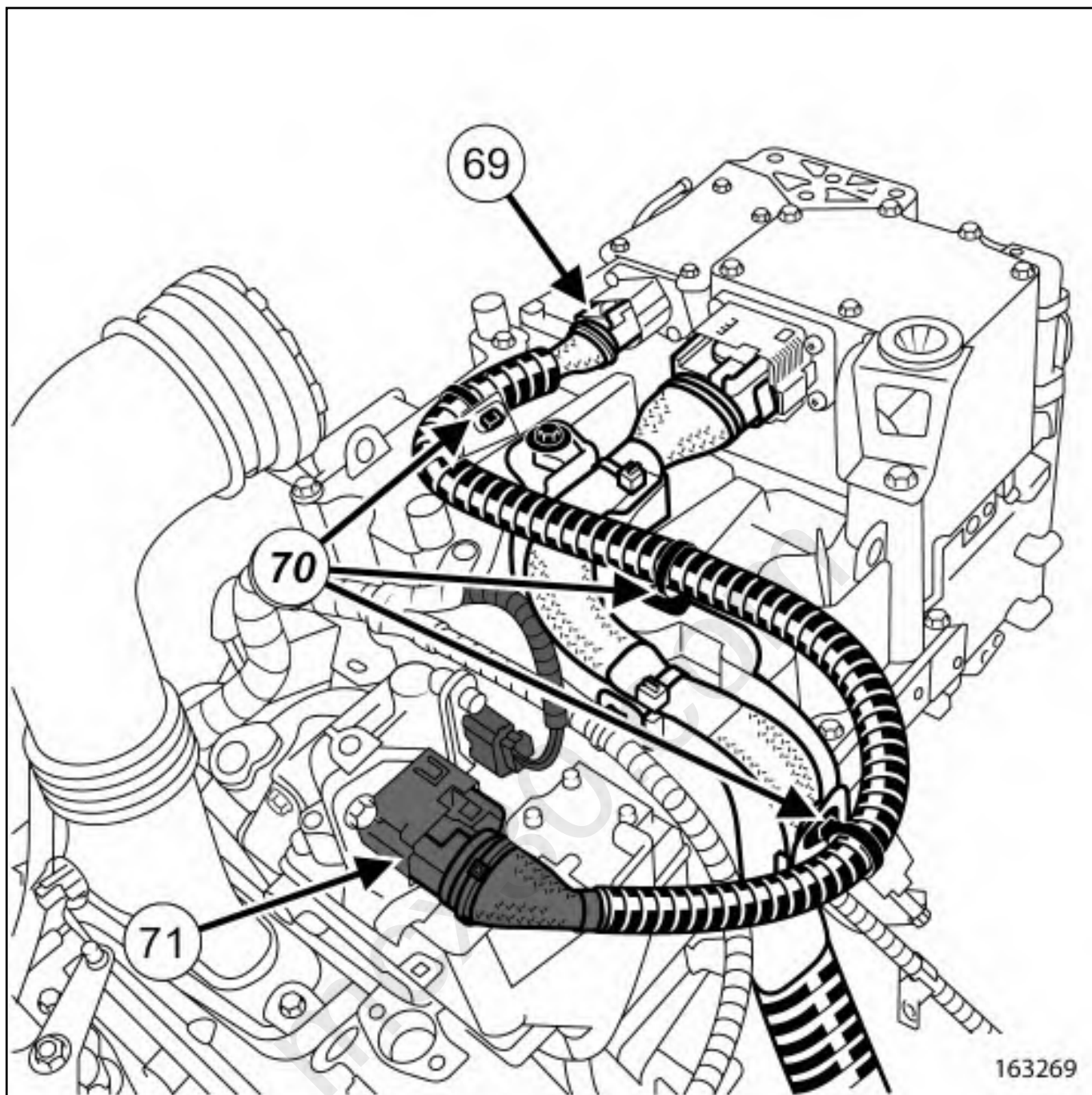
Disconnect the connector(67) of the electric vehicle charger and converter signal socket.

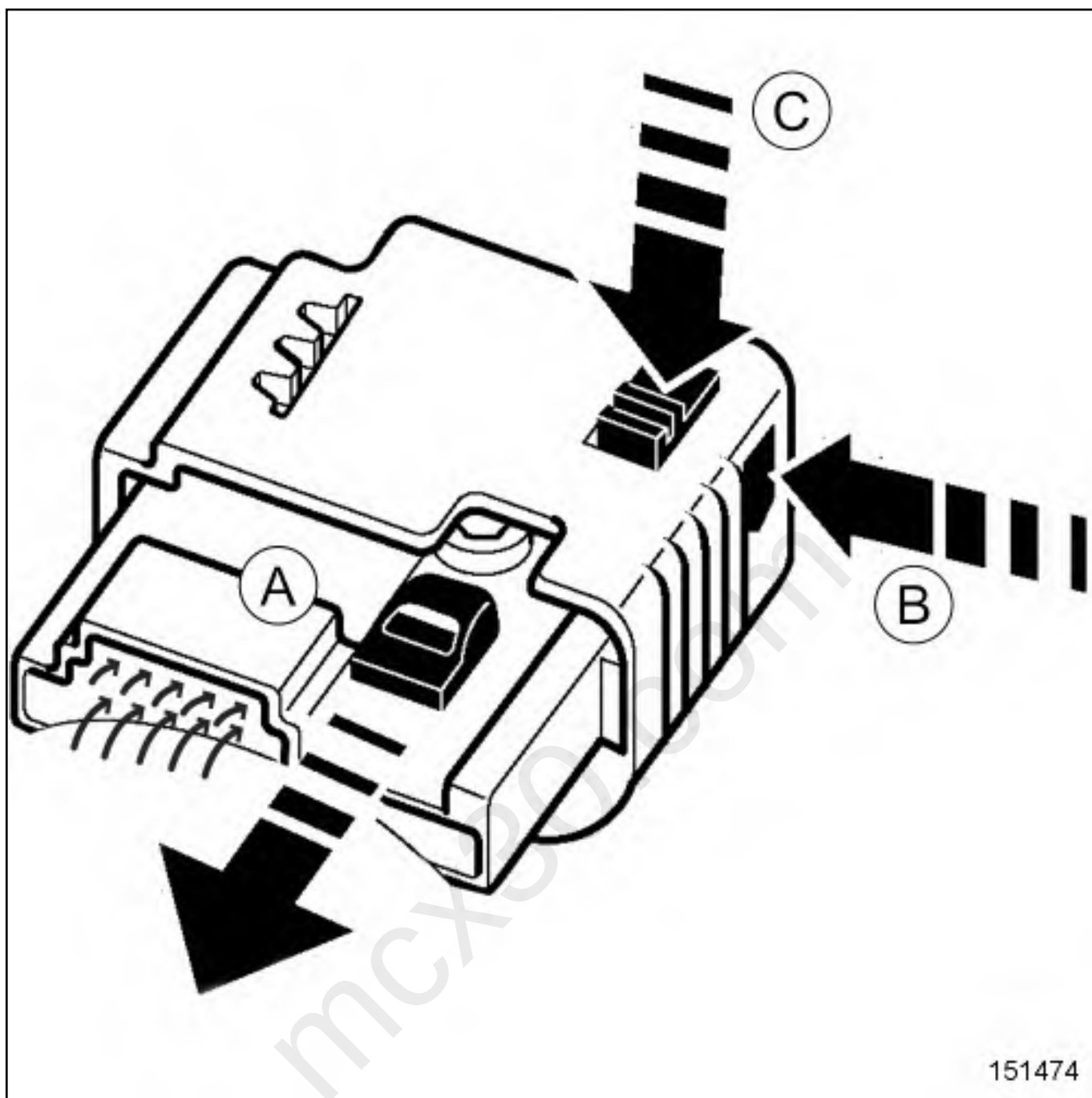


■ Disconnect the coolant pipe(68) from the electric vehicle charger and converter.

■ Unclip the wiring from the electric vehicle charger and converter.

■ Move aside the wiring from the electric vehicle charger and converter.



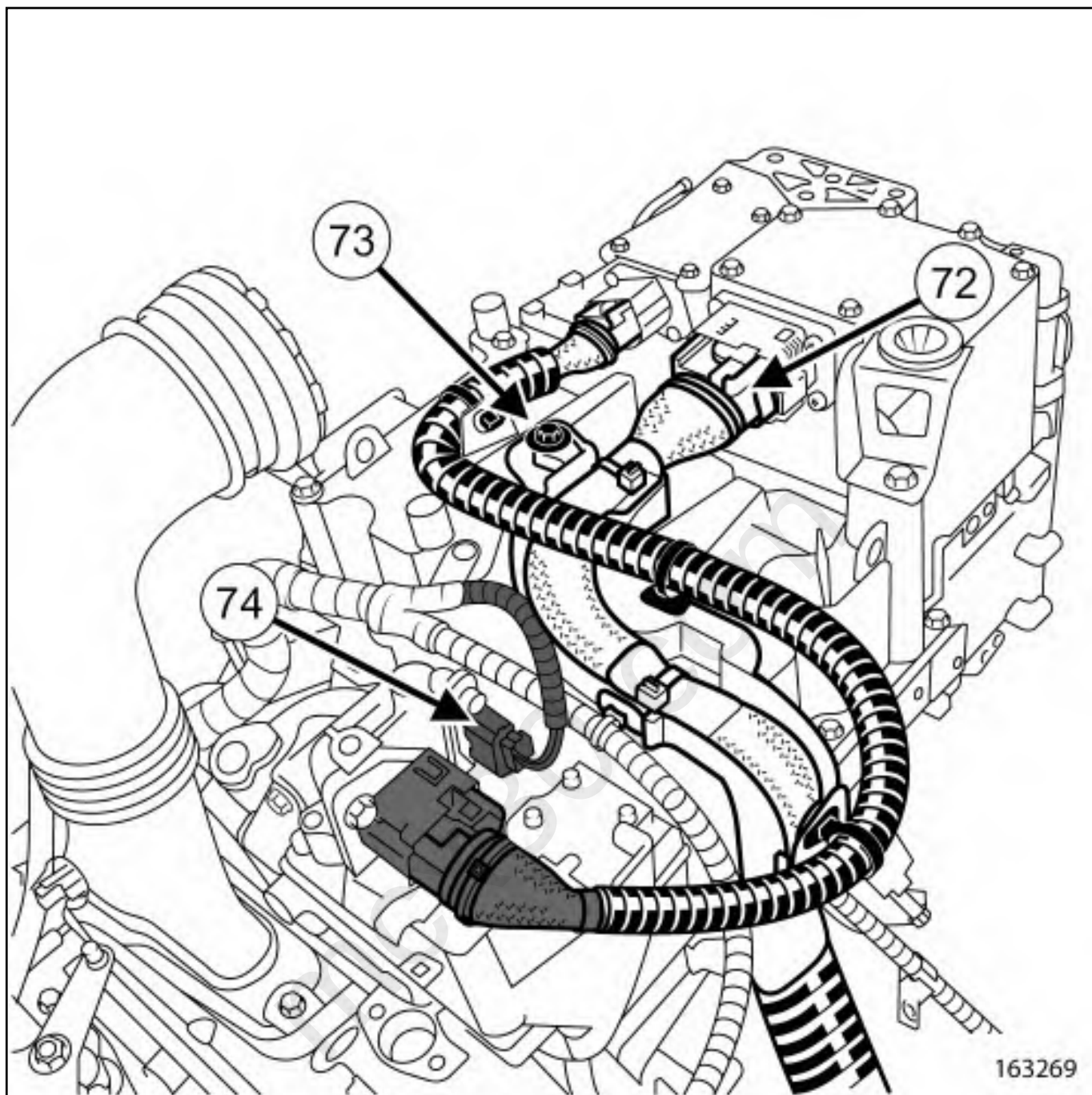


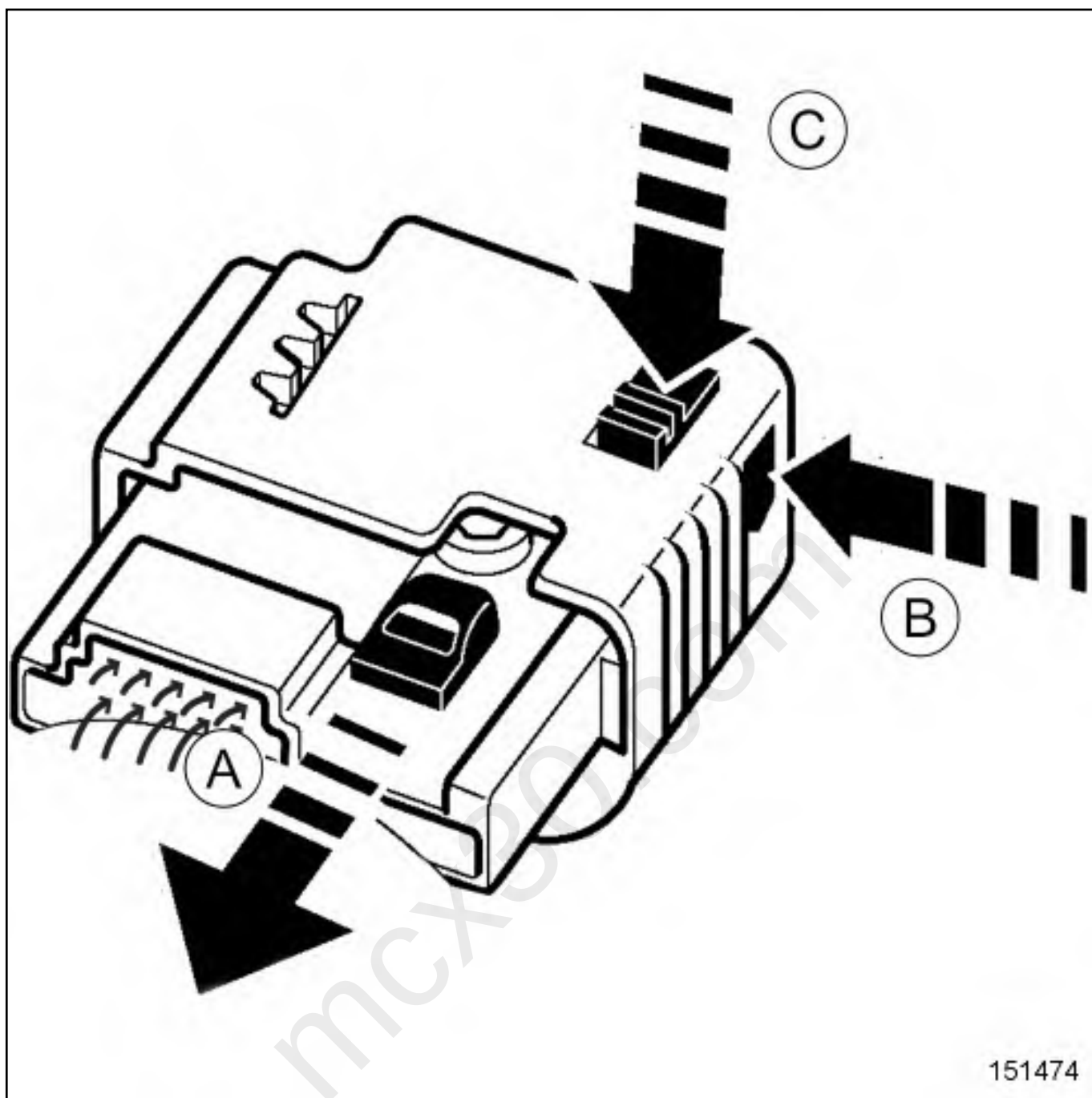
Disconnect by following the step specified by the arrows(A) , (B) and (C) :

the wiring connector between the compressor and the electric vehicle charger and converter from the electric vehicle charger and converter(69) ,

the wiring connector between the compressor and the electric vehicle charger and converter from the compressor (71) .

Unclip the wiring between the compressor and the electric vehicle charger and converter at(70) .





Disconnect the traction battery connector(72) from the electric vehicle charger and converter by following the step specified by the arrows(A) , (B) and (C) .



Remove the wiring channel screw(73) .



Move aside the traction battery connector wiring.



Disconnect the signal compressor connector(74) .

Remove [Passenger compartment cooling assembly: Exploded view](#) :

the compressor screws,

the compressor.

Remove the electric vehicle charger and converter([see 17E, Power electronics, Electric vehicle charger and converter: Removal - Refitting](#)) .

2- THE ELECTRIC TRACTION REDUCER ASSEMBLY

Lightly unstrap the traction motor assembly.

Disconnect the multifunction switch[Electric traction reduction gearing assembly: Exploded view](#) .

Remove the electric coolant pump support screws[Coolant circuit assembly: Exploded view](#) .

Unclip the wiring on the electric traction reducer assembly[Electric traction reduction gearing assembly: Exploded view](#) .

Remove [Electric traction reduction gearing assembly: Exploded view](#) :

the electric traction reducer assembly nuts,

the electric traction reducer assembly studs.

Position the centring pins.



Note:

For the method of the removing of the electric traction reducer assembly using the centring pins see : (see **Electric traction reduction gearing assembly: Removal - Refitting**) .



Remove the electric traction reducer assembly screws [Electric traction reduction gearing assembly: Exploded view](#) .



Remove the electric traction reducer assembly.

Note:

The front air distribution duct rest on the traction reducer assembly.



for the stripping of the electric traction reducer assembly see :

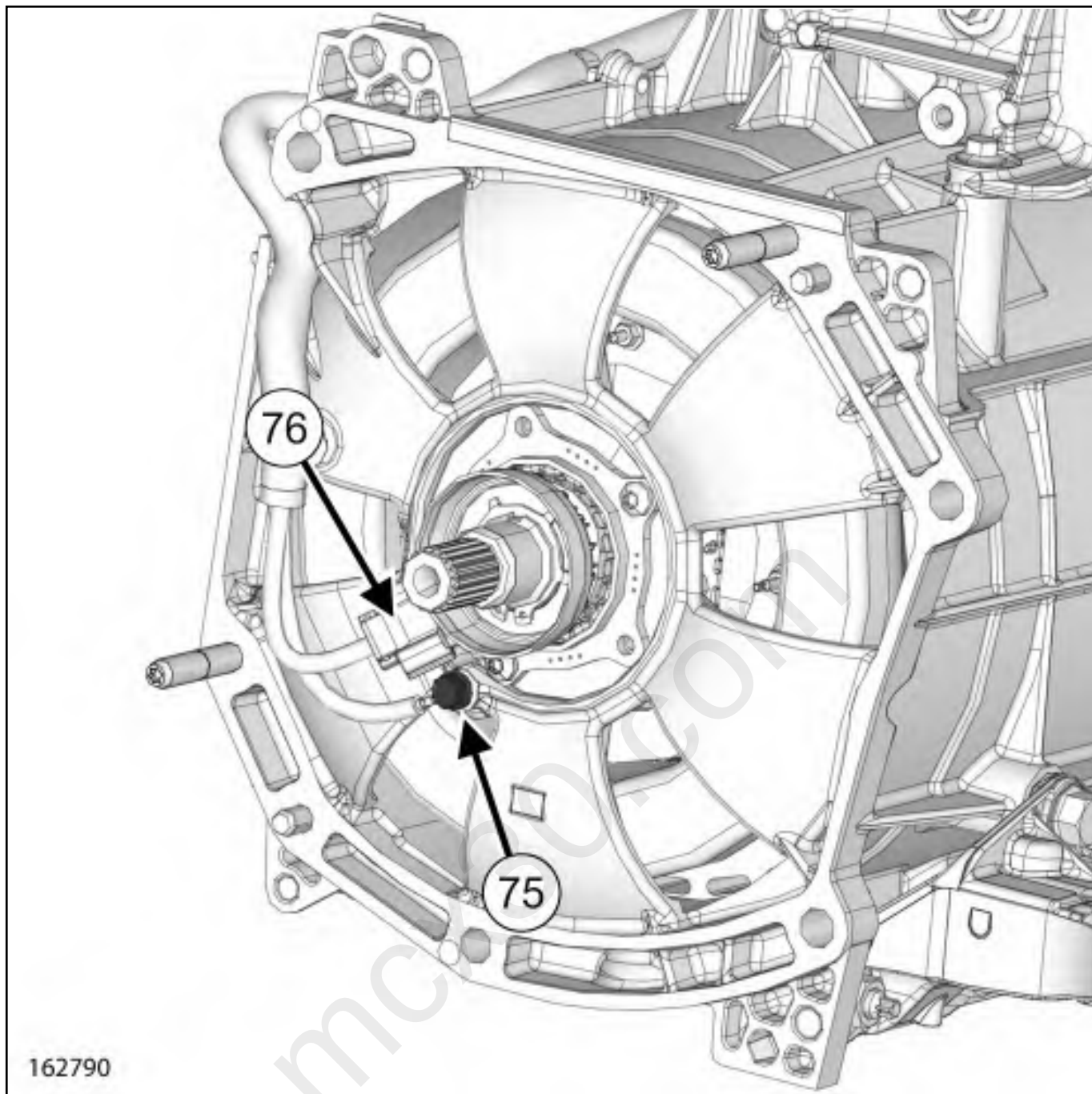


[Electric traction reduction gearing assembly: Exploded view](#) ,



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

3- THE ELECTRIC POWERTRAIN ASSEMBLY WIRING



Remove the electrical connection screw(75) of the electric traction motor signal wiring.

Disconnect the position rotor sensor(76) .

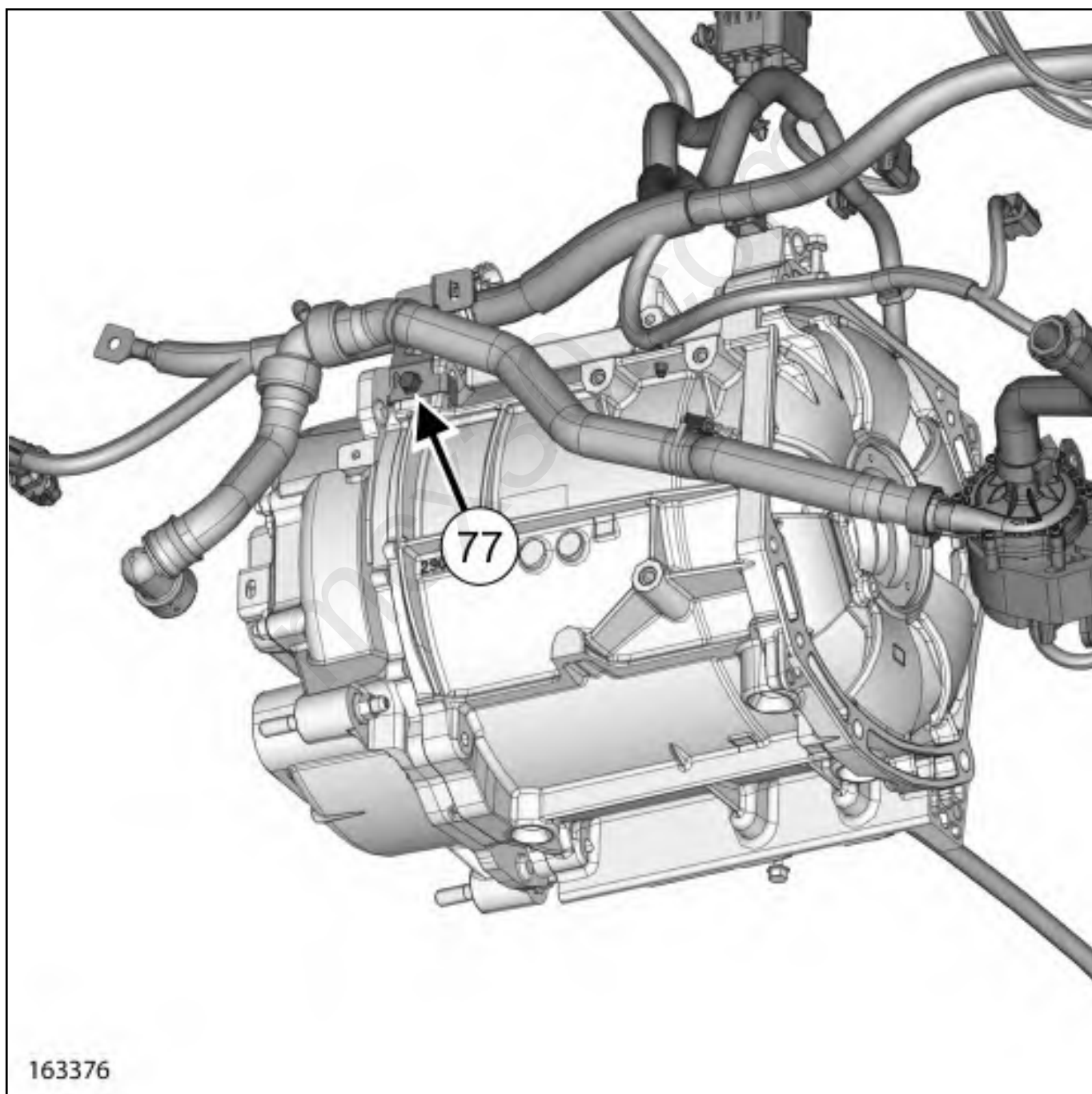
Unclip the electric traction motor signal wiring from the electric traction motor assembly.

Remove the electric traction motor signal wiring.

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

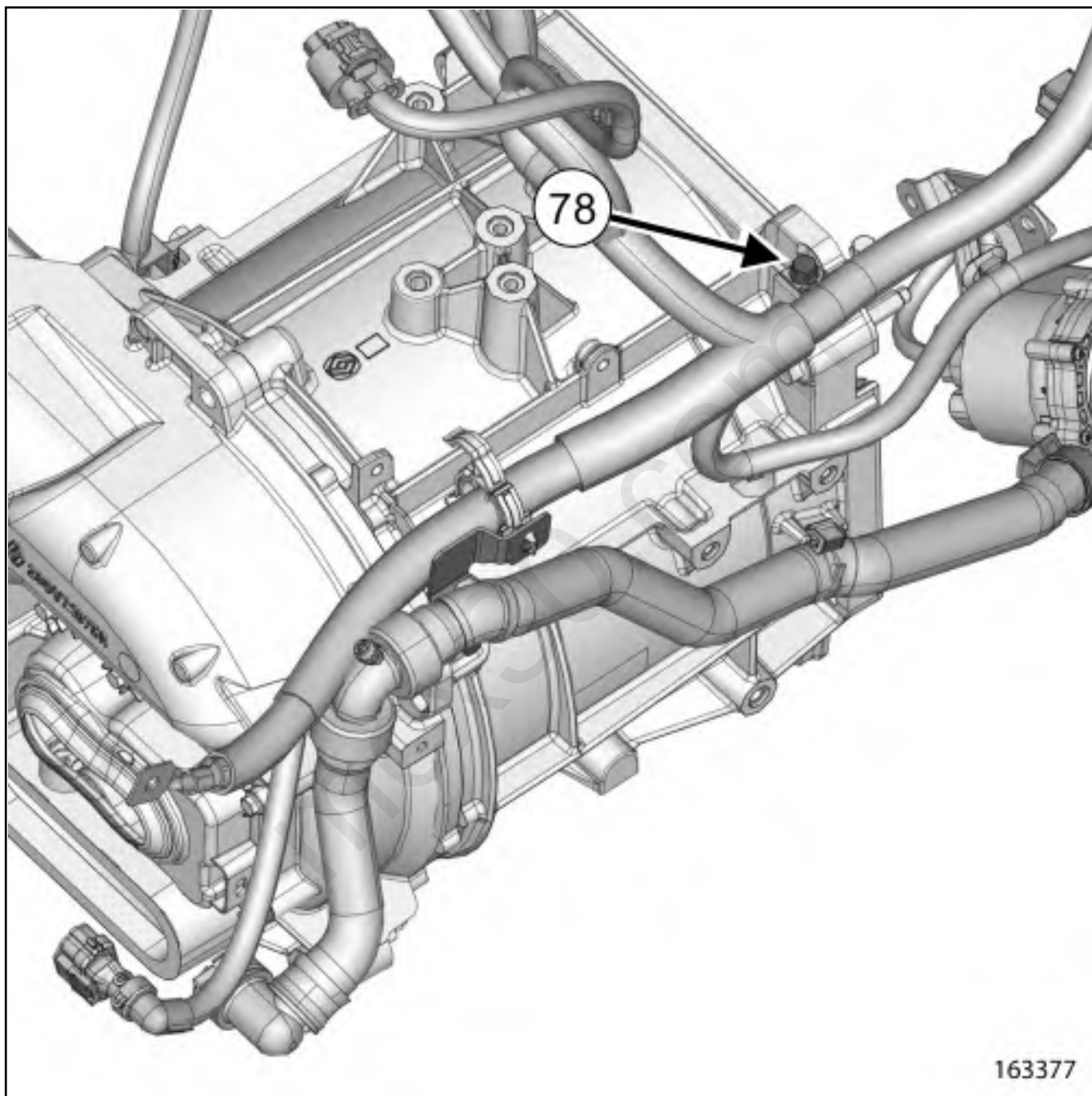
- the charger and converter support screws,

- the charger and converter support.

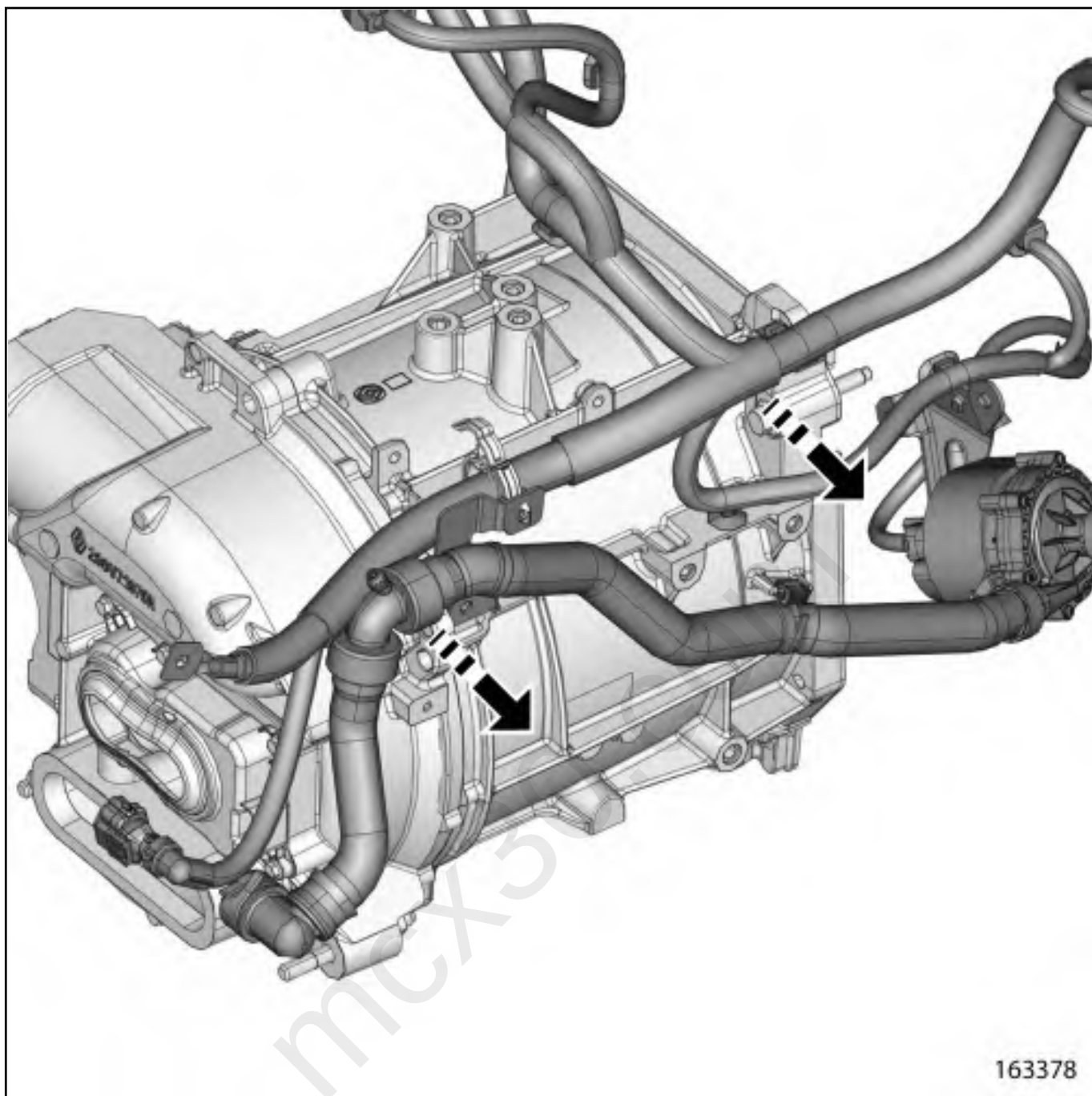


Remove the screw(77) of the coolant pipe support.

Move aside the coolant pipe support.



Remove the screw(78) of the wiring from the electric traction motor assembly.



Remove the "wiring-coolant pipe- coolant pipe support" assembly from the electric traction motor assembly.

REFITTING

1. REBUILDING OF THE ELECTRIC POWERTRAIN ASSEMBLY



Refitting the "wiring-coolant pipe- coolant pipe support" assembly on the electric traction motor assembly.



Refit the screw of the wiring on the electric traction motor assembly.



Position the coolant pipe support on electric traction motor assembly.



Refit the screw of the coolant pipe support.



Refit [Passenger compartment cooling assembly: Exploded view](#) :



the support compressor,



the support compressor screws.



Torque tighten the support compressor screws [Passenger compartment cooling assembly: Exploded view](#)

2- THE ELECTRIC POWERTRAIN ASSEMBLY WIRING



Refit the electric traction motor signal wiring.



Clip the electric traction motor signal wiring on the electric traction motor assembly.



Connect the position rotor sensor.



Check the electrical connection with a push-pull test (see **Electric vehicle power electronics : Precautions for the repair**) .



Refit the electrical connection screw of the electric traction motor signal wiring.



Torque tighten the electrical connection screw of the electric traction motor signal wiring([see 17E, Power electronics, Electric powertrain assembly : Exploded view](#)) .



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

3- THE ELECTRIC TRACTION REDUCER ASSEMBLY



Refit the electric traction reducer assembly[Electric traction reduction gearing assembly: Exploded view](#) .



Refit the electric traction reducer assembly screws[Electric traction reduction gearing assembly: Exploded view](#) .



Torque tighten the electric traction reducer assembly screws[Electric traction reduction gearing assembly: Exploded view](#) .



Remove the centring pins.



Refit the electric traction reducer assembly studs[Electric traction reduction gearing assembly: Exploded view](#) .



Torque tighten the electric traction reducer assembly studs[Electric traction reduction gearing assembly: Exploded view](#) .



Refit the electric traction reducer assembly nuts[Electric traction reduction gearing assembly: Exploded view](#) .



Torque tighten the electric traction reducer assembly nuts[Electric traction reduction gearing assembly: Exploded view](#) .



Clip the wiring on the electric traction reducer assembly [Electric traction reduction gearing assembly: Exploded view](#) .



Refit the electric coolant pump support screws [Coolant circuit assembly: Exploded view](#) .



Connect the multifunction switch [Electric traction reduction gearing assembly: Exploded view](#) .



Strap strongly the traction motor assembly on the table.

4- THE ELECTRIC VEHICLE CHARGER AND CONVERTER



Refit the electric vehicle charger and converter [\(see 17E, Power electronics, Electric vehicle charger and converter: Removal - Refitting\)](#) .



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



the charger and converter support,



the charger and converter support screws.



Torque tighten the charger and converter support screws [\(see 17E, Power electronics, Electric powertrain assembly : Exploded view\)](#) .



Connect the signal compressor connector.



Position the traction battery connector wiring.



Refit the wiring channel screw.



Connect the traction battery connector on the electric vehicle charger and converter.



Clip the wiring between the compressor and the electric vehicle charger and converter on the electric vehicle charger and converter.



Connect:



the wiring connector between the compressor and the electric vehicle charger and converter connector on the electric vehicle charger and converter,



the wiring connector between the compressor and the electric vehicle charger and converter connector on the compressor.



Position the wiring on the electric vehicle charger and converter.



Clip the wiring on the electric vehicle charger and converter.



Connect the coolant pipe on the electric vehicle charger and converter.



Connect the connector of the electric vehicle charger and converter signal socket.



Check the electrical connections with a push-pull test(see **Electric vehicle power electronics :**

Precautions for the repair) .



Position the positive wiring from the electric vehicle charger and converter.



Refit the nut of the positive wiring on the electric vehicle charger and converter.



Torque tighten the nut of the positive wiring on the electric vehicle charger and converter10 N.m.



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

Refit the nut cover of the positive wiring.

2. REFITTING PREPARATION OPERATION

Refit the electric powertrain assembly on the tool Support for removal - refitting of engine - gearbox assembly (Mot. 1390).

3. REFITTING OPERATION

Refit the electric powertrain assembly.

Refit [Engine-gearbox unit support assembly: Exploded view](#) :



the right-hand suspended engine mounting.



the screws of the right-hand suspended engine mounting.

Torque tighten the screws of the right-hand suspended engine mounting [Engine-gearbox unit support assembly: Exploded view](#) .

Refit [Engine-gearbox unit support assembly: Exploded view](#) :



the support of the left-hand suspended engine mounting,



the screws of the support of the left-hand suspended engine mounting.

Torque tighten the screws of the support of the left-hand suspended engine mounting [Engine-gearbox unit support assembly: Exploded view](#) .

Refit [Engine-gearbox unit support assembly: Exploded view](#) :

- the left-hand suspended engine mounting,

- the nuts of the left-hand suspended engine mounting.



Torque tighten the nuts of the left-hand suspended engine mounting [Engine-gearbox unit support assembly: Exploded view](#) .



Torque tighten :

- the screws of the lower support cooling radiator [Front axle assembly: Exploded view](#) ,

- the screws of the tirant of the lower support cooling radiator [Front axle assembly: Exploded view](#) ,

- the screw of supply cable of the fuse box 8 N.m,

- the earth nuts on the front left-hand side member 10 N.m,

- the nut of 12V supply cable 8 N.m,

- the earth strap screw on the electric vehicle charger and converter 21 N.m,

- the air conditioning pipe screws [Passenger compartment cooling assembly: Exploded view](#) ,

- the earth strap screw on the electric traction reducer assembly 21 N.m,

- the front impact cross member screws 44 N.m,

- the four mounting screws of the electric vehicle charging socket support 8 N.m.



Proceed in the reverse order to removal.

4. FINAL OPERATION

Fill and bleed the cooling system [Cooling system: Draining - Refilling](#) .

Fill :

the electric traction reducer assembly ,

the refrigerant circuit using the refrigerant charging station [Refrigerant circuit: Draining - Filling](#) .

Adjust:

the multifunction switch [Multifunction switch : Adjustment](#) ,

the gear shift cable [Electric traction reduction gearing control cable : Adjustment](#) .

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

Apply the After repair procedure using the Diagnostic tool [Diagnostic tool : Use](#) :

-Computer concerned by the After repair procedure:

"BCB" ,

-Component controlled by this computer concerned by the After repair procedure:

"electric vehicle charger//calculateur BCB" .

Apply the After repair procedure using the Diagnostic tool [Diagnostic tool : Use](#) :

-Computer concerned by the After repair procedure:

"PEB" ,

-Component controlled by this computer concerned by the After repair procedure:

"electric traction reduction gear assembly" .

Apply the After repair procedure using the Diagnostic tool [Diagnostic tool : Use](#) :

-Computer concerned by the After repair procedure:

"EVC" ,

-Component controlled by this computer concerned by the After repair procedure:

"engine cooling fan assembly" .



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XSL version : 3.02 du 22/07/11

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